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

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for  
TSG RAN WG4  
meeting: 96-e**

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## 1 Opening of the E-meeting

The Chairman Steven Chen (Futurewei) opened the meeting on RAN4 reflector on 17/08/2020.

**Intellectual Property Rights Policy**

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

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

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

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

**Statement regarding competition law**

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

**Meeting Arrangements**

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

## 2 Approval of the agenda

**R4-2009500 Agenda for RAN4 #96-e**

*Type: Agenda For: Approval  
 Source: RAN4 Chairman*

**Decision:** The document was **revised to R4-2011530**.

**R4-2011530 Agenda for RAN4 #96-e**

*Type: Agenda For: Approval  
 Source: ETSI*

(Replaces R4-2009500)

**Decision:** The document was **revised to R4-2011578**.

**R4-2011578 Agenda for RAN4 #96-e**

*Type: Agenda For: Approval  
 Source: ETSI*

(Replaces R4-2011530)

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

**R4-2009501 RAN4#95-e Meeting Report**

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

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

**R4-2011531 E-meeting arrangements and guidelines**

*Type: other For: Approval  
 Source: RAN4 Chairman*

**Decision:** The document was **revised to R4-2011533**.

**R4-2011533 E-meeting arrangements and guidelines**

*Type: other For: Approval  
 Source: RAN4 Chairman*

(Replaces R4-2011531)

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

## 3 Letters / reports from other groups / meetings

**R4-2009502 NGMN Liaison Statement to 3GPP RAN4 on 5G NR Over The Air test methodologies and performance requirements**

*Type: LS in For: Information  
 Original outgoing LS: -, to RAN4, cc RAN5, RAN  
 Source: NGMN Alliance Project*

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

**R4-2009503 Resolutions of the World Radiocommunication Conference, 2019 (WRC-19) 01PC(FMD)O-2020-001473**

*Type: LS in For: Information  
 Original outgoing LS: -, to RAN4, cc -  
 Source: WRC-19*

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

**R4-2009504 LS response to RAN2 LS on Guard Symbols in IAB**

*Type: LS in For: Information  
 Original outgoing LS: R1-2004784, to RAN2, cc RAN4  
 Source: RAN1*

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

**R4-2009505 LS on categories for terrestrial broadcast**

*Type: LS in For: Information  
 Original outgoing LS: R1-2004912, to RAN2, cc RAN4  
 Source: RAN1*

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

**R4-2009506 LS to RAN2 on NR-U RSSI Measurement Duration**

*Type: LS in For: Information  
 Original outgoing LS: R1-2004915, to RAN2, cc RAN4  
 Source: RAN1*

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

**R4-2009507 Reply LS on RAN4 IAB-MT feature list agreement**

*Type: LS in For: Information  
 Original outgoing LS: R1-2004954, to RAN2, cc RAN4  
 Source: RAN1*

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

**R4-2009508 LS on the UE DL PRS processing**

*Type: LS in For: Information  
 Original outgoing LS: R1-2004959, to RAN4, cc RAN2  
 Source: RAN1*

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

**R4-2009509 LS on UE capability on wideband carrier operation for NR-U**

*Type: LS in For: Information  
 Original outgoing LS: R1-2004965, to RAN4, cc RAN2  
 Source: RAN1*

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

**R4-2009510 Reply LS on NR-U SSB monitoring capabilities**

*Type: LS in For: Information  
 Original outgoing LS: R1-2004992, to RAN4, cc -  
 Source: RAN1*

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

**R4-2009511 LS Reply on DCP Open Issues**

*Type: LS in For: Information  
 Original outgoing LS: R1-2004994, to RAN2, cc RAN4  
 Source: RAN1*

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

**R4-2009512 LS to RAN2 on initial BWP for NR-U**

*Type: LS in For: Information  
 Original outgoing LS: R1-2004998, to RAN4, cc RAN2  
 Source: RAN1*

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

**R4-2009513 LS on SCell Dormancy**

*Type: LS in For: Information  
 Original outgoing LS: R1-2005081, to RAN4, cc -  
 Source: RAN1*

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

**R4-2009514 LS on updated Rel-16 RAN1 UE features lists for NR**

*Type: LS in For: Information  
 Original outgoing LS: R1-2005096, to RAN4, RAN2, cc -  
 Source: RAN1*

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

**R4-2009515 LS on sidelink synchronization timing reference**

*Type: LS in For: Information  
 Original outgoing LS: R1-2005098, to RAN4, cc -  
 Source: RAN1*

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

**R4-2009516 LS on updated Rel-16 RAN1 UE features lists for NR after RAN1#101-e**

*Type: LS in For: Information  
 Original outgoing LS: R1-2005109, to RAN4, RAN2, cc -  
 Source: RAN1*

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

**R4-2009517 LS on further updated Rel-16 RAN1 UE features list for LTE**

*Type: LS in For: Information  
 Original outgoing LS: R1-2005118, to RAN2, cc RAN4  
 Source: RAN1*

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

**R4-2009518 LS reply to RAN4 on UE declaring beam failure due to LBT failures during active TCI switching**

*Type: LS in For: Information  
 Original outgoing LS: R2-2005851, to RAN4, cc RAN1  
 Source: RAN2*

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

**R4-2009519 LS to RAN4 on RRM relaxation in power saving**

*Type: LS in For: Information  
 Original outgoing LS: R2-2005858, to RAN4, cc -  
 Source: RAN2*

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

**R4-2009520 Reply LS on Rel-16 UE feature lists**

*Type: LS in For: Information  
 Original outgoing LS: R2-2006030, to RAN4, RAN1, cc -  
 Source: RAN2*

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

**R4-2009521 Reply LS on supporting Rel-16 NR HST from Rel-15 Ues**

*Type: LS in For: Information  
 Original outgoing LS: R2-2006192, to RAN4, cc -  
 Source: RAN2*

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

**R4-2009522 Reply LS on inter-frequency measurement without gap**

*Type: LS in For: Information  
 Original outgoing LS: R2-2006264, to RAN4, cc RAN1  
 Source: RAN2*

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

**R4-2009523 Reply LS RAN4 on RRM Enhanced Measurement Reporting**

*Type: LS in For: Information  
 Original outgoing LS: R2-2006287, to RAN4, cc -  
 Source: RAN2*

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

**R4-2009524 Reply LS on SCell dormancy requirement scope**

*Type: LS in For: Information  
 Original outgoing LS: R2-2006318, to RAN4, cc RAN1  
 Source: RAN2*

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

**R4-2009525 LS on UE capability xDD differentiation for SUL/SDL bands**

*Type: LS in For: Information  
 Original outgoing LS: R2-2006322, to RAN4, cc RAN1  
 Source: RAN2*

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

**R4-2009526 LS on Clarification on RAN4 features of NE-DC**

*Type: LS in For: Information  
 Original outgoing LS: R2-2006352, to RAN4, cc -  
 Source: RAN2*

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

**R4-2009527 Reply LS on XDD-FRX Differentiation**

*Type: LS in For: Information  
 Original outgoing LS: R2-2006448, to RAN1, cc RAN4  
 Source: RAN2*

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

**R4-2009528 Response LS on Exchange of information related to SRS-RSRP measurement resource configuration for UE-CLI**

*Type: LS in For: Information  
 Original outgoing LS: R3-204399, to RAN2, RAN1, cc RAN4  
 Source: RAN3*

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

**R4-2009529 LS on ambiguity in output power requirements for power class 2 UE for EN-DC**

*Type: LS in For: Information  
 Original outgoing LS: R5-202805, to RAN4, cc -  
 Source: RAN5*

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

**R4-2009530 LS on RF testing of 4Rx capable UE**

*Type: LS in For: Information  
 Original outgoing LS: R5-202806, to RAN4, cc -  
 Source: RAN5*

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

**R4-2009531 LS on structure of NR CA reference sensitivity requirements in 38.101-1**

*Type: LS in For: Information  
 Original outgoing LS: R5-202963, to RAN4, cc -  
 Source: RAN5*

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

**R4-2009532 LS on introducing UE capability for power class for NR band in MR-DC combination**

*Type: LS in For: Information  
 Original outgoing LS: RP-201392, to RAN2, cc RAN4  
 Source: RAN*

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

**R4-2009533 New work item in SE21 on measurement methodologies for 5G AAS in the field**

*Type: LS in For: Information  
 Original outgoing LS: -, to RAN4, RAN, cc -  
 Source: CEPT ECC WG SE*

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

**R4-2013038 Reply LS on Rel-16 UE feature lists**

*Type: LS in For: Information  
 Original outgoing LS: R2-2008395, to RAN1, RAN4, cc -  
 Source: RAN2*

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

**R4-2013039 LS on UE behavior for P/SP-CSI-RS reception in NR-U**

*Type: LS in For: Information  
 Original outgoing LS: R1-2006195, to RAN4, cc RAN2  
 Source: RAN1*

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

**R4-2013040 Reply LS on feasibility of UL FPT modes and transparent TxD for certain UE implementations**

*Type: LS in For: Information  
 Original outgoing LS: R1-2007245, to RAN4, cc -  
 Source: RAN1*

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

**R4-2013041 LS on UE capability**

*Type: LS in For: Information  
 Original outgoing LS: R2-2008497, to RAN1, cc RAN4  
 Source: RAN2*

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

**R4-2013042 LS to RAN4 on Phase noise and other RF Impairment modelling**

*Type: LS in For: Information  
 Original outgoing LS: R1-2005196, to RAN4, cc -  
 Source: RAN1*

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

## 4 Rel-15 New radio access technology

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

**R4-2011534 Email discussion summary for [96e][101] NR\_NewRAT\_SysParameters**

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

**Discussion:**

The contribution summarized email discussion thread [96e][101] NR\_NewRAT\_SysParameters. The subject for discussion was System Parameters Maintenance. The email thread was moderated by Aijun Cao (ZTE Wistron Telecom AB) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **revised to R4-2011841**.

**R4-2011841 Email discussion summary for [96e][101] NR\_NewRAT\_SysParameters**

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

(Replaces R4-2011534)

**Discussion:**

The contribution summarized email discussion thread [96e][101] NR\_NewRAT\_SysParameters. The subject for discussion was System Parameters Maintenance. The email thread was moderated by Aijun Cao (ZTE Wistron Telecom AB) and treated during Main session chaired by Steven Chen (Futurewei).

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

**R4-2011682 WF on 30k SCS support for n34 and n39 SSB**

*Type: other For: discussion  
 Source: CMCC*

**Discussion:**

The contribution was discussed during email thread [96e][101] NR\_NewRAT\_SysParameters. The discussion was recorded in R4-2011841.

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

**R4-2011686 WF on UE capability xDD differentiation for SUL/SDL bands**

*Type: other For: discussion  
 Source: Nokia*

**Discussion:**

The contribution was discussed during email thread [96e][101] NR\_NewRAT\_SysParameters. The discussion was recorded in R4-2011841.

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

**R4-2010108 Disucssion on support of 30KHz SCS for SSB of n34 and n39**

*Type: discussion For: Discussion  
 Source: CMCC*

**Discussion:**

The contribution was discussed during email thread [96e][101] NR\_NewRAT\_SysParameters. The discussion was recorded in R4-2011841.

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

**R4-2010264 Reply LS on Clarification on RAN4 features of NE-DC**

*Type: LS out For: Approval  
 to RAN 2  
 Source: Samsung*

**Discussion:**

The contribution was discussed during email thread [96e][101] NR\_NewRAT\_SysParameters. The discussion was recorded in R4-2011841.

**Decision:** The document was **revised to R4-2011688**.

**R4-2011688 Reply LS on Clarification on RAN4 features of NE-DC**

*Type: LS out For: Approval  
 to RAN 2  
 Source: RAN4*

(Replaces R4-2010264)

**Discussion:**

The contribution was discussed during email thread [96e][101] NR\_NewRAT\_SysParameters. The discussion was recorded in R4-2011841.

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

**R4-2010340 30k SSB for n34 and n39**

*Type: CR For: Agreement  
 38.101-1 v15.10.0 CR-0441 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

Add 30k SSB with pattern C for n34 and n39 while restricting the GSCN for 15k SSB not to unduly increase cell-search complexity.

The set of GSCN for n34 is resticted to the 5 MHz and 15 MHz channel allocations consistent with the test frequencies in the conformance specification (covers the entire passband).

The set of GSCN for n39 is restricted to

a. the Band 39 allocation in Japan with center frequencies at

1886.0, 1891.0, 1899.1, 1904.1, 1909.1, 1914.1 MHz

b. the band by regular 5 MHz blocks (also works for 20 MHz channel bandwidth on a 5 MHz grid)

1882.5, 1887.5, 1892.5, 1897.5, 1902.5, 1907.5, 1912.5, 1917.5 MHz

**Discussion:**

The contribution was discussed during email thread [96e][101] NR\_NewRAT\_SysParameters. The discussion was recorded in R4-2011841.

**Decision:** The document was **revised to R4-2011683**.

**R4-2011683 30k SSB for n34 and n39**

*Type: CR For: Agreement  
 38.101-1 v15.10.0 CR-0441 rev 1 Cat: F (Rel-15)  
  
 Source: Ericsson*

(Replaces R4-2010340)

**Abstract:**

Add 30k SSB with pattern C for n34 and n39 while restricting the GSCN for 15k SSB not to unduly increase cell-search complexity.

The set of GSCN for n34 is resticted to the 5 MHz and 15 MHz channel allocations consistent with the test frequencies in the conformance specification (covers the entire passband).

The set of GSCN for n39 is restricted to

a. the Band 39 allocation in Japan with center frequencies at

1886.0, 1891.0, 1899.1, 1904.1, 1909.1, 1914.1 MHz

b. the band by regular 5 MHz blocks (also works for 20 MHz channel bandwidth on a 5 MHz grid)

1882.5, 1887.5, 1892.5, 1897.5, 1902.5, 1907.5, 1912.5, 1917.5 MHz

**Discussion:**

The contribution was discussed during email thread [96e][101] NR\_NewRAT\_SysParameters. The discussion was recorded in R4-2011841.

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

**R4-2010341 30k SSB SCS for Band n34 and n39**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0442 Cat: A (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

CR to introduce 30k SSB SCS for n34 and n39

**Discussion:**

The contribution was discussed during email thread [96e][101] NR\_NewRAT\_SysParameters. The discussion was recorded in R4-2011841.

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

**R4-2010342 Correction for 5 MHz channel bandwidth for n40 and n50 (15k SCS)**

*Type: CR For: Agreement  
 38.101-1 v15.10.0 CR-0443 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

UE channel bandwidths: correct the note numbers (superscripts) for the 5 MHz bandwidth of n40 and n50.

**Discussion:**

The contribution was discussed during email thread [96e][101] NR\_NewRAT\_SysParameters. The discussion was recorded in R4-2011841.

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

**R4-2010343 Correction for 5 MHz channel bandwidth for n50 and introduction of Annex H**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0444 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

UE channel bandwidths: correct the note number (superscript) for the 5 MHz bandwidth of n50.

Add annex H (modified MPR behaviour) that was not implemented in the Rel-16 version (agreed CR in TS 38.101-1 CR 351).

**Discussion:**

The contribution was discussed during email thread [96e][101] NR\_NewRAT\_SysParameters. The discussion was recorded in R4-2011841.

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

**R4-2010536 On default SSB for band n34, and n39**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

30kHz SSB SCS is proposed to be added.

**Discussion:**

The contribution was discussed during email thread [96e][101] NR\_NewRAT\_SysParameters. The discussion was recorded in R4-2011841.

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

**R4-2010620 On NR bands n34 and n39 supporting 30kHz SSB SCS**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][101] NR\_NewRAT\_SysParameters. The discussion was recorded in R4-2011841.

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

**R4-2010621 CR to TS38.104: Add 30k SSB SCS for Band n34 and n39**

*Type: CR For: Agreement  
 38.104 v15.10.0 CR-0223 Cat: F (Rel-15)  
  
 Source: ZTE Corporation*

**Abstract:**

Currently, only 15kHz SSB SCS is supported for band n34 and band n39. According to the R4-2010620, 30kHz SSB SCS is proposed to added for band n34 and band n39 from Rel-15.

**Discussion:**

The contribution was discussed during email thread [96e][101] NR\_NewRAT\_SysParameters. The discussion was recorded in R4-2011841.

**Decision:** The document was **revised to R4-2011684**.

**R4-2011684 CR to TS38.104: Add 30k SSB SCS for Band n34 and n39**

*Type: CR For: Agreement  
 38.104 v15.10.0 CR-0223 rev 1 Cat: F (Rel-15)  
  
 Source: ZTE Corporation*

(Replaces R4-2010621)

**Abstract:**

Currently, only 15kHz SSB SCS is supported for band n34 and band n39.

The set of GSCN for n34 is resticted to the 5 MHz and 15 MHz channel allocations consistent with the test frequencies in the conformance specification (covers the entire passband).

The set of GSCN for n39 is restricted to

a. the Band 39 allocation in Japan with center frequencies at

1886.0, 1891.0, 1899.1, 1904.1, 1909.1, 1914.1 MHz

b. the band by regular 5 MHz blocks (also works for 20 MHz channel bandwidth on a 5 MHz grid)

1882.5, 1887.5, 1892.5, 1897.5, 1902.5, 1907.5, 1912.5, 1917.5 MHz.

**Discussion:**

The contribution was discussed during email thread [96e][101] NR\_NewRAT\_SysParameters. The discussion was recorded in R4-2011841.

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

**R4-2010622 CR to TS38.104: Add 30k SSB SCS for Band n34 and n39**

*Type: CR For: Agreement  
 38.104 v16.4.0 CR-0224 Cat: A (Rel-16)  
  
 Source: ZTE Corporation*

**Abstract:**

Currently, only 15kHz SSB SCS is supported for band n34 and band n39.

The set of GSCN for n34 is resticted to the 5 MHz and 15 MHz channel allocations consistent with the test frequencies in the conformance specification (covers the entire passband).

The set of GSCN for n39 is restricted to

a. the Band 39 allocation in Japan with center frequencies at

1886.0, 1891.0, 1899.1, 1904.1, 1909.1, 1914.1 MHz

b. the band by regular 5 MHz blocks (also works for 20 MHz channel bandwidth on a 5 MHz grid)

1882.5, 1887.5, 1892.5, 1897.5, 1902.5, 1907.5, 1912.5, 1917.5 MHz.

**Discussion:**

The contribution was discussed during email thread [96e][101] NR\_NewRAT\_SysParameters. The discussion was recorded in R4-2011841.

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

**R4-2010623 CR to TS38.101-1: Add 30k SSB SCS for Band n34 and n39**

*Type: CR For: Agreement  
 38.101-1 v15.10.0 CR-0446 Cat: F (Rel-15)  
  
 Source: ZTE Corporation*

**Abstract:**

Currently, only 15kHz SSB SCS is supported for band n34 and band n39. According to the R4-2010620, 30kHz SSB SCS is proposed to added for band n34 and band n39 from Rel-15.

**Discussion:**

The contribution was discussed during email thread [96e][101] NR\_NewRAT\_SysParameters. The discussion was recorded in R4-2011841.

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

**R4-2010624 CR to TS38.101-1: Add 30k SSB SCS for Band n34 and n39**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0447 Cat: A (Rel-16)  
  
 Source: ZTE Corporation*

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

**R4-2010788 Release independence support of new channel bandwidth from Rel-15**

*Type: discussion For: Discussion  
 Source: ZTE Wistron Telecom AB*

**Discussion:**

The contribution was discussed during email thread [96e][101] NR\_NewRAT\_SysParameters. The discussion was recorded in R4-2011841.

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

**R4-2010789 Draft CR to TS 38.307 Release independence support of new channel bandwidth from Rel-15**

*Type: draftCR For: Endorsement  
 38.307 v15.6.0  
 Source: ZTE Wistron Telecom AB*

**Abstract:**

There is no requirement specified for a new channel bandwidth added to an existing operating band introduced in Rel-15 in a manner of release independent from Rel-15

**Discussion:**

The contribution was discussed during email thread [96e][101] NR\_NewRAT\_SysParameters. The discussion was recorded in R4-2011841.

**Decision:** The document was **revised to R4-2011685**.

**R4-2011685 Draft CR to TS 38.307 Release independence support of new channel bandwidth from Rel-15**

*Type: draftCR For: Endorsement  
 38.307 v15.6.0  
 Source: ZTE Wistron Telecom AB*

(Replaces R4-2010789)

**Abstract:**

There is no requirement specified for a new channel bandwidth added to an existing operating band introduced in Rel-15 in a manner of release independent from Rel-15

**Discussion:**

The contribution was discussed during email thread [96e][101] NR\_NewRAT\_SysParameters. The discussion was recorded in R4-2011841.

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

**R4-2011484 CR on channel space for CA**

*Type: CR For: Agreement  
 38.101-1 v15.10.0 CR-0472 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

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

**Discussion:**

The contribution was discussed during email thread [96e][101] NR\_NewRAT\_SysParameters. The discussion was recorded in R4-2011841.

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

**R4-2011485 CR for 38.101-1 channel space for CA\_Rel16**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0473 Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

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

**R4-2011486 CR on channel space for CA**

*Type: CR For: Agreement  
 38.101-2 v15.10.0 CR-0255 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

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

**Discussion:**

The contribution was discussed during email thread [96e][101] NR\_NewRAT\_SysParameters. The discussion was recorded in R4-2011841.

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

**R4-2011487 CR for 38.101-2 channel space for CA\_Rel16**

*Type: CR For: Agreement  
 38.101-2 v16.4.0 CR-0256 Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

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

**R4-2009799 CR for R15 38.101-2: Clarification of the order of sub-blocks for intra-band non-contiguous CA**

*Type: CR For: Agreement  
 38.101-2 v15.10.0 CR-0222 Cat: F (Rel-15)  
  
 Source: CATT*

**Abstract:**

The following clarifications in CR R4-2002922 (RAN CR RP-200395)

NOTE: Sub-blocks belonging to a CA configuration can be in any order. In other words certain CA configuration acronym includes all sub-block arrangements which have exactly the same sub-block set. As an example, CA\_260(3O-2P) denotes CA\_260(2O-2P-O), CA\_260(P-3O-P) etc. but these are not listed in tables separately.

was not implemented in the version 15.9.0.

It’s not clear in spec and it’s not aligned with R16 spec.

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

**R4-2009802 CR for R16 38.101-2: Correction of Table 5.4.3.3-1**

*Type: CR For: Agreement  
 38.101-2 v16.4.0 CR-0225 Cat: F (Rel-16)  
  
 Source: CATT*

**Abstract:**

The whole content of Table 5.4.3.3-1 is wrong.

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

**R4-2010782 Draft reply LS on UE capability xDD differentiation for SUL/SDL bands**

*Type: LS out For: Approval  
 to RAN2, cc RAN1  
 Source: ZTE Wistron Telecom AB*

**Discussion:**

The contribution was discussed during email thread [96e][101] NR\_NewRAT\_SysParameters. The discussion was recorded in R4-2011841.

**Decision:** The document was **revised to R4-2011687**.

**R4-2011687 Reply LS on UE capability xDD differentiation for SUL/SDL bands**

*Type: LS out For: Approval  
 to RAN2, cc RAN1  
 Source: RAN4*

(Replaces R4-2010782)

**Discussion:**

The contribution was discussed during email thread [96e][101] NR\_NewRAT\_SysParameters. The discussion was recorded in R4-2011841.

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

**R4-2011470 Response to LS on UE capability xDD differentiation for SUL/SDL bands**

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

**Abstract:**

In this contribution we provide the response to RAN2 on xDD differentiation for SUL/SDL bands.

**Discussion:**

The contribution was discussed during email thread [96e][101] NR\_NewRAT\_SysParameters. The discussion was recorded in R4-2011841.

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

**R4-2009592 On UE capability xDD differentiation for SUL/SDL bands**

*Type: other For: Approval  
 Source: Nokia Japan*

**Abstract:**

This contribution aims at gaining a common understanding in RAN4 on if the below RAN2 understanding in R2-2006322 works or not to differentiate SUL or SDL bands as FDD or TDD, respectively. We also provide a draft LS in the Annex.

**Discussion:**

The contribution was discussed during email thread [96e][101] NR\_NewRAT\_SysParameters. The discussion was recorded in R4-2011841.

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

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

**R4-2009704 Adding NR FDD Intra-band CA and FR1 3CC Inter-band CA into Release Independence**

*Type: CR For: Agreement  
 38.307 v15.6.0 CR-0026 Cat: B (Rel-15)  
  
 Source: Dish Network*

**Abstract:**

FDD NR Intra-band contiguous and non-contiguous CA are missing from Release independence specification. FR1 NR Inter-band CA for >2 CC’s is missing from Release indence specification.

**Discussion:**

The contribution was discussed during email thread [96e][101] NR\_NewRAT\_SysParameters. The discussion was recorded in R4-2011841.

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

**R4-2009705 Adding NR FDD Intra-band CA and FR1 3CC Inter-band CA into Release Independence**

*Type: CR For: Agreement  
 38.307 v16.3.0 CR-0027 Cat: A (Rel-16)  
  
 Source: Dish Network*

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

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

**R4-2011535 Email discussion summary for [96e][102] NR\_NewRAT\_UE\_RF\_Part\_1**

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

**Discussion:**

The contribution summarized email discussion thread [96e][102] NR\_NewRAT\_UE\_RF\_Part\_1. The subject for discussion was UE RF requirements maintenance. The email thread was moderated by Hisashi Onozawa (Nokia Japan) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **revised to R4-2011842**.

**R4-2011842 Email discussion summary for [96e][102] NR\_NewRAT\_UE\_RF\_Part\_1**

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

(Replaces R4-2011535)

**Discussion:**

The contribution summarized email discussion thread [96e][102] NR\_NewRAT\_UE\_RF\_Part\_1. The subject for discussion was UE RF requirements maintenance. The email thread was moderated by Hisashi Onozawa (Nokia Japan) and treated during Main session chaired by Steven Chen (Futurewei).

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

**R4-2011747 WF on EVM measurement for UL-MIMO**

*Type: other For: discussion  
 Source: Anritsu*

**Discussion:**

The contribution was discussed during email thread [96e][102] NR\_NewRAT\_UE\_RF\_Part\_1. The discussion was recorded in R4-2011842.

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

**R4-2011748 WF on Handling of additional requirements for UE co-ex in CA/DC**

*Type: other For: discussion  
 Source: Softbank*

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

**R4-2011751 Reply LS on RF testing of 4Rx capable UE**

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

**Discussion:**

The contribution was discussed during email thread [96e][102] NR\_NewRAT\_UE\_RF\_Part\_1. The discussion was recorded in R4-2011842.

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

**R4-2011754 WF on structure of NR CA reference sensitivity requirements in 38.101-1**

*Type: other For: discussion  
 Source: Huawei*

**Discussion:**

The contribution was discussed during email thread [96e][102] NR\_NewRAT\_UE\_RF\_Part\_1. The discussion was recorded in R4-2011842.

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

**R4-2011755 Reply LS on structure of NR CA reference sensitivity requirements in 38.101-1**

*Type: other For: Approval  
 Source: Huawei*

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

**R4-2011752 Correction of applicability of 2Rx requirements**

*Type: CR For: Agreement  
 38.101-1 v15.10.0 CR-0482 Cat: F (Rel-15)  
  
 Source: vivo*

**Abstract:**

According to the agreement, tapplicability of Rx requirements shall be udated. This document proposes a CR to capture the agreement in TS 38.101.1

**Discussion:**

The contribution was discussed during email thread [96e][102] NR\_NewRAT\_UE\_RF\_Part\_1. The discussion was recorded in R4-2011842.

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

**R4-2011753 Correction of applicability of 2Rx requirements**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0483 Cat: A (Rel-16)  
  
 Source: vivo*

**Abstract:**

This CR is mirror CR of R4-2011752

**Discussion:**

The contribution was discussed during email thread [96e][102] NR\_NewRAT\_UE\_RF\_Part\_1. The discussion was recorded in R4-2011842.

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

**R4-2010626 CR to TS 38.101-1: Correction on the Aggregated Channel Bandwidth**

*Type: CR For: Agreement  
 38.101-1 v15.10.0 CR-0449 Cat: F (Rel-15)  
  
 Source: ZTE Corporation*

**Abstract:**

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

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

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

**Discussion:**

The contribution was discussed during email thread [96e][102] NR\_NewRAT\_UE\_RF\_Part\_1. The discussion was recorded in R4-2011842.

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

**R4-2010627 CR to TS 38.101-1: Correction on the Aggregated Channel Bandwidth**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0450 Cat: A (Rel-16)  
  
 Source: ZTE Corporation*

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

**R4-2010810 On UL MIMO Tx EVM requirement**

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

**Discussion:**

The contribution was discussed during email thread [96e][102] NR\_NewRAT\_UE\_RF\_Part\_1. The discussion was recorded in R4-2011842.

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

**R4-2010814 CR for 38.101-1 RFC corrections (R15)**

*Type: CR For: Agreement  
 38.101-1 v15.10.0 CR-0457 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

‘Allocated slots per Frame’ isn’t aligned with ‘Max. Throughput averaged’ of a frame in every FRC table in section A 3.2. For example, in Table A.3.2.2-1, ‘Allocated slots per Frame’ is 9, but Information Bit Payload for slot 0 and slot is N/A, which means that there are 8 slots allocated for DL in one frame.

For Table A.3.2.4-1, there is a typo while MCS Table for TBS determination shall be modified to ‘256QAM’.

**Discussion:**

The contribution was discussed during email thread [96e][102] NR\_NewRAT\_UE\_RF\_Part\_1. The discussion was recorded in R4-2011842.

**Decision:** The document was **revised to R4-2011749**.

**R4-2011749 CR for 38.101-1 RFC corrections (R15)**

*Type: CR For: Agreement  
 38.101-1 v15.10.0 CR-0457 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2010814)

**Abstract:**

‘Allocated slots per Frame’ isn’t aligned with ‘Max. Throughput averaged’ of a frame in every FRC table in section A 3.2. For example, in Table A.3.2.2-1, ‘Allocated slots per Frame’ is 9, but Information Bit Payload for slot 0 and slot is N/A, which means that there are 8 slots allocated for DL in one frame.

For Table A.3.2.4-1, there is a typo while MCS Table for TBS determination shall be modified to ‘256QAM’.

**Discussion:**

The contribution was discussed during email thread [96e][102] NR\_NewRAT\_UE\_RF\_Part\_1. The discussion was recorded in R4-2011842.

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

**R4-2010815 CR for 38.101-1 FRC corrections (R16)**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0458 Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][102] NR\_NewRAT\_UE\_RF\_Part\_1. The discussion was recorded in R4-2011842.

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

**R4-2010827 Reply LS on RF testing of 4Rx capable UE**

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

**Discussion:**

The contribution was discussed during email thread [96e][102] NR\_NewRAT\_UE\_RF\_Part\_1. The discussion was recorded in R4-2011842.

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

**R4-2011520 On the Transmit EVM Requirement for UL MIMO Transmission**

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

**Discussion:**

The contribution was discussed during email thread [96e][102] NR\_NewRAT\_UE\_RF\_Part\_1. The discussion was recorded in R4-2011842.

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

**R4-2009702 Adding NR FDD non-contiguous Intra-band CA and FR1 3CC Inter-band CA into Release Independence**

*Type: CR For: Agreement  
 38.101-1 v15.10.0 CR-0417 Cat: B (Rel-15)  
  
 Source: Dish Network*

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

**R4-2009703 Adding NR FDD Intra-band CA and FR1 3CC Inter-band CA into Release Independence**

*Type: CR For: Agreement  
 38.307 v16.3.0 CR-0025 Cat: A (Rel-16)  
  
 Source: Dish Network*

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

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

**R4-2010114 Corrections of Japan-related CA co-ex tables for REL-15 combo**

*Type: CR For: Agreement  
 38.101-1 v15.10.0 CR-0434 Cat: F (Rel-15)  
  
 Source: SoftBank Corp., NTT docomo INC., KDDI Corporation*

**Abstract:**

Some requirements for Japan related band protection are missed and necessary notes/prerequisities are inappricate for CA tables. (This is follow-up of R4-2008970 for single band requirement correction in R4#95-e.)

**Discussion:**

The contribution was discussed during email thread [96e][102] NR\_NewRAT\_UE\_RF\_Part\_1. The discussion was recorded in R4-2011842.

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

**R4-2010115 Corrections of Japan-related CA co-ex tables for REL-15 combo**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0435 Cat: A (Rel-16)  
  
 Source: SoftBank Corp., NTT docomo INC., KDDI Corporation*

**Abstract:**

This is the mirror CR for R15 correction.

**Discussion:**

The contribution was discussed during email thread [96e][102] NR\_NewRAT\_UE\_RF\_Part\_1. The discussion was recorded in R4-2011842.

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

**R4-2010126 Handling of additional requirements for UE co-ex in CA/DC**

*Type: other For: Approval  
 Source: SoftBank Corp.*

**Abstract:**

This is to discuss how to capture Additional requirements for CA/DC in UE co-ex requirements and propose to fix the issue by the next meeting.

**Discussion:**

The contribution was discussed during email thread [96e][102] NR\_NewRAT\_UE\_RF\_Part\_1. The discussion was recorded in R4-2011842.

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

**R4-2010800 Correction to uplink antenna connectors**

*Type: CR For: Agreement  
 38.101-1 v15.10.0 CR-0455 Cat: F (Rel-15)  
  
 Source: Rohde & Schwarz*

**Abstract:**

The maximum number of transmit antenna connectors is ambiguous in the specification. As discussed in previous meetings, UEs are equipped with either one or two transmit antenna connectors. This shall be also defined in the spec to avoid misunderstandings.

**Discussion:**

The contribution was discussed during email thread [96e][102] NR\_NewRAT\_UE\_RF\_Part\_1. The discussion was recorded in R4-2011842.

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

**R4-2010801 Correction to uplink antenna connectors**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0456 Cat: A (Rel-16)  
  
 Source: Rohde & Schwarz*

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

**R4-2010804 Discussion on the number of Tx connectors**

*Type: discussion For: Approval  
 Source: Rohde & Schwarz*

**Discussion:**

The contribution was discussed during email thread [96e][102] NR\_NewRAT\_UE\_RF\_Part\_1. The discussion was recorded in R4-2011842.

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

**R4-2011341 Applicability of DTRxSRS to SRS carrier switching and power class 2**

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

**Discussion:**

The contribution was discussed during email thread [96e][102] NR\_NewRAT\_UE\_RF\_Part\_1. The discussion was recorded in R4-2011842.

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

**R4-2011342 Correction to configured power with allowance for SRS switching**

*Type: CR For: Agreement  
 38.101-1 v15.10.0 CR-0464 Cat: F (Rel-15)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

DeltaT\_RxSRS does not properly cover cases of SRS carrier switching with DL-only carriers and SRS antenna switching when the primary Tx is PC2

**Discussion:**

The contribution was discussed during email thread [96e][102] NR\_NewRAT\_UE\_RF\_Part\_1. The discussion was recorded in R4-2011842.

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

**R4-2011343 Correction to configured power with allowance for SRS switching**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0465 Cat: A (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

DeltaT\_RxSRS does not properly cover cases of SRS carrier switching with DL-only carriers and SRS antenna switching when the primary Tx is PC2

**Discussion:**

The contribution was discussed during email thread [96e][102] NR\_NewRAT\_UE\_RF\_Part\_1. The discussion was recorded in R4-2011842.

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

**R4-2011492 CR on PTRS configuration for UL RMC-Rel-15**

*Type: CR For: Agreement  
 38.101-1 v15.10.0 CR-0474 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

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

**R4-2011495 CR on minumum output power**

*Type: CR For: Agreement  
 38.101-1 v15.10.0 CR-0476 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

In EVM requirement, the applied minimum output power for 256QAM is 10dB higher than other modulation order as specified in TS 38.101-1. But in minumum output power section, the requirement has no difference for 256QAM and other modulation order, it indicates UE need to satify EVM requirement with output power defined in table 6.3.1-1. Obviously, there is ambiguty in the current spec.

**Discussion:**

The contribution was discussed during email thread [96e][102] NR\_NewRAT\_UE\_RF\_Part\_1. The discussion was recorded in R4-2011842.

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

**R4-2011496 CR for 38.101-1 on minimum output power-Rel-16**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0477 Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

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

**R4-2011497 CR on correction for AMPR NS\_38,NS\_40 and NS\_41**

*Type: CR For: Agreement  
 38.101-1 v15.10.0 CR-0478 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

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

**Discussion:**

The contribution was discussed during email thread [96e][102] NR\_NewRAT\_UE\_RF\_Part\_1. The discussion was recorded in R4-2011842.

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

**R4-2011498 CR for 38.101-1 on corrections for AMPR-Rel-16**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0479 Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

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

**R4-2009655 Clarification of assumption on EVM measurement for UL-MIMO**

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

**Abstract:**

In this contribution we discuss a necessity of the common assumption in the group on EVM for UL-MIMO.

**Discussion:**

The contribution was discussed during email thread [96e][102] NR\_NewRAT\_UE\_RF\_Part\_1. The discussion was recorded in R4-2011842.

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

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

**R4-2010022 CR to TS 38.101-1: corrections on narrow band blocking for intra-band contiguous CA**

*Type: CR For: Agreement  
 38.101-1 v15.10.0 CR-0425 Cat: F (Rel-15)  
  
 Source: Xiaomi*

**Abstract:**

In the existing spec, the narrow band blocking for intra-band contiguous CA is specified only for the component carrier with 15 kHz SCS. This will case only 50MHz +50 MHz case can be tested for CA class C since there are no requirements for all other cases that one component carrier bandwidth is more than 50MHz.

**Discussion:**

The contribution was discussed during email thread [96e][102] NR\_NewRAT\_UE\_RF\_Part\_1. The discussion was recorded in R4-2011842.

**Decision:** The document was **revised to R4-2011908**.

**R4-2011908 CR to TS 38.101-1: corrections on narrow band blocking for intra-band contiguous CA**

*Type: CR For: Agreement  
 38.101-1 v15.10.0 CR-0425 rev 1 Cat: F (Rel-15)  
  
 Source: Xiaomi*

(Replaces R4-2010022)

**Abstract:**

In the existing spec, the narrow band blocking for intra-band contiguous CA is specified only for the component carrier with 15 kHz SCS. This will case only 50MHz +50 MHz case can be tested for CA class C since there are no requirements for all other cases that one component carrier bandwidth is more than 50MHz.

**Discussion:**

The contribution was discussed during email thread [96e][102] NR\_NewRAT\_UE\_RF\_Part\_1. The discussion was recorded in R4-2011842.

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

**R4-2010023 CR to TS 38.101-1: corrections on narrow band blocking for intra-band contiguous CA**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0426 Cat: A (Rel-16)  
  
 Source: Xiaomi*

**Abstract:**

In the existing spec, the narrow band blocking for intra-band contiguous CA is specified only for the component carrier with 15 kHz SCS. This will case only 50MHz +50 MHz case can be tested for CA class C since there are no requirements for all other cases that one component carrier bandwidth is more than 50MHz.

**Discussion:**

The contribution was discussed during email thread [96e][102] NR\_NewRAT\_UE\_RF\_Part\_1. The discussion was recorded in R4-2011842.

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

**R4-2010796 Correction to RMC for 256QAM**

*Type: CR For: Agreement  
 38.101-1 v15.10.0 CR-0453 Cat: F (Rel-15)  
  
 Source: Rohde & Schwarz*

**Abstract:**

In table A.3.2.4-1 the incorrect MCS table is referenced, the 256QAM MCS table needs to be used.

**Discussion:**

The contribution was discussed during email thread [96e][102] NR\_NewRAT\_UE\_RF\_Part\_1. The discussion was recorded in R4-2011842.

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

**R4-2010797 Correction to RMC for 256QAM**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0454 Cat: A (Rel-16)  
  
 Source: Rohde & Schwarz*

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

**R4-2010926 CR for 38.101-1 to add the missing MSD for CA\_n41A-n78A**

*Type: CR For: Agreement  
 38.101-1 v15.10.0 CR-0461 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

The exception due to cross band isolation for CA\_n41-n78 is not aligned with 38.101-1-g40, especially for DL band n78 with UL band n41.

The exception values for 60MHz, 80MHz, 90MHz and 100MHz for CA\_n41-n78 are missing.

There are some editorial errors.

**Discussion:**

The contribution was discussed during email thread [96e][102] NR\_NewRAT\_UE\_RF\_Part\_1. The discussion was recorded in R4-2011842.

**Decision:** The document was **revised to R4-2011750**.

**R4-2011750 CR for 38.101-1 to add the missing MSD for CA\_n41A-n78A**

*Type: CR For: Agreement  
 38.101-1 v15.10.0 CR-0461 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2010926)

**Abstract:**

The exception due to cross band isolation for CA\_n41-n78 is not aligned with 38.101-1-g40, especially for DL band n78 with UL band n41.

The exception values for 60MHz, 80MHz, 90MHz and 100MHz for CA\_n41-n78 are missing.

There are some editorial errors.

**Discussion:**

The contribution was discussed during email thread [96e][102] NR\_NewRAT\_UE\_RF\_Part\_1. The discussion was recorded in R4-2011842.

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

**R4-2010927 CR for 38.101-1 to add the missing MSD for CA\_n41A-n78A**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0462 Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

The exception due to cross band isolation for CA\_n41-n78 is not aligned with 38.101-1-g40, especially for DL band n78 with UL band n41.

The exception values for 60MHz, 80MHz, 90MHz and 100MHz for CA\_n41-n78 are missing.

There are some editorial errors.

**Discussion:**

The contribution was discussed during email thread [96e][102] NR\_NewRAT\_UE\_RF\_Part\_1. The discussion was recorded in R4-2011842.

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

**R4-2010928 Discussion and reply draft LS on structure of NR CA reference sensitivity requirements in 38.101-1**

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

**Discussion:**

The contribution was discussed during email thread [96e][102] NR\_NewRAT\_UE\_RF\_Part\_1. The discussion was recorded in R4-2011842.

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

**R4-2011235 Views and reply LS on RF testing of 4Rx UEs**

*Type: other For: Approval  
 Source: vivo*

**Discussion:**

The contribution was discussed during email thread [96e][102] NR\_NewRAT\_UE\_RF\_Part\_1. The discussion was recorded in R4-2011842.

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

**R4-2011493 CR on PTRS configuration for UL RMC-Rel-16**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0475 Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

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

**R4-2009616 OOB blocking for Inter-band CA**

*Type: CR For: Agreement  
 38.101-1 v15.10.0 CR-0410 Cat: F (Rel-15)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

Missing in-gap and exclusion region for FR1 OOB blocking for Interband CA

Endorsed draft CR reference R4-2004399

**Discussion:**

The contribution was discussed during email thread [96e][102] NR\_NewRAT\_UE\_RF\_Part\_1. The discussion was recorded in R4-2011842.

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

**R4-2009617 OOB blocking for Inter-band CA**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0411 Cat: A (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

Missing in-gap and exclusion region for FR1 OOB blocking for Interband CA

Endorsed draft CR reference R4-2004399

**Discussion:**

The contribution was discussed during email thread [96e][102] NR\_NewRAT\_UE\_RF\_Part\_1. The discussion was recorded in R4-2011842.

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

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

**R4-2011536 Email discussion summary for [96e][103] NR\_NewRAT\_UE\_RF\_Part\_2**

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

**Discussion:**

The contribution summarized email discussion thread [96e][103] NR\_NewRAT\_UE\_RF\_Part\_2. The subject for discussion was UE RF requirements maintenance. The email thread was moderated by James Wang Apple (UK) Limited and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **revised to R4-2011843**.

**R4-2011843 Email discussion summary for [96e][103] NR\_NewRAT\_UE\_RF\_Part\_2**

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

(Replaces R4-2011536)

**Discussion:**

The contribution summarized email discussion thread [96e][103] NR\_NewRAT\_UE\_RF\_Part\_2. The subject for discussion was UE RF requirements maintenance. The email thread was moderated by James Wang Apple (UK) Limited and treated during Main session chaired by Steven Chen (Futurewei).

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

**R4-2011694 WF on remaining issues on WRC-19 resolutions**

*Type: other For: discussion  
 Source: Nokia*

**Discussion:**

The contribution was discussed during email thread [96e][103] NR\_NewRAT\_UE\_RF\_Part\_2. The discussion was recorded in R4-2011843.

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

**R4-2011695 WF on NR SCC UL power drop behavior in FR2**

*Type: other For: discussion  
 Source: Anritsu Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][103] NR\_NewRAT\_UE\_RF\_Part\_2. The discussion was recorded in R4-2011843.

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

**R4-2010224 modifiedMPR correction for FR2 REL15**

*Type: CR For: Agreement  
 38.101-2 v15.10.0 CR-0229 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

In RAN4#95e CRs R4-2008891 and R4-2008419 were agreed with overlapping context. ModifiedMPR bit 0 for n258 was taken into use for two different purposes. However as was recorded into moderator report in R4-2008936 the undertanding was that NS\_201 uses bit 1 inorder to have same meaning for bit 0 for all bands.

Issue 5-1-3:

Nokia: In CR R4-2006485 there is a proposal to use this bit 0 to indicate the enhanced MPR for bands n257, n258, n260, n261. This change may not be necessary as only PC1 is changed and there is no legacy.

Huawei: the CR is for Rel-15, the changes for Rel-16 can use other bit to indicate the modified MPR

Issue 5-1-3: It is recommended to revise the CR in 08163 to take companies’ comments into account

**Discussion:**

The contribution was discussed during email thread [96e][103] NR\_NewRAT\_UE\_RF\_Part\_2. The discussion was recorded in R4-2011843.

**Decision:** The document was **revised to R4-2011691**.

**R4-2011691 modifiedMPR correction for FR2 REL15**

*Type: CR For: Agreement  
 38.101-2 v15.10.0 CR-0229 rev 1 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2010224)

**Abstract:**

In RAN4#95e CRs R4-2008891 and R4-2008419 were agreed with overlapping context. ModifiedMPR bit 0 for n258 was taken into use for two different purposes. However as was recorded into moderator report in R4-2008936 the undertanding was that NS\_201 uses bit 1 inorder to have same meaning for bit 0 for all bands.

Issue 5-1-3:

Nokia: In CR R4-2006485 there is a proposal to use this bit 0 to indicate the enhanced MPR for bands n257, n258, n260, n261. This change may not be necessary as only PC1 is changed and there is no legacy.

Huawei: the CR is for Rel-15, the changes for Rel-16 can use other bit to indicate the modified MPR

Issue 5-1-3: It is recommended to revise the CR in 08163 to take companies’ comments into account

**Discussion:**

The contribution was discussed during email thread [96e][103] NR\_NewRAT\_UE\_RF\_Part\_2. The discussion was recorded in R4-2011843.

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

**R4-2010225 modifiedMPR correction for FR2 REL16**

*Type: CR For: Agreement  
 38.101-2 v16.4.0 CR-0230 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

In RAN4#95e CRs R4-2009169 and R4-2008164 were agreed with overlapping context. ModifiedMPR bit 0 for n258 was taken into use for two different purposes. However as was recorded into moderator report in R4-2008936 the undertanding was that NS\_201 uses bit 1 inorder to have same meaning for bit 0 for all bands.

Issue 5-1-3:

Nokia: In CR R4-2006485 there is a proposal to use this bit 0 to indicate the enhanced MPR for bands n257, n258, n260, n261. This change may not be necessary as only PC1 is changed and there is no legacy.

Huawei: the CR is for Rel-15, the changes for Rel-16 can use other bit to indicate the modified MPR

Issue 5-1-3: It is recommended to revise the CR in 08163 to take companies’ comments into account

**Discussion:**

The contribution was discussed during email thread [96e][103] NR\_NewRAT\_UE\_RF\_Part\_2. The discussion was recorded in R4-2011843.

**Decision:** The document was **revised to R4-2011692**.

**R4-2011692 modifiedMPR correction for FR2 REL16**

*Type: CR For: Agreement  
 38.101-2 v16.4.0 CR-0230 rev 1 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2010225)

**Abstract:**

In RAN4#95e CRs R4-2009169 and R4-2008164 were agreed with overlapping context. ModifiedMPR bit 0 for n258 was taken into use for two different purposes. However as was recorded into moderator report in R4-2008936 the undertanding was that NS\_201 uses bit 1 inorder to have same meaning for bit 0 for all bands.

Issue 5-1-3:

Nokia: In CR R4-2006485 there is a proposal to use this bit 0 to indicate the enhanced MPR for bands n257, n258, n260, n261. This change may not be necessary as only PC1 is changed and there is no legacy.

Huawei: the CR is for Rel-15, the changes for Rel-16 can use other bit to indicate the modified MPR

Issue 5-1-3: It is recommended to revise the CR in 08163 to take companies’ comments into account

**Discussion:**

The contribution was discussed during email thread [96e][103] NR\_NewRAT\_UE\_RF\_Part\_2. The discussion was recorded in R4-2011843.

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

**R4-2010322 CR to TS 38.101-2 on corrections to operating bands for intra-band CA (Rel-15)**

*Type: CR For: Agreement  
 38.101-2 v15.10.0 CR-0233 Cat: F (Rel-15)  
  
 Source: ZTE Corporation*

**Abstract:**

The operating bands for intra-band non-contiguous CA in 5.2A.1 are missing. According to the previous agreement in R4-2002911, the notation of CA\_nX(\*) should be used to denote the NR CA band for intra-band non-contiguous CA. Furthermore, to align with the notation of NR intra-band contiguous CA band for FR1 in TS 38.101-1, the NR CA band for FR2 in table 5.2A.1-1 should be specified as “CA\_nX” by removing the CA BW class letter as the suffix.

**Discussion:**

The contribution was discussed during email thread [96e][103] NR\_NewRAT\_UE\_RF\_Part\_2. The discussion was recorded in R4-2011843.

**Decision:** The document was **revised to R4-2011927**.

**R4-2011927 CR to TS 38.101-2 on corrections to operating bands for intra-band CA (Rel-15)**

*Type: CR For: Agreement  
 38.101-2 v15.10.0 CR-0233 rev 1 Cat: F (Rel-15)  
  
 Source: ZTE Corporation*

(Replaces R4-2010322)

**Abstract:**

The operating bands for intra-band non-contiguous CA in 5.2A.1 are missing. To align with the notation of NR intra-band contiguous CA band for FR1 in TS 38.101-1, the NR CA band for FR2 in table 5.2A.1-1 should be specified as “CA\_nX” by removing the CA BW class letter as the suffix.

**Discussion:**

The contribution was discussed during email thread [96e][103] NR\_NewRAT\_UE\_RF\_Part\_2. The discussion was recorded in R4-2011843.

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

**R4-2010323 CR to TS 38.101-2 on corrections to operating bands for intra-band CA (Rel-16)**

*Type: CR For: Agreement  
 38.101-2 v16.4.0 CR-0234 Cat: A (Rel-16)  
  
 Source: ZTE Corporation*

**Abstract:**

The operating bands for intra-band non-contiguous CA in 5.2A.1 is missing and should be added to the intra-band CA operating band table.

**Discussion:**

The contribution was discussed during email thread [96e][103] NR\_NewRAT\_UE\_RF\_Part\_2. The discussion was recorded in R4-2011843.

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

**R4-2011387 FR2 Minimum output power measurement period definition**

*Type: CR For: Agreement  
 38.101-2 v15.10.0 CR-0245 Cat: F (Rel-15)  
  
 Source: Keysight Technologies UK Ltd*

**Abstract:**

Current core requirements do not specify measurement period for FR2 minimum output power requirement.

**Discussion:**

The contribution was discussed during email thread [96e][103] NR\_NewRAT\_UE\_RF\_Part\_2. The discussion was recorded in R4-2011843.

**Decision:** The document was **revised to R4-2011693**.

**R4-2011693 FR2 Minimum output power measurement period definition**

*Type: CR For: Agreement  
 38.101-2 v15.10.0 CR-0245 rev 1 Cat: F (Rel-15)  
  
 Source: Keysight Technologies UK Ltd*

(Replaces R4-2011387)

**Abstract:**

Current core requirements do not specify measurement period for FR2 minimum output power requirement.

**Discussion:**

The contribution was discussed during email thread [96e][103] NR\_NewRAT\_UE\_RF\_Part\_2. The discussion was recorded in R4-2011843.

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

**R4-2011402 FR2 Minimum output power measurement period definition**

*Type: CR For: Agreement  
 38.101-2 v16.4.0 CR-0246 Cat: A (Rel-16)  
  
 Source: Keysight Technologies UK Ltd*

**Abstract:**

Current core requirements do not specify measurement period for FR2 minimum output power requirement.

**Discussion:**

The contribution was discussed during email thread [96e][103] NR\_NewRAT\_UE\_RF\_Part\_2. The discussion was recorded in R4-2011843.

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

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

**R4-2010589 CR for introduction of EESS protection for n257 into general spurious emission**

*Type: CR For: Agreement  
 38.101-2 v15.10.0 CR-0238 Cat: F (Rel-15)  
  
 Source: NTT DOCOMO INC.*

**Abstract:**

It was approved in R4-2009141 that EESS protection of 1dBm/200MHz for n257 should be introduced into general requirements.

According to WRC-19 decision, EESS protection of 1dBm/200MHz will be applied after 1 January 2021. The protection requirement should be introduced in RAN4#96-e. This CR is submitted apart from EESS protection associated with NS.

**Discussion:**

The contribution was discussed during email thread [96e][103] NR\_NewRAT\_UE\_RF\_Part\_2. The discussion was recorded in R4-2011843.

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

**R4-2010614 CR for introduction of EESS protection for n257 into general spurious emission**

*Type: CR For: Agreement  
 38.101-2 v16.4.0 CR-0239 Cat: A (Rel-16)  
  
 Source: NTT DOCOMO INC.*

**Abstract:**

NOTE: Corresponding Cat F CR is R4-2010589 (CR number is 0238)

It was approved in R4-2009141 that EESS protection of 1dBm/200MHz for n257 should be introduced into general requirements.

According to WRC-19 decision, EESS protection of 1dBm/200MHz will be applied after 1 January 2021. The protection requirement should be introduced in RAN4#96-e. This CR is submitted apart from EESS protection associated with NS.

**Discussion:**

The contribution was discussed during email thread [96e][103] NR\_NewRAT\_UE\_RF\_Part\_2. The discussion was recorded in R4-2011843.

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

**R4-2010615 Remaining issues on WRC-19 resolution**

*Type: other For: Approval  
 38.101-2 v..  
 Source: NTT DOCOMO INC.*

**Discussion:**

The contribution was discussed during email thread [96e][103] NR\_NewRAT\_UE\_RF\_Part\_2. The discussion was recorded in R4-2011843.

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

**R4-2011415 CR for introduction of EESS protection into additional spurious emission**

*Type: CR For: Agreement  
 38.101-2 v15.10.0 CR-0247 Cat: F (Rel-15)  
  
 Source: NTT DOCOMO INC.*

**Abstract:**

For EESS protection, the following were agreements in R4-2009141:

-10dBm/100MHz and 1dBm/200MHz protection requirements are specified with NS\_202 for n257 and n258

1dBm/200MHz protection requirements is specified with NS\_203 for n258

-5dBm/200MHz protection requirements is specified with NS\_204 for n257 and n258

7dBm/1GHz and -13dBm/MHz are specified with NS\_205 for n260.

Explicit signaling for a UE to report newly supported NS value(s) for a legacy band to the network (reuse modifiedMPR bits)

A-MPR values proposed in R4-2006788.

For repurposing NS\_201, considering the concern on already existing devices supporting NS\_201, this CR uses another NS value as NS\_206.

For enforcement of the time of “UE brought into use”, as discussed in R4-2010615, this CR use same wording of “UE brought into use” as WRC-19 decision.

**Discussion:**

The contribution was discussed during email thread [96e][103] NR\_NewRAT\_UE\_RF\_Part\_2. The discussion was recorded in R4-2011843.

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

**R4-2011418 CR for introduction of EESS protection into additional spurious emission**

*Type: CR For: Agreement  
 38.101-2 v16.4.0 CR-0248 Cat: A (Rel-16)  
  
 Source: NTT DOCOMO INC.*

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

**R4-2009593 On remaining issues for WRC-19**

*Type: other For: Approval  
 38.101-2 v..  
 Source: Nokia Japan*

**Abstract:**

RAN4#95-e approved a “WF on WRC-19 outcome and impact on RAN4 specifications” [R4-2009141]. This contribution addresses the open issues captured in the WF.

**Discussion:**

The contribution was discussed during email thread [96e][103] NR\_NewRAT\_UE\_RF\_Part\_2. The discussion was recorded in R4-2011843.

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

**R4-2009594 EESS protection related requirements for FR2 bands**

*Type: CR For: Agreement  
 38.101-2 v15.10.0 CR-0214 Cat: F (Rel-15)  
  
 Source: Nokia Japan*

**Abstract:**

Introduction of EESS protection based on WRC-19 decision and European regulatory body. In addition, this CR resolves smooth transmision of the requirements whose EESS protection limist changes before or after the changeover date to avoid unnecesasry A-MPR.

**Discussion:**

The contribution was discussed during email thread [96e][103] NR\_NewRAT\_UE\_RF\_Part\_2. The discussion was recorded in R4-2011843.

**Decision:** The document was **revised to R4-2011910**.

**R4-2011910 EESS protection related requirements for FR2 bands**

*Type: CR For: Agreement  
 38.101-2 v15.10.0 CR-0214 rev 1 Cat: F (Rel-15)  
  
 Source: Nokia Japan*

(Replaces R4-2009594)

**Abstract:**

Introduction of EESS protection based on WRC-19.

**Discussion:**

The contribution was discussed during email thread [96e][103] NR\_NewRAT\_UE\_RF\_Part\_2. The discussion was recorded in R4-2011843.

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

**R4-2009595 EESS protection related requirements for FR2 bands**

*Type: CR For: Agreement  
 38.101-2 v16.4.0 CR-0215 Cat: A (Rel-16)  
  
 Source: Nokia Japan*

**Abstract:**

This CR is a category A CR for R4-2009594 whose CR number is 214.

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

**R4-2009953 WRC-19 resolutions and impact to NR bands**

*Type: discussion For: Discussion  
 Source: Apple Inc.*

**Discussion:**

The contribution was discussed during email thread [96e][103] NR\_NewRAT\_UE\_RF\_Part\_2. The discussion was recorded in R4-2011843.

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

**R4-2009954 CR to capture WRC-19 impact on NR bands in TR38.817-01**

*Type: CR For: Agreement  
 38.817-01 v15.5.0 CR-0020 Cat: F (Rel-15)  
  
 Source: Apple Inc.*

**Abstract:**

The technical background and outcome of the RAN4 discussion of the impact of the WRC-19 decision on FR2 band requirements needs to be captured in the Rel-15 technical report on NR RF to provide a convenient reference. RAN4 reached a common understanding of all applicable regulatory requirements, the necessary A-MPR to comply with these requirements, and the NS signaling structure over multiple working group meetings. This summary collects all relevant agreements.

**Discussion:**

The contribution was discussed during email thread [96e][103] NR\_NewRAT\_UE\_RF\_Part\_2. The discussion was recorded in R4-2011843.

**Decision:** The document was **revised to R4-2011689**.

**R4-2011689 CR to capture WRC-19 impact on NR bands in TR38.817-01**

*Type: CR For: Agreement  
 38.817-01 v15.5.0 CR-0020 rev 1 Cat: F (Rel-15)  
  
 Source: Apple Inc.*

(Replaces R4-2009954)

**Abstract:**

The technical background and outcome of the RAN4 discussion of the impact of the WRC-19 decision on FR2 band requirements needs to be captured in the Rel-15 technical report on NR RF to provide a convenient reference. RAN4 reached a common understanding of all applicable regulatory requirements, the necessary A-MPR to comply with these requirements, and the NS signaling structure over multiple working group meetings. This summary collects all relevant agreements.

**Discussion:**

The contribution was discussed during email thread [96e][103] NR\_NewRAT\_UE\_RF\_Part\_2. The discussion was recorded in R4-2011843.

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

**R4-2009955 CR to capture WRC-19 impact on NR bands in TR38.817-01 Cat-A**

*Type: CR For: Agreement  
 38.817-01 v16.1.0 CR-0021 Cat: A (Rel-16)  
  
 Source: Apple Inc.*

**Abstract:**

The technical background and outcome of the RAN4 discussion of the impact of the WRC-19 decision on FR2 band requirements needs to be captured in the Rel-15 technical report on NR RF to provide a convenient reference. RAN4 reached a common understanding of all applicable regulatory requirements, the necessary A-MPR to comply with these requirements, and the NS signaling structure over multiple working group meetings. This summary collects all relevant agreements.

**Discussion:**

The contribution was discussed during email thread [96e][103] NR\_NewRAT\_UE\_RF\_Part\_2. The discussion was recorded in R4-2011843.

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

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

**R4-2010630 CR to TS 38.101-2: Correction on the PC3 MPR description**

*Type: CR For: Agreement  
 38.101-2 v15.10.0 CR-0242 Cat: F (Rel-15)  
  
 Source: ZTE Corporation*

**Abstract:**

According to symbols section, the ‘LCRB’ is defined as

LCRBTransmission bandwidth which represents the length of a contiguous resource block allocation expressed in units of resources blocks

which means the LCRB is number of the located RB, not the bandwidth of the RB allocation size.

Therefore, the ‘LCRB ≤ 1.44 MHz’ in current PC3 MPR description is not exactly correct, and also it will cause confusion for the equation of ‘ 0 ≤ RBstart < Ceil(1/3 NRB) or Ceil(2/3NRB) ≤ RBstart ≤ NRB-LCRB’ . Here it should be the allocated RB bandwidth ≤ 1.44 MHz.

It is proposed to replace ‘LCRB ≤ 1.44 MHz’ with ‘BWalloc,RB ≤ 1.44 MHz’, where BWalloc,RB is the bandwidth of the RB allocation size, which is the same description as PC1 MPR.

In addition, the duplicated descriptions for NRB are existed.

**Discussion:**

The contribution was discussed during email thread [96e][103] NR\_NewRAT\_UE\_RF\_Part\_2. The discussion was recorded in R4-2011843.

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

**R4-2010631 CR to TS 38.101-2: Correction on the PC3 MPR description**

*Type: CR For: Agreement  
 38.101-2 v16.4.0 CR-0243 Cat: A (Rel-16)  
  
 Source: ZTE Corporation*

**Abstract:**

According to symbols section, the ‘LCRB’ is defined as

LCRBTransmission bandwidth which represents the length of a contiguous resource block allocation expressed in units of resources blocks

which means the LCRB is number of the located RB, not the bandwidth of the RB allocation size.

Therefore, some descriptions such as “when LCRB is less than or equal to 1.44 MHz” are not exactly correct, and also it will cause confusion for the equations such as ‘ 0 ≤ RBstart < Ceil(1/3 NRB) or Ceil(2/3NRB) ≤ RBstart ≤ NRB-LCRB’ . Here it should be the allocated RB bandwidth ≤ 1.44 MHz.

It is proposed to replace LCRB in these descriptions with BWalloc,RB where BWalloc,RB is the bandwidth of the RB allocation size, which is the same description as PC1 MPR.

In addition, the duplicated descriptions for NRB are existed.

**Discussion:**

The contribution was discussed during email thread [96e][103] NR\_NewRAT\_UE\_RF\_Part\_2. The discussion was recorded in R4-2011843.

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

**R4-2011513 CR on PTRS configuration for UL RMC**

*Type: CR For: Agreement  
 38.101-2 v15.10.0 CR-0257 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

In FR2, UE is mandatory to support the PTRS to evaluate on the phase noise, while PTRS is not configured for FR2 in EVM test.

**Discussion:**

The contribution was discussed during email thread [96e][103] NR\_NewRAT\_UE\_RF\_Part\_2. The discussion was recorded in R4-2011843.

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

**R4-2011514 CR on PTRS configuration for UL RMC-Rel-16**

*Type: CR For: Agreement  
 38.101-2 v16.4.0 CR-0258 Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

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

**R4-2009656 NR SCC UL power drop behaviour with EN-DC UE in FR2**

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

**Abstract:**

There is a case that an FR2 EN-DC UE stops transmitting NR SCC UL signals during the TRx measurement even though it is for a CA test

**Discussion:**

The contribution was discussed during email thread [96e][103] NR\_NewRAT\_UE\_RF\_Part\_2. The discussion was recorded in R4-2011843.

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

**R4-2009657 CR on Minimum output power and Off power MBW definition in FR2**

*Type: CR For: Agreement  
 38.101-2 v15.10.0 CR-0217 Cat: F (Rel-15)  
  
 Source: Anritsu Corporation*

**Abstract:**

Excluding ACLR, measurement bandwidth definitions in the Minimum output power and Off power have inconsistencies between FR1 and FR2.

- Current specification in FR2 uses a MBW equal to Transmission Bandwidth Configuration but centered on the wanted and adjacent channels

- MBW does not account for the half SCS Shift and thus results in the transmission signal not being fully captured for all cases.

- ACLR MBW was corrected at R4-2006150.

**Discussion:**

The contribution was discussed during email thread [96e][103] NR\_NewRAT\_UE\_RF\_Part\_2. The discussion was recorded in R4-2011843.

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

**R4-2009658 CR on Minimum output power and Off power MBW definition in FR2**

*Type: CR For: Agreement  
 38.101-2 v16.4.0 CR-0218 Cat: A (Rel-16)  
  
 Source: Anritsu Corporation*

**Abstract:**

Excluding ACLR, measurement bandwidth definitions in the Minimum output power and Off power have inconsistencies between FR1 and FR2.

- Current specification in FR2 uses a MBW equal to Transmission Bandwidth Configuration but centered on the wanted and adjacent channels

- MBW does not account for the half SCS Shift and thus results in the transmission signal not being fully captured for all cases.

- ACLR MBW was corrected at R4-2006150.

**Discussion:**

The contribution was discussed during email thread [96e][103] NR\_NewRAT\_UE\_RF\_Part\_2. The discussion was recorded in R4-2011843.

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

**R4-2009659 Correction to a description of PRB for in-band emission with CA in FR2**

*Type: CR For: Agreement  
 38.101-2 v15.10.0 CR-0219 Cat: F (Rel-15)  
  
 Source: Anritsu Corporation*

**Abstract:**

Description of in-band emission measurement interval in 6.4A.2.3 should be aligned with EVM and thus it should be the average of 10 sub-frames

Parameter PRB to calculate general limit should also be an average of 10 sub-frames.

**Discussion:**

The contribution was discussed during email thread [96e][103] NR\_NewRAT\_UE\_RF\_Part\_2. The discussion was recorded in R4-2011843.

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

**R4-2009660 Correction to a description of PRB for in-band emission with CA in FR2**

*Type: CR For: Agreement  
 38.101-2 v16.4.0 CR-0220 Cat: A (Rel-16)  
  
 Source: Anritsu Corporation*

**Abstract:**

Description of in-band emission measurement interval in 6.4A.2.3 should be aligned with EVM and thus it should be the average of 10 sub-frames

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

**R4-2009800 CR for R15 38.101-2: Correction of in-band emission tables**

*Type: CR For: Agreement  
 38.101-2 v15.10.0 CR-0223 Cat: F (Rel-15)  
  
 Source: CATT*

**Abstract:**

PRB should be in the NOTE 1 of in-band emission tables.

The general requirements for the in-band emissions are missing.

The PRB should also be averaged for CA scenarios.

**Discussion:**

The contribution was discussed during email thread [96e][103] NR\_NewRAT\_UE\_RF\_Part\_2. The discussion was recorded in R4-2011843.

**Decision:** The document was **revised to R4-2011690**.

**R4-2011690 CR for R15 38.101-2: Correction of in-band emission tables**

*Type: CR For: Agreement  
 38.101-2 v15.10.0 CR-0223 rev 1 Cat: F (Rel-15)  
  
 Source: CATT*

(Replaces R4-2009800)

**Abstract:**

PRB should be in the NOTE 1 of in-band emission tables.

The general requirements for the in-band emissions are missing.

The PRB should also be averaged for CA scenarios.

**Discussion:**

The contribution was discussed during email thread [96e][103] NR\_NewRAT\_UE\_RF\_Part\_2. The discussion was recorded in R4-2011843.

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

**R4-2009801 CR for R16 38.101-2: Correction of in-band emission tables**

*Type: CR For: Agreement  
 38.101-2 v16.4.0 CR-0224 Cat: A (Rel-16)  
  
 Source: CATT*

**Abstract:**

PRB should be in the NOTE 1 of in-band emission tables.

The PRB should also be averaged for CA scenarios.

**Discussion:**

The contribution was discussed during email thread [96e][103] NR\_NewRAT\_UE\_RF\_Part\_2. The discussion was recorded in R4-2011843.

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

**R4-2010302 Scope of Rel-16 tests/requirements for FR2 fallback band combination**

*Type: discussion For: Approval  
 Source: Verizon UK Ltd*

**Discussion:**

The contribution was discussed during email thread [96e][103] NR\_NewRAT\_UE\_RF\_Part\_2. The discussion was recorded in R4-2011843.

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

**R4-2011480 CR on modified MPR for FR2**

*Type: CR For: Agreement  
 38.101-2 v15.10.0 CR-0253 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

Modified MPR Bit ‘0’ for n258 is clashed between two modified MPR CRs(R4-2008891/ R4-2009169 and R4-2008419/R4-2008164).

**Discussion:**

The contribution was discussed during email thread [96e][103] NR\_NewRAT\_UE\_RF\_Part\_2. The discussion was recorded in R4-2011843.

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

**R4-2011481 CR for modified MPR\_Rel-16**

*Type: CR For: Agreement  
 38.101-2 v16.4.0 CR-0254 Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

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

**R4-2011491 on PTRS configuration for EVM requirement+LS to RAN5**

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

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

**R4-2010628 CR to TS 38.101-2: Correction on the Aggregated Channel Bandwidth**

*Type: CR For: Agreement  
 38.101-2 v15.10.0 CR-0240 Cat: F (Rel-15)  
  
 Source: ZTE Corporation*

**Abstract:**

The current definition for the parameters such as SCSlow, SCShigh, NRB,low, NRB,high and BWGB,Channel(k) in the equation may cause BWChannel\_CA larger than the sum of the channel bandwidht of the CCs, which is not acceptable.

To avoid it, it is propose to adopt the same methods as TS38.101-1, which is SCSlow, SCShigh, NRB,low, NRB,high, and BWGB,Channel(k) use the largest μ value among the subcarrier spacing configurations supported in the operating band for both of the channel bandwidths.

**Discussion:**

The contribution was discussed during email thread [96e][103] NR\_NewRAT\_UE\_RF\_Part\_2. The discussion was recorded in R4-2011843.

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

**R4-2010629 CR to TS 38.101-2: Correction on the Aggregated Channel Bandwidth**

*Type: CR For: Agreement  
 38.101-2 v16.4.0 CR-0241 Cat: A (Rel-16)  
  
 Source: ZTE Corporation*

**Abstract:**

The current definition for the parameters such as SCSlow, SCShigh, NRB,low, NRB,high and BWGB,Channel(k) in the equation may cause BWChannel\_CA larger than the sum of the channel bandwidht of the CCs, which is not acceptable.

To avoid it, it is propose to adopt the same methods as TS38.101-1, which is SCSlow, SCShigh, NRB,low, NRB,high, and BWGB,Channel(k) use the largest μ value among the subcarrier spacing configurations supported in the operating band for both of the channel bandwidths.

**Discussion:**

The contribution was discussed during email thread [96e][103] NR\_NewRAT\_UE\_RF\_Part\_2. The discussion was recorded in R4-2011843.

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

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

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

**R4-2011537 Email discussion summary for [96e][104] NR\_NewRAT\_UE\_RF\_Part\_3**

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

**Discussion:**

The contribution summarized email discussion thread [96e][104] NR\_NewRAT\_UE\_RF\_Part\_3. The subject for discussion was UE RF requirements maintenance. The email thread was moderated by Meng Zhang (Huawei) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **revised to R4-2011844**.

**R4-2011844 Email discussion summary for [96e][104] NR\_NewRAT\_UE\_RF\_Part\_3**

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

(Replaces R4-2011537)

**Discussion:**

The contribution summarized email discussion thread [96e][104] NR\_NewRAT\_UE\_RF\_Part\_3. The subject for discussion was UE RF requirements maintenance. The email thread was moderated by Meng Zhang (Huawei) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **revised to R4-2011937**.

**R4-2011937 Email discussion summary for [96e][104] NR\_NewRAT\_UE\_RF\_Part\_3**

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

(Replaces R4-2011844)

**Discussion:**

The contribution was discussed during email thread [96e][104] NR\_NewRAT\_UE\_RF\_Part\_3. The discussion was recorded in R4-2011937.

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

**R4-2010825 CR for 38.101-3 Correction on EN-DC DL Synchronous carriers**

*Type: CR For: Agreement  
 38.101-3 v15.10.0 CR-0341 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

The statement (note 10 and note 11) specifies some conditions for UE to meet corresponding EN-DC requirements. However, such conditions can only be met under co-located deployment scenario. To make it clear that performance may not be guaranteed under inappropriate scenario, an additional Node is added for clarification.

**Discussion:**

The contribution was discussed during email thread [96e][104] NR\_NewRAT\_UE\_RF\_Part\_3. The discussion was recorded in R4-2011937.

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

**R4-2010826 CR for 38.101-3 Correction on EN-DC synchronous carriers (R16)**

*Type: CR For: Agreement  
 38.101-3 v16.4.0 CR-0342 Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

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

**R4-2009964 CR to 38.101-3 MSD due to UL harmonics and intermodulation interference**

*Type: CR For: Agreement  
 38.101-3 v15.10.0 CR-0316 Cat: B (Rel-15)  
  
 Source: Apple Inc.*

**Abstract:**

This CR was agreed in RAN4#95-e (R4-2008413). Resubmission due to mistake on the Table format.

We have identified missing MSD in the reference sensitivity exceptions for DC combinations and therefore, we are proposing to include these combinations in the specification.

**Discussion:**

The contribution was discussed during email thread [96e][104] NR\_NewRAT\_UE\_RF\_Part\_3. The discussion was recorded in R4-2011937.

**Decision:** The document was **revised to R4-2011760**.

**R4-2011760 CR to 38.101-3 MSD due to UL harmonics and intermodulation interference**

*Type: CR For: Agreement  
 38.101-3 v15.10.0 CR-0316 rev 1 Cat: F (Rel-15)  
  
 Source: Apple Inc.*

(Replaces R4-2009964)

**Abstract:**

This CR was agreed in RAN4#95-e (R4-2008413). Resubmission due to mistake on the Table format.

We have identified missing MSD in the reference sensitivity exceptions for DC combinations and therefore, we are proposing to include these combinations in the specification.

There is a case that the REFSENS Exception tests cannot be carried out with combinations of SCS and BW for NR bands which are defined in the requirement since there is a UE which does not support all the described BW/SCS in TS 38.101-1 Table 5.3.5-1.

Table 7.3B.2.3.1-2 is missing the description of SCS of UL band.

**Discussion:**

The contribution was discussed during email thread [96e][104] NR\_NewRAT\_UE\_RF\_Part\_3. The discussion was recorded in R4-2011937.

**Decision:** The document was **revised to R4-2011938**.

**R4-2011938 CR to 38.101-3 MSD due to UL harmonics and intermodulation interference**

*Type: CR For: Agreement  
 38.101-3 v15.10.0 CR-0316 rev 2 Cat: F (Rel-15)  
  
 Source: Apple Inc., Anritsu*

(Replaces R4-2011760)

**Abstract:**

This CR was agreed in RAN4#95-e (R4-2008413). Resubmission due to mistake on the Table format.

We have identified missing MSD in the reference sensitivity exceptions for DC combinations and therefore, we are proposing to include these combinations in the specification.

There is a case that the REFSENS Exception tests cannot be carried out with combinations of SCS and BW for NR bands which are defined in the requirement since there is a UE which does not support all the described BW/SCS in TS 38.101-1 Table 5.3.5-1.

Table 7.3B.2.3.1-2 is missing the description of SCS of UL band.

**Discussion:**

The contribution was discussed during email thread [96e][104] NR\_NewRAT\_UE\_RF\_Part\_3. The discussion was recorded in R4-2011937.

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

**R4-2009965 CR to 38.101-3 MSD due to UL harmonics and intermodulation interference R16**

*Type: CR For: Agreement  
 38.101-3 v16.4.0 CR-0317 Cat: A (Rel-16)  
  
 Source: Apple Inc.*

**Discussion:**

The contribution was discussed during email thread [96e][104] NR\_NewRAT\_UE\_RF\_Part\_3. The discussion was recorded in R4-2011937.

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

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

**R4-2010123 Corrections of Japan-related EN-DC co-ex tables for REL-15 combo**

*Type: CR For: Agreement  
 38.101-3 v15.10.0 CR-0325 Cat: F (Rel-15)  
  
 Source: SoftBank Corp., NTT docomo INC., KDDI Corporation*

**Abstract:**

Some requirements for Japan related band protection are missed and necessary notes/prerequisities are inappricate for EN-DC tables. (This is follow-up of R4-2008970 for single band requirement correction in R4#95-e.)

**Discussion:**

The contribution was discussed during email thread [96e][104] NR\_NewRAT\_UE\_RF\_Part\_3. The discussion was recorded in R4-2011937.

**Decision:** The document was **revised to R4-2011759**.

**R4-2011759 Corrections of Japan-related EN-DC co-ex tables for REL-15 combo**

*Type: CR For: Agreement  
 38.101-3 v15.10.0 CR-0325 rev 1 Cat: F (Rel-15)  
  
 Source: SoftBank Corp., NTT docomo INC., KDDI Corporation, Huawei, HiSilicon*

(Replaces R4-2010123)

**Abstract:**

Some requirements for Japan related band protection are missed and necessary notes/prerequisities are inappricate for EN-DC tables. (This is follow-up of R4-2008970 for single band requirement correction in R4#95-e.)

**Discussion:**

The contribution was discussed during email thread [96e][104] NR\_NewRAT\_UE\_RF\_Part\_3. The discussion was recorded in R4-2011937.

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

**R4-2010124 Corrections of Japan-related EN-DC co-ex tables for REL-15 combo**

*Type: CR For: Agreement  
 38.101-3 v16.4.0 CR-0326 Cat: A (Rel-16)  
  
 Source: SoftBank Corp., NTT docomo INC., KDDI Corporation, Huawei, HiSilicon*

**Abstract:**

Mirror CR for REL-15 combo. correction to REL-16 spec.

**Discussion:**

The contribution was discussed during email thread [96e][104] NR\_NewRAT\_UE\_RF\_Part\_3. The discussion was recorded in R4-2011937.

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

**R4-2010598 Remove power-class ambiguity for UL-MIMO PC2 capable UE configured for EN-DC**

*Type: CR For: Agreement  
 38.101-3 v15.10.0 CR-0333 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

The power-class indication for the NR CG is ambigous for a UE indicating PC2 and supporting two SRS ports in SA but only one SRS port in NSA. When configured for EN-DC a UE is allowed to comply with NR PC3 (if implemented with two PC3 TX-chains) or NR PC2 (if implented with at least one PC2 TX-chain).

From a network perspective, this means that the BS must parse both the SA MIMO and EN-DC MIMO capabilities only to find out that the power indication may be ambiguous.

**Discussion:**

The contribution was discussed during email thread [96e][104] NR\_NewRAT\_UE\_RF\_Part\_3. The discussion was recorded in R4-2011937.

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

**R4-2010921 CR for 38.101-3 to correct spurious emission band UE co-existence for DC\_1\_n28**

*Type: CR For: Agreement  
 38.101-3 v15.10.0 CR-0345 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

The PHS system protection can be signalled by the network. Thus, the corresponding frequency band protection can be removed for DC\_1\_n28.

Some bands which need harmonic exception are missing.

EN-DC configuration is not correct.

**Discussion:**

The contribution was discussed during email thread [96e][104] NR\_NewRAT\_UE\_RF\_Part\_3. The discussion was recorded in R4-2011937.

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

**R4-2010922 CR for 38.101-3 to correct spurious emission band UE co-existence for DC\_1\_n28 (Rel-16)**

*Type: CR For: Agreement  
 38.101-3 v16.4.0 CR-0346 Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

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

**R4-2009661 Correction to in-band emissions for intra-band contiguous EN-DC**

*Type: CR For: Agreement  
 38.101-3 v15.10.0 CR-0308 Cat: F (Rel-15)  
  
 Source: Anritsu Corporation*

**Abstract:**

There is an incorrect reference at 6.4B.2.1.3.

Though the reference of SCG need to be the NR specification, E-UTRA spec is referred.

**Discussion:**

The contribution was discussed during email thread [96e][104] NR\_NewRAT\_UE\_RF\_Part\_3. The discussion was recorded in R4-2011937.

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

**R4-2009662 Correction to in-band emissions for intra-band contiguous EN-DC**

*Type: CR For: Agreement  
 38.101-3 v16.4.0 CR-0309 Cat: A (Rel-16)  
  
 Source: Anritsu Corporation*

**Abstract:**

There is an incorrect reference at 6.4B.2.1.3.

Though the reference of SCG need to be the NR specification, E-UTRA spec is referred.

**Discussion:**

The contribution was discussed during email thread [96e][104] NR\_NewRAT\_UE\_RF\_Part\_3. The discussion was recorded in R4-2011937.

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

**R4-2009975 CR to correct protected band of intra-band EN-DC**

*Type: CR For: Agreement  
 38.101-3 v15.10.0 CR-0318 Cat: F (Rel-15)  
  
 Source: KDDI Corporation*

**Abstract:**

some bands are missed in protected band specification of band 41/n41 intra-band EN-DC

**Discussion:**

The contribution was discussed during email thread [96e][104] NR\_NewRAT\_UE\_RF\_Part\_3. The discussion was recorded in R4-2011937.

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

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

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

**R4-2010020 CR to TS 38.101-3: corrections on MSD table due to harmonic interference for EN-DC FR1**

*Type: CR For: Agreement  
 38.101-3 v15.10.0 CR-0320 Cat: F (Rel-15)  
  
 Source: Xiaomi*

**Abstract:**

Some Uplink configurations for reference sensitivity exceptions due to UL harmonic interference for DC\_5-n78 are missing.

∆FHD values are missing for some band combinations that contains note13

**Discussion:**

The contribution was discussed during email thread [96e][104] NR\_NewRAT\_UE\_RF\_Part\_3. The discussion was recorded in R4-2011937.

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

**R4-2010021 CR to TS 38.101-3 R16: corrections on MSD table for EN-DC FR1**

*Type: CR For: Agreement  
 38.101-3 v16.4.0 CR-0321 Cat: A (Rel-16)  
  
 Source: Xiaomi*

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

**R4-2010045 FR1 EN-DC Out-of-Band Blocking UL test configuration**

*Type: discussion For: Approval  
 38.101-3 v..  
 Source: Apple Inc.*

**Discussion:**

The contribution was discussed during email thread [96e][104] NR\_NewRAT\_UE\_RF\_Part\_3. The discussion was recorded in R4-2011937.

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

**R4-2010046 CR for TS 38.101-3: FR1 inter-band EN-DC out-of-band blocking UL configuration**

*Type: CR For: Agreement  
 38.101-3 v15.10.0 CR-0322 Cat: F (Rel-15)  
  
 Source: Apple Inc.*

**Abstract:**

The current FR1 inter-band EN-DC/NE-DC UL power configuration for out-of-band blocking requirements has triggered a testability issue due to the ADC dyanmic range limitation on the tester.

**Discussion:**

The contribution was discussed during email thread [96e][104] NR\_NewRAT\_UE\_RF\_Part\_3. The discussion was recorded in R4-2011937.

**Decision:** The document was **revised to R4-2011936**.

**R4-2011936 CR for TS 38.101-3: FR1 inter-band EN-DC out-of-band blocking UL configuration**

*Type: CR For: Agreement  
 38.101-3 v15.10.0 CR-0322 rev 1 Cat: F (Rel-15)  
  
 Source: Apple Inc.*

(Replaces R4-2010046)

**Abstract:**

The current FR1 inter-band EN-DC/NE-DC UL power configuration for out-of-band blocking requirements has triggered a testability issue due to the ADC dyanmic range limitation on the tester.

**Discussion:**

The contribution was discussed during email thread [96e][104] NR\_NewRAT\_UE\_RF\_Part\_3. The discussion was recorded in R4-2011937.

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

**R4-2010047 CR for TS 38.101-3: FR1 inter-band EN-DC out-of-band blocking UL configuration**

*Type: CR For: Agreement  
 38.101-3 v16.4.0 CR-0323 Cat: A (Rel-16)  
  
 Source: Apple Inc.*

**Abstract:**

The current FR1 inter-band EN-DC/NE-DC UL power configuration for out-of-band blocking requirements has triggered a testability issue due to the ADC dyanmic range limitation on the tester.

This is a mirror to its Rel-15 CR.

**Discussion:**

The contribution was discussed during email thread [96e][104] NR\_NewRAT\_UE\_RF\_Part\_3. The discussion was recorded in R4-2011937.

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

**R4-2010320 UE UL Power setting for OoBB for inter-band EN-DC within FR1**

*Type: other For: Approval  
 38.101-1 v..  
 Source: NTT DOCOMO INC.*

**Discussion:**

The contribution was discussed during email thread [96e][104] NR\_NewRAT\_UE\_RF\_Part\_3. The discussion was recorded in R4-2011937.

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

**R4-2010794 Addition of missing exception for n78**

*Type: CR For: Agreement  
 38.101-3 v15.10.0 CR-0339 Cat: F (Rel-15)  
  
 Source: Rohde & Schwarz*

**Abstract:**

Band n78 is missing as an affected band for MSD in the band combination DC\_1A\_n78A

**Discussion:**

The contribution was discussed during email thread [96e][104] NR\_NewRAT\_UE\_RF\_Part\_3. The discussion was recorded in R4-2011937.

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

**R4-2010795 Addition of missing exception for n78**

*Type: CR For: Agreement  
 38.101-3 v16.4.0 CR-0340 Cat: A (Rel-16)  
  
 Source: Rohde & Schwarz*

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

**R4-2011460 CR to 38.101-3 - Correction DC\_42\_n79 simultaneous Tx/Rx operation**

*Type: CR For: Agreement  
 38.101-3 v15.10.0 CR-0348 Cat: F (Rel-15)  
  
 Source: Skyworks Solutions Inc.*

**Abstract:**

Wether DC\_42\_n79 supports simultaneous Tx/Rx is ambiguous, it cannot be supported by solutions implemented with n77 or n78 filter without MSD as already shown for CA\_n79-n79.

**Discussion:**

The contribution was discussed during email thread [96e][104] NR\_NewRAT\_UE\_RF\_Part\_3. The discussion was recorded in R4-2011937.

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

**R4-2009623 CR for missing DC\_1A\_n40A Cross Band Noise MSD for large NR UL BW in 38.101-3**

*Type: CR For: Agreement  
 38.101-3 v15.10.0 CR-0304 Cat: F (Rel-15)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

Missing cross band noise MSD for various interband ENDC band combinations with large NR UL BW

**Discussion:**

The contribution was discussed during email thread [96e][104] NR\_NewRAT\_UE\_RF\_Part\_3. The discussion was recorded in R4-2011937.

**Decision:** The document was **revised to R4-2011756**.

**R4-2011756 CR for missing DC\_1A\_n40A Cross Band Noise MSD for large NR UL BW in 38.101-3**

*Type: CR For: Agreement  
 38.101-3 v15.10.0 CR-0304 rev 1 Cat: F (Rel-15)  
  
 Source: Qualcomm Incorporated*

(Replaces R4-2009623)

**Discussion:**

The contribution was discussed during email thread [96e][104] NR\_NewRAT\_UE\_RF\_Part\_3. The discussion was recorded in R4-2011937.

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

**R4-2009624 CR for missing DC\_1A\_n40A Cross Band Noise MSD for large NR UL BW in 38.101-3**

*Type: CR For: Agreement  
 38.101-3 v16.4.0 CR-0305 Cat: A (Rel-16)  
  
 Source: Qualcomm Incorporated*

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

**R4-2009625 CR for missing IMD MSD in 38.101-3 for DC\_1A-41A\_n78A, DC\_7A-28A\_n78A**

*Type: CR For: Agreement  
 38.101-3 v15.10.0 CR-0306 Cat: F (Rel-15)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

Missing IMD MSD for various interband ENDC band combinations

**Discussion:**

The contribution was discussed during email thread [96e][104] NR\_NewRAT\_UE\_RF\_Part\_3. The discussion was recorded in R4-2011937.

**Decision:** The document was **revised to R4-2011757**.

**R4-2011757 CR for missing IMD MSD in 38.101-3 for DC\_1A-41A\_n78A, DC\_7A-28A\_n78A**

*Type: CR For: Agreement  
 38.101-3 v15.10.0 CR-0306 rev 1 Cat: F (Rel-15)  
  
 Source: Qualcomm Incorporated*

(Replaces R4-2009625)

**Abstract:**

Missing IMD MSD for various interband ENDC band combinations

**Discussion:**

The contribution was discussed during email thread [96e][104] NR\_NewRAT\_UE\_RF\_Part\_3. The discussion was recorded in R4-2011937.

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

**R4-2009626 CR for missing IMD MSD in 38.101-3 for DC\_1A-41A\_n78A, DC\_7A-28A\_n78A**

*Type: CR For: Agreement  
 38.101-3 v16.4.0 CR-0307 Cat: A (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

Missing IMD MSD for various interband ENDC band combinations

**Discussion:**

The contribution was discussed during email thread [96e][104] NR\_NewRAT\_UE\_RF\_Part\_3. The discussion was recorded in R4-2011937.

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

**R4-2009663 Testability issue with OoBB for FR1 EN-DC UE (3)**

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

**Abstract:**

In this contribution we summarize the current status of discussions and try to create a common test assumption for this requirement.

**Discussion:**

The contribution was discussed during email thread [96e][104] NR\_NewRAT\_UE\_RF\_Part\_3. The discussion was recorded in R4-2011937.

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

**R4-2009664 CR to 7.3B.2.3 BW, SCS and UL RB condition extension**

*Type: CR For: Agreement  
 38.101-3 v15.10.0 CR-0310 Cat: F (Rel-15)  
  
 Source: Anritsu Corporation*

**Abstract:**

1) There is a case that the REFSENS Exception tests cannot be carried out with combinations of SCS and BW for NR bands which are defined in the requirement since there is a UE which does not support all the described BW/SCS in TS 38.101-1 Table 5.3.5-1.

2) Table 7.3B.2.3.1-2 is missing the description of SCS of UL band.

**Discussion:**

The contribution was discussed during email thread [96e][104] NR\_NewRAT\_UE\_RF\_Part\_3. The discussion was recorded in R4-2011937.

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

**R4-2009665 CR to 7.3B.2.3 BW, SCS and UL RB condition extension**

*Type: CR For: Agreement  
 38.101-3 v16.4.0 CR-0311 Cat: A (Rel-16)  
  
 Source: Anritsu Corporation*

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

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

### 4.3 UE EMC [NR\_newRAT-Core]

#### 4.3.1 General [NR\_newRAT-Core]

**R4-2012532 Email discussion summary for [96e][304] NR\_EMC**

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

**Discussion:**

The contribution summarized email discussion thread [96e][304] NR\_EMC. The topic areas for discussion were Rel-15 NR BS/UE EMC, and NR IAB EMC. The email thread was moderated by Wubin Zhou (ZTE)

. All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2012717**.

**R4-2012717 Email discussion summary for [96e][304] NR\_EMC**

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

(Replaces R4-2012532)

**Discussion:**

The contribution summarized email discussion thread [96e][304] NR\_EMC. The topic areas for discussion were Rel-15 NR BS/UE EMC, and NR IAB EMC. The email thread was moderated by Wubin Zhou (ZTE)

. All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

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

**R4-2012575 WF on UE EMC requirements extensions**

*Type: other For: discussion  
 Source: Xiaomi*

**Discussion:**

The contribution was discussed during email thread [96e][304] NR\_EMC. The discussion was recorded in R4-2012717.

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

**R4-2010600 CR to TS 38.124 combined correction R15**

*Type: CR For: Agreement  
 38.124 v15.3.0 CR-0025 Cat: F (Rel-15)  
  
 Source: Xiaomi*

**Abstract:**

Couple of changes have been made because of:

1, Some editorial correction.

2, CISPR 16-1 reference is not needed.

3, Some abbreviations are missing.

4, Note 4 is missing which is not aligned to RF spec.

5, Max hold detector and corresponding annex A should not be used.

**Discussion:**

The contribution was discussed during email thread [96e][304] NR\_EMC. The discussion was recorded in R4-2012717.

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

**R4-2012576 [UE EMC] CR to TS 38.124 combined correction R15**

*Type: CR For: Agreement  
 38.124 v15.3.0 CR-0025 rev 1 Cat: F (Rel-15)  
  
 Source: Xiaomi*

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

**R4-2010601 CR to TS 38.124 combined correction R16**

*Type: CR For: Agreement  
 38.124 v16.0.0 CR-0026 Cat: A (Rel-16)  
  
 Source: Xiaomi*

**Abstract:**

Couple of changes have been made because of:

1, Some editorial correction.

2, CISPR 16-1 reference is not needed.

3, Some abbreviations are missing.

4, Note 4 is missing which is not aligned to RF spec.

5, Max hold detector and corresponding annex A should not be used.

**Discussion:**

The contribution was discussed during email thread [96e][304] NR\_EMC. The discussion was recorded in R4-2012717.

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

**R4-2010604 [UE EMC] Discussion on RX exclusion band for CA and DC cases**

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

**Abstract:**

the RF core requirement has been differentiated into different CA and DC cases, similar concern has been raised regarding the UE EMC requirements and we believe it is needed to further discuss these requirements case by case.

**Discussion:**

The contribution was discussed during email thread [96e][304] NR\_EMC. The discussion was recorded in R4-2012717.

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

#### 4.3.2 Emission requirements [NR\_newRAT-Core]

**R4-2010602 CR to TS 38.124: additional EMC requirements for different features correction R15**

*Type: CR For: Agreement  
 38.124 v15.3.0 CR-0027 Cat: F (Rel-15)  
  
 Source: Xiaomi*

**Abstract:**

As discussed in the discussion paper R4-2010604, only single carrier requirements are defined for UE EMC while no additional requirement defined for different UE features which is inconsistent with UE RF requirements,

**Discussion:**

The contribution was discussed during email thread [96e][304] NR\_EMC. The discussion was recorded in R4-2012717.

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

**R4-2010603 [UE EMC] CR to TS38.124 additional EMC requirements for different features correction R16**

*Type: CR For: Agreement  
 38.124 v16.0.0 CR-0028 Cat: A (Rel-16)  
  
 Source: Xiaomi*

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

#### 4.3.3 Immunity requirements [NR\_newRAT-Core]

### 4.4 BS RF [NR\_newRAT-Core]

#### 4.4.1 General [NR\_newRAT-Core]

**R4-2012533 Email discussion summary for [96e][302] NR\_maintenance\_RF\_BS**

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

**Discussion:**

The contribution summarized email discussion thread [96e][302] NR\_maintenance\_RF\_BS. The topic areas for discussion were Rel-15 NR BS RF Core maintenance

Rel-16 NR BS RF Core maintenance. The email thread was moderated by Johan Sköld (Ericsson)

. All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2012718**.

**R4-2012718 Email discussion summary for [96e][302] NR\_maintenance\_RF\_BS**

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

(Replaces R4-2012533)

**Discussion:**

The contribution summarized email discussion thread [96e][302] NR\_maintenance\_RF\_BS. The topic areas for discussion were Rel-15 NR BS RF Core maintenance

Rel-16 NR BS RF Core maintenance. The email thread was moderated by Johan Sköld (Ericsson)

. All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

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

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

**R4-2011186 CR to TS 38.817-02: Clarification on calculation of step frequencies for defining the Category B radiated Tx spurious emission limits in FR2**

*Type: CR For: Agreement  
 38.817-02 v15.8.0 CR-0068 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

The step frequencies for defining the Category B radiated Tx spurious emission limits in FR2 are calculated based on ERC Recommendation 74-01 and ΔfOBUE, but how to calculate them are not clearly explained in the TR.

**Discussion:**

The contribution was discussed during email thread [96e][302] NR\_maintenance\_RF\_BS. The discussion was recorded in R4-2012718.

**Decision:** The document was **revised to R4-2012585**.

**R4-2012585 CR to TS 38.817-02: Clarification on calculation of step frequencies for defining the Category B radiated Tx spurious emission limits in FR2**

*Type: CR For: Agreement  
 38.817-02 v15.8.0 CR-0068 rev 1 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2011186)

**Abstract:**

The step frequencies for defining the Category B radiated Tx and Rx spurious emission limits in FR2 are calculated based on ERC Recommendation 74-01 and ΔfOBUE, but how to calculate them are not clearly explained in the TR.

**Discussion:**

The contribution was discussed during email thread [96e][302] NR\_maintenance\_RF\_BS. The discussion was recorded in R4-2012718.

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

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

**R4-2010178 CR to TS 38.104: Correction of co-location requirement in subclause 7.5.3**

*Type: CR For: Agreement  
 38.104 v15.10.0 CR-0221 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

The CR corrects the tabe with wanted signal power levels and interferer signal power levels. Currently, the wanted power is only specified for WA BS. However, the wanted signal power level is also applicalbe for MR and LA BS.

**Discussion:**

The contribution was discussed during email thread [96e][302] NR\_maintenance\_RF\_BS. The discussion was recorded in R4-2012718.

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

**R4-2010179 CR to TS 38.104: Correction of co-location requirement in subclause 7.5.3**

*Type: CR For: Agreement  
 38.104 v16.4.0 CR-0222 Cat: A (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

The CR corrects the tabe with wanted signal power levels and interferer signal power levels. Currently, the wanted power is only specified for WA BS. However, the wanted signal power level is also applicalbe for MR and LA BS.

**Discussion:**

The contribution was discussed during email thread [96e][302] NR\_maintenance\_RF\_BS. The discussion was recorded in R4-2012718.

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

**R4-2010326 CEPT/ECC work on recommendation for receiver parameters**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

The paper summarizes the ongoing work on receiver parameters in CEPT/ECC for European regulation, where presently a new recommendation is being drafted.

**Discussion:**

The contribution was discussed during email thread [96e][302] NR\_maintenance\_RF\_BS. The discussion was recorded in R4-2012718.

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

**R4-2010762 CR to TS 38.104: OTA receiver spurious requirements for EESS protection (rel-15)**

*Type: CR For: Agreement  
 38.104 v15.10.0 CR-0226 Cat: F (Rel-15)  
  
 Source: NEC*

**Abstract:**

In the current specification, it looks protection of EESS for OTA receiver spurious requirements for BS type 2-O are mandatory.

Protection of EESS shall not be mandated.

**Discussion:**

The contribution was discussed during email thread [96e][302] NR\_maintenance\_RF\_BS. The discussion was recorded in R4-2012718.

**Decision:** The document was **revised to R4-2012580**.

**R4-2012580 CR to TS 38.104: OTA receiver spurious requirements for EESS protection (rel-15)**

*Type: CR For: Agreement  
 38.104 v15.10.0 CR-0226 rev 1 Cat: F (Rel-15)  
  
 Source: NEC****,*** *Nokia, Ericsson*

(Replaces R4-2010762)

**Abstract:**

In the current specification, it looks protection of EESS for OTA receiver spurious requirements for BS type 2-O are mandatory.

Protection of EESS shall not be mandated.

**Discussion:**

The contribution was discussed during email thread [96e][302] NR\_maintenance\_RF\_BS. The discussion was recorded in R4-2012718.

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

**R4-2010763 CR to TS 38.104: OTA receiver spurious requirements for EESS protection (rel-16)**

*Type: CR For: Agreement  
 38.104 v16.4.0 CR-0227 Cat: A (Rel-16)  
  
 Source: NEC*

**Abstract:**

In the current specification, it looks protection of EESS for OTA receiver spurious requirements for BS type 2-O are mandatory.

Protection of EESS shall not be mandated.

**Discussion:**

The contribution was discussed during email thread [96e][302] NR\_maintenance\_RF\_BS. The discussion was recorded in R4-2012718.

**Decision:** The document was **revised to R4-2012747**.

**R4-2012747 CR to TS 38.104: OTA receiver spurious requirements for EESS protection (rel-16)**

*Type: CR For: Agreement  
 38.104 v16.4.0 CR-0227 rev 1 Cat: A (Rel-16)  
  
 Source: NEC, Nokia, Ericsson*

(Replaces R4-2010763)

**Abstract:**

In the current specification, it looks protection of EESS for OTA receiver spurious requirements for BS type 2-O are mandatory.

Protection of EESS shall not be mandated.

**Discussion:**

The contribution was discussed during email thread [96e][302] NR\_maintenance\_RF\_BS. The discussion was recorded in R4-2012718.

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

**R4-2010764 CR to TS 38.141-2: Additional requirements for EESS protection (rel-15)**

*Type: CR For: Agreement  
 38.141-2 v15.6.0 CR-0213 Cat: F (Rel-15)  
  
 Source: NEC*

**Abstract:**

In the current specification, it looks protection of EESS for OTA receiver spurious requirements for BS type 2-O are mandatory. Protection of EESS shall not be mandated.

TT values for OTA OBUE and OTA TX spurious requirements for EESS protection are specifited in the tables for FR1.

**Discussion:**

The contribution was discussed during email thread [96e][302] NR\_maintenance\_RF\_BS. The discussion was recorded in R4-2012718.

**Decision:** The document was **revised to R4-2012581**.

**R4-2012581 CR to TS 38.141-2: Additional requirements for EESS protection (rel-15)**

*Type: CR For: Agreement  
 38.141-2 v15.6.0 CR-0213 rev 1 Cat: F (Rel-15)  
  
 Source: NEC****,*** *Nokia, Ericsson*

(Replaces R4-2010764)

**Abstract:**

In the current specification, it looks protection of EESS for OTA receiver spurious requirements for BS type 2-O are mandatory. Protection of EESS shall not be mandated.

TT values for OTA OBUE and OTA TX spurious requirements for EESS protection are specifited in the tables for FR1.

**Discussion:**

The contribution was discussed during email thread [96e][302] NR\_maintenance\_RF\_BS. The discussion was recorded in R4-2012718.

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

**R4-2010765 CR to TS 38.141-2: Additional requirements for EESS protection (rel-16)**

*Type: CR For: Agreement  
 38.141-2 v16.4.0 CR-0214 Cat: A (Rel-16)  
  
 Source: NEC*

**Abstract:**

In the current specification, it looks protection of EESS for OTA receiver spurious requirements for BS type 2-O are mandatory. Protection of EESS shall not be mandated.

TT values for OTA OBUE and OTA TX spurious requirements for EESS protection are specifited in the tables for FR1.

**Discussion:**

The contribution was discussed during email thread [96e][302] NR\_maintenance\_RF\_BS. The discussion was recorded in R4-2012718.

**Decision:** The document was **revised to R4-2012748**.

**R4-2012748 CR to TS 38.141-2: Additional requirements for EESS protection (rel-16)**

*Type: CR For: Agreement  
 38.141-2 v16.4.0 CR-0214 rev 1 Cat: A (Rel-16)  
  
 Source: NEC, Nokia, Ericsson*

(Replaces R4-2010765)

**Abstract:**

In the current specification, it looks protection of EESS for OTA receiver spurious requirements for BS type 2-O are mandatory. Protection of EESS shall not be mandated.

**Discussion:**

The contribution was discussed during email thread [96e][302] NR\_maintenance\_RF\_BS. The discussion was recorded in R4-2012718.

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

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

#### 4.5.1 General [NR\_newRAT-Perf]

**R4-2012534 Email discussion summary for [96e][303] NR\_NewRAT\_Conformance\_BS**

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

**Discussion:**

The contribution summarized email discussion thread [96e][303] NR\_NewRAT\_Conformance\_BS. The topic areas for discussion were Rel-15 BS conformance testing. The email thread was moderated by Vipul Desai (Futurewei Technologies). All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2012719**.

**R4-2012719 Email discussion summary for [96e][303] NR\_NewRAT\_Conformance\_BS**

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

(Replaces R4-2012534)

**Discussion:**

The contribution summarized email discussion thread [96e][303] NR\_NewRAT\_Conformance\_BS. The topic areas for discussion were Rel-15 BS conformance testing. The email thread was moderated by Vipul Desai (Futurewei Technologies). All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

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

**R4-2012589 WF on selecting CLTA height**

*Type: other For: discussion  
 Source: Huawei*

**Discussion:**

The contribution was discussed during email thread [96e][303] NR\_NewRAT\_Conformance\_BS. The discussion was recorded in R4-2012719.

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

**R4-2010729 Discussion on NR BS EVM equalizer averaging**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

In this contribution, we discuss potential options and solutions discussed during RAN4#95-e meeting and captured in WF.

**Discussion:**

The contribution was discussed during email thread [96e][303] NR\_NewRAT\_Conformance\_BS. The discussion was recorded in R4-2012719.

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

**R4-2011285 CR to 38.104: Annex B and C clarification on equlisation calculation (B.6, C.6)**

*Type: CR For: Agreement  
 38.104 v15.10.0 CR-0232 Cat: F (Rel-15)  
  
 Source: Keysight Technologies UK Ltd, Rohde & Schwarz*

**Abstract:**

In Annex section describing equlisation, clarification needed where to apply exceptional case of moving average calculation. Current text which originally copied from LTE specification describes exceptional case at or near the edge of the channel. The same needs to be applied for the case at or near the edge of allocated resources because NR test model 2 doesn’t not have contiguously allocated reference signal subcarriers in the frequency domain.

**Discussion:**

The contribution was discussed during email thread [96e][303] NR\_NewRAT\_Conformance\_BS. The discussion was recorded in R4-2012719.

**Decision:** The document was **revised to R4-2012586**.

**R4-2012586 CR to 38.104: Annex B and C clarification on equlisation calculation (B.6, C.6)**

*Type: CR For: Agreement  
 38.104 v15.10.0 CR-0232 rev 1 Cat: F (Rel-15)  
  
 Source: Keysight Technologies UK Ltd, Rohde & Schwarz, Nokia*

(Replaces R4-2011285)

**Abstract:**

In Annex section describing equlisation, clarification needed where to apply exceptional case of moving average calculation. Current text which originally copied from LTE specification describes exceptional case at or near the edge of the channel. The same needs to be applied for the case at or near the edge of allocated resources because NR test model 2 doesn’t not have contiguously allocated reference signal subcarriers in the frequency domain.

**Discussion:**

The contribution was discussed during email thread [96e][303] NR\_NewRAT\_Conformance\_BS. The discussion was recorded in R4-2012719.

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

**R4-2011286 CR to 38.141-1: Annex H clarification on equlisation calculation (H.6)**

*Type: CR For: Agreement  
 38.141-1 v15.6.0 CR-0149 Cat: F (Rel-15)  
  
 Source: Keysight Technologies UK Ltd, Rohde & Schwarz*

**Abstract:**

In Annex section describing equlisation, clarification needed where to apply exceptional case of moving average calculation. Current text which originally copied from LTE specification describes exceptional case at or near the edge of the channel. The same needs to be applied for the case at or near the edge of allocated resources because NR test model 2 doesn’t not have contiguously allocated reference signal subcarriers in the frequency domain.

**Discussion:**

The contribution was discussed during email thread [96e][303] NR\_NewRAT\_Conformance\_BS. The discussion was recorded in R4-2012719.

**Decision:** The document was **revised to R4-2012587**.

**R4-2012587 CR to 38.141-1: Annex H clarification on equlisation calculation (H.6)**

*Type: CR For: Agreement  
 38.141-1 v15.6.0 CR-0149 rev 1 Cat: F (Rel-15)  
  
 Source: Keysight Technologies UK Ltd, Rohde & Schwarz,Nokia*

(Replaces R4-2011286)

**Abstract:**

In Annex section describing equlisation, clarification needed where to apply exceptional case of moving average calculation. Current text which originally copied from LTE specification describes exceptional case at or near the edge of the channel. The same needs to be applied for the case at or near the edge of allocated resources because NR test model 2 doesn’t not have contiguously allocated reference signal subcarriers in the frequency domain.

**Discussion:**

The contribution was discussed during email thread [96e][303] NR\_NewRAT\_Conformance\_BS. The discussion was recorded in R4-2012719.

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

**R4-2011287 CR to 38.141-2: Annex L clarification on equlisation calculation (L.6)**

*Type: CR For: Agreement  
 38.141-2 v15.6.0 CR-0219 Cat: F (Rel-15)  
  
 Source: Keysight Technologies UK Ltd, Rohde & Schwarz*

**Abstract:**

In Annex section describing equlisation, clarification needed where to apply exceptional case of moving average calculation. Current text which originally copied from LTE specification describes exceptional case at or near the edge of the channel. The same needs to be applied for the case at or near the edge of allocated resources because NR test model 2 doesn’t not have contiguously allocated reference signal subcarriers in the frequency domain.

**Discussion:**

The contribution was discussed during email thread [96e][303] NR\_NewRAT\_Conformance\_BS. The discussion was recorded in R4-2012719.

**Decision:** The document was **revised to R4-2012588**.

**R4-2012588 CR to 38.141-2: Annex L clarification on equlisation calculation (L.6)**

*Type: CR For: Agreement  
 38.141-2 v15.6.0 CR-0219 rev 1 Cat: F (Rel-15)  
  
 Source: Keysight Technologies UK Ltd, Rohde & Schwarz,Nokia*

(Replaces R4-2011287)

**Abstract:**

In Annex section describing equlisation, clarification needed where to apply exceptional case of moving average calculation. Current text which originally copied from LTE specification describes exceptional case at or near the edge of the channel. The same needs to be applied for the case at or near the edge of allocated resources because NR test model 2 doesn’t not have contiguously allocated reference signal subcarriers in the frequency domain.

**Discussion:**

The contribution was discussed during email thread [96e][303] NR\_NewRAT\_Conformance\_BS. The discussion was recorded in R4-2012719.

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

**R4-2011288 CR to 38.104: Annex B and C clarification on equlisation calculation (B.6, C.6)**

*Type: CR For: Agreement  
 38.104 v16.4.0 CR-0233 Cat: A (Rel-16)  
  
 Source: Keysight Technologies UK Ltd, Rohde & Schwarz,Nokia*

**Abstract:**

In Annex section describing equlisation, clarification needed where to apply exceptional case of moving average calculation. Current text which originally copied from LTE specification describes exceptional case at or near the edge of the channel. The same needs to be applied for the case at or near the edge of allocated resources because NR test model 2 doesn’t not have contiguously allocated reference signal subcarriers in the frequency domain.

**Discussion:**

The contribution was discussed during email thread [96e][303] NR\_NewRAT\_Conformance\_BS. The discussion was recorded in R4-2012719.

**Decision:** The document was **revised to R4-2012752**.

**R4-2012752 CR to 38.104: Annex B and C clarification on equlisation calculation (B.6, C.6)**

*Type: CR For: Agreement  
 38.104 v16.4.0 CR-0233 rev 1 Cat: A (Rel-16)  
  
 Source: Keysight Technologies UK Ltd, Rohde & Schwarz,Nokia*

(Replaces R4-2011288)

**Abstract:**

In Annex section describing equlisation, clarification needed where to apply exceptional case of moving average calculation. Current text which originally copied from LTE specification describes exceptional case at or near the edge of the channel. The same needs to be applied for the case at or near the edge of allocated resources because NR test model 2 doesn’t not have contiguously allocated reference signal subcarriers in the frequency domain.

**Discussion:**

The contribution was discussed during email thread [96e][303] NR\_NewRAT\_Conformance\_BS. The discussion was recorded in R4-2012719.

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

**R4-2011289 CR to 38.141-1: Annex H clarification on equlisation calculation (H.6)**

*Type: CR For: Agreement  
 38.141-1 v16.4.0 CR-0150 Cat: A (Rel-16)  
  
 Source: Keysight Technologies UK Ltd, Rohde & Schwarz,Nokia*

**Abstract:**

In Annex section describing equlisation, clarification needed where to apply exceptional case of moving average calculation. Current text which originally copied from LTE specification describes exceptional case at or near the edge of the channel. The same needs to be applied for the case at or near the edge of allocated resources because NR test model 2 doesn’t not have contiguously allocated reference signal subcarriers in the frequency domain.

**Discussion:**

The contribution was discussed during email thread [96e][303] NR\_NewRAT\_Conformance\_BS. The discussion was recorded in R4-2012719.

**Decision:** The document was **revised to R4-2012753**.

**R4-2012753 CR to 38.141-1: Annex H clarification on equlisation calculation (H.6)**

*Type: CR For: Agreement  
 38.141-1 v16.4.0 CR-0150 rev 1 Cat: A (Rel-16)  
  
 Source: Keysight Technologies UK Ltd, Rohde & Schwarz,Nokia*

(Replaces R4-2011289)

**Abstract:**

In Annex section describing equlisation, clarification needed where to apply exceptional case of moving average calculation. Current text which originally copied from LTE specification describes exceptional case at or near the edge of the channel. The same needs to be applied for the case at or near the edge of allocated resources because NR test model 2 doesn’t not have contiguously allocated reference signal subcarriers in the frequency domain.

**Discussion:**

The contribution was discussed during email thread [96e][303] NR\_NewRAT\_Conformance\_BS. The discussion was recorded in R4-2012719.

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

**R4-2011290 CR to 38.141-2: Annex L clarification on equlisation calculation (L.6)**

*Type: CR For: Agreement  
 38.141-2 v16.4.0 CR-0220 Cat: A (Rel-16)  
  
 Source: Keysight Technologies UK Ltd, Rohde & Schwarz,Nokia*

**Abstract:**

In Annex section describing equlisation, clarification needed where to apply exceptional case of moving average calculation. Current text which originally copied from LTE specification describes exceptional case at or near the edge of the channel. The same needs to be applied for the case at or near the edge of allocated resources because NR test model 2 doesn’t not have contiguously allocated reference signal subcarriers in the frequency domain.

**Discussion:**

The contribution was discussed during email thread [96e][303] NR\_NewRAT\_Conformance\_BS. The discussion was recorded in R4-2012719.

**Decision:** The document was **revised to R4-2012754**.

**R4-2012754 CR to 38.141-2: Annex L clarification on equlisation calculation (L.6)**

*Type: CR For: Agreement  
 38.141-2 v16.4.0 CR-0220 rev 1 Cat: A (Rel-16)  
  
 Source: Keysight Technologies UK Ltd, Rohde & Schwarz,Nokia*

(Replaces R4-2011290)

**Abstract:**

In Annex section describing equlisation, clarification needed where to apply exceptional case of moving average calculation. Current text which originally copied from LTE specification describes exceptional case at or near the edge of the channel. The same needs to be applied for the case at or near the edge of allocated resources because NR test model 2 doesn’t not have contiguously allocated reference signal subcarriers in the frequency domain.

**Discussion:**

The contribution was discussed during email thread [96e][303] NR\_NewRAT\_Conformance\_BS. The discussion was recorded in R4-2012719.

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

**R4-2011291 Further Analysis on EVM equalizer frequency domain calculation for NR BS conformance testing**

*Type: discussion For: Agreement  
 Source: Keysight Technologies UK Ltd, Rohde & Schwarz*

**Discussion:**

The contribution was discussed during email thread [96e][303] NR\_NewRAT\_Conformance\_BS. The discussion was recorded in R4-2012719.

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

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

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

**R4-2011187 CR to TS 37.145-2: Correction on procedure for spurious unwanted emissions measurement using orthogonal cut grid**

*Type: CR For: Agreement  
 37.145-2 v15.7.0 CR-0235 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

In Annex F.1 , it is stated that orthogonal cut grid (F.5) is one of the methods which require angular alignment between the selected measurement grid and EUT radiation pattern in order to measure peak values in the main beams. However, in TS 38.141-2 Annex I.1, it is stated that orthogonal cut grid for spurious unwanted emissions (I.5.3) is one of the method which are designed to be independent of rotations of the angular grid, and hence angular alignment between the measurement grid and EUT is not needed. Moreover, in TR 37.941 clauses 6.3.2.5.5, it is stated that no alignment is needed for spurious emissions using two or three cuts with dense sampling.

**Discussion:**

The contribution was discussed during email thread [96e][303] NR\_NewRAT\_Conformance\_BS. The discussion was recorded in R4-2012719.

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

**R4-2011188 CR to TS 37.145-2: Correction on procedure for spurious unwanted emissions measurement using orthogonal cut grid**

*Type: CR For: Agreement  
 37.145-2 v16.4.0 CR-0236 Cat: A (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

In Annex F.1 , it is stated that orthogonal cut grid (F.5) is one of the methods which require angular alignment between the selected measurement grid and EUT radiation pattern in order to measure peak values in the main beams. However, in TS 38.141-2 Annex I.1, it is stated that orthogonal cut grid for spurious unwanted emissions (I.5.3) is one of the method which are designed to be independent of rotations of the angular grid, and hence angular alignment between the measurement grid and EUT is not needed. Moreover, in TR 37.941 clauses 6.3.2.5.5, it is stated that no alignment is needed for spurious emissions using two or three cuts with dense sampling.

**Discussion:**

The contribution was discussed during email thread [96e][303] NR\_NewRAT\_Conformance\_BS. The discussion was recorded in R4-2012719.

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

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

**R4-2011407 CR to 37.141: Correction to applicability of additional BC3 requirement (Rel-15)**

*Type: CR For: Agreement  
 37.141 v15.11.0 CR-0947 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

On top of generic Tx IM and blocking requirement, there is additional requirement for BC3 base stations which uses 1.28Mcps UTRA TDD signal. Since this signal is not used anymore in any deployment, it is not clear why such requirement would need to be applicable. This CR is proposing to remove this requirement for recently introduced CS16/17 base stations, at the same time discussion is needed if such requirement make sense for other capability sets.

**Discussion:**

The contribution was discussed during email thread [96e][303] NR\_NewRAT\_Conformance\_BS. The discussion was recorded in R4-2012719.

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

**R4-2011408 CR to 37.141: Correction to applicability of additional BC3 requirement (Rel-16)**

*Type: CR For: Agreement  
 37.141 v16.6.0 CR-0948 Cat: A (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

On top of generic Tx IM and blocking requirement, there is additional requirement for BC3 base stations which uses 1.28Mcps UTRA TDD signal. Since this signal is not used anymore in any deployment, it is not clear why such requirement would need to be applicable. This CR is proposing to remove this requirement for recently introduced CS16/17 base stations, at the same time discussion is needed if such requirement make sense for other capability sets.

**Discussion:**

The contribution was discussed during email thread [96e][303] NR\_NewRAT\_Conformance\_BS. The discussion was recorded in R4-2012719.

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

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

**R4-2011301 Out of band CLTA maximum height and adjacent band site solutions**

*Type: discussion For: Discussion  
 Source: Huawei*

**Abstract:**

Discussion on Out of band CLTA definition and also adjacent band co-location site solutions.

**Discussion:**

The contribution was discussed during email thread [96e][303] NR\_NewRAT\_Conformance\_BS. The discussion was recorded in R4-2012719.

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

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

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

**R4-2010284 Clarification CR on NR-FR2-TM3.1**

*Type: CR For: Agreement  
 38.141-2 v15.6.0 CR-0209 Cat: F (Rel-15)  
  
 Source: Samsung*

**Abstract:**

In NR-FR2-TM3.1 the physical channel parameters configuration is refered to table 4.9.2.2.1-1 with QPSK modulation order, which may bring in the confusion

**Discussion:**

The contribution was discussed during email thread [96e][303] NR\_NewRAT\_Conformance\_BS. The discussion was recorded in R4-2012719.

**Decision:** The document was **revised to R4-2012590**.

**R4-2012590 Clarification CR on NR-FR2-TM3.1**

*Type: CR For: Agreement  
 38.141-2 v15.6.0 CR-0209 rev 1 Cat: F (Rel-15)  
  
 Source: Samsung*

(Replaces R4-2010284)

**Abstract:**

In NR-FR2-TM3.1 the physical channel parameters configuration is refered to table 4.9.2.2.1-1 with QPSK modulation order, which may bring in the confusion

**Discussion:**

The contribution was discussed during email thread [96e][303] NR\_NewRAT\_Conformance\_BS. The discussion was recorded in R4-2012719.

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

**R4-2010285 Clarification CR on NR-FR2-TM3.1**

*Type: CR For: Agreement  
 38.141-2 v16.4.0 CR-0210 Cat: A (Rel-16)  
  
 Source: Samsung*

**Abstract:**

In NR-FR2-TM3.1 the physical channel parameters configuration is refered to table 4.9.2.2.1-1 with QPSK modulation order, which may bring in the confusion

**Discussion:**

The contribution was discussed during email thread [96e][303] NR\_NewRAT\_Conformance\_BS. The discussion was recorded in R4-2012719.

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

**R4-2010492 CR for TS 38.141-2: NR FR2 test model 2**

*Type: CR For: Agreement  
 38.141-2 v15.6.0 CR-0211 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

From the context of test procedure for total power dynamic range, “NR-FR2-TM2 with highest modulation order supported” means test model with 16 QAM or QPSK. However the 16 QAM or QPSK is not well defined in the corresponding test model.

**Discussion:**

The contribution was discussed during email thread [96e][303] NR\_NewRAT\_Conformance\_BS. The discussion was recorded in R4-2012719.

**Decision:** The document was **revised to R4-2012591**.

**R4-2012591 CR for TS 38.141-2: NR FR2 test model 2**

*Type: CR For: Agreement  
 38.141-2 v15.6.0 CR-0211 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2010492)

**Abstract:**

From the context of test procedure for total power dynamic range, “NR-FR2-TM2 with highest modulation order supported” means test model with 16 QAM or QPSK. However the test model for 16 QAM or QPSK is not well defined.

**Discussion:**

The contribution was discussed during email thread [96e][303] NR\_NewRAT\_Conformance\_BS. The discussion was recorded in R4-2012719.

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

**R4-2010493 CR for TS 38.141-2: NR FR2 test model 2**

*Type: CR For: Agreement  
 38.141-2 v16.4.0 CR-0212 Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

From the context of test procedure for total power dynamic range, “NR-FR2-TM2 with highest modulation order supported” means test model with 16 QAM or QPSK. However the test model for 16 QAM or QPSK is not well defined.

**Discussion:**

The contribution was discussed during email thread [96e][303] NR\_NewRAT\_Conformance\_BS. The discussion was recorded in R4-2012719.

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

**R4-2011388 CR to TS 37.145-2: Out-of-band co-location test antenna definition**

*Type: CR For: Agreement  
 37.145-2 v15.7.0 CR-0240 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

There exist a few cases where testing becomes impractical with the current CLTA definition.

**Discussion:**

The contribution was discussed during email thread [96e][303] NR\_NewRAT\_Conformance\_BS. The discussion was recorded in R4-2012719.

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

**R4-2011389 CR to TS 37.145-2: Out-of-band co-location test antenna definition**

*Type: CR For: Agreement  
 37.145-2 v16.4.0 CR-0241 Cat: A (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

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

**R4-2011391 Discussions on CLTA maximum height**

*Type: other For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This document discusses the open issues and presents our views including possible solutions.

**Discussion:**

The contribution was discussed during email thread [96e][303] NR\_NewRAT\_Conformance\_BS. The discussion was recorded in R4-2012719.

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

**R4-2011392 CR to TS 38.141-2: Out-of-band co-location test antenna definition**

*Type: CR For: Agreement  
 38.141-2 v15.6.0 CR-0221 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

There exist cases where testing becomes impractical with the current CLTA definition.

**Discussion:**

The contribution was discussed during email thread [96e][303] NR\_NewRAT\_Conformance\_BS. The discussion was recorded in R4-2012719.

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

**R4-2011393 CR to TS 38.141-2: Out-of-band co-location test antenna definition**

*Type: CR For: Agreement  
 38.141-2 v16.4.0 CR-0222 Cat: A (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

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

**R4-2011394 On correlation between wanted and in-band unwanted emissions**

*Type: other For: Discussion  
 38.141-2 v..  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This document has addressed the suggestion to consider first nulls in the proposed approach that is used to determine whether unwanted emissions are correlated with the wanted radiation.

**Discussion:**

The contribution was discussed during email thread [96e][303] NR\_NewRAT\_Conformance\_BS. The discussion was recorded in R4-2012719.

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

**R4-2009779 Discussion on out of band CLTA maximum height**

*Type: discussion For: Discussion  
 Source: CATT*

**Discussion:**

The contribution was discussed during email thread [96e][303] NR\_NewRAT\_Conformance\_BS. The discussion was recorded in R4-2012719.

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

**R4-2009780 CR for TS 38.141-2: Correction on half-power vertical beam width for the out of band CLTA**

*Type: CR For: Agreement  
 38.141-2 v15.6.0 CR-0201 Cat: F (Rel-15)  
  
 Source: CATT*

**Abstract:**

When the out of band is much lower than the operating band of test object antenna, the existing half-power vertical beam width definition for the out of band CLTA will result in unrealistic antenna height.

**Discussion:**

The contribution was discussed during email thread [96e][303] NR\_NewRAT\_Conformance\_BS. The discussion was recorded in R4-2012719.

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

**R4-2009781 CR for 38.141-2: correction on half-power vertical beam width for the out of band CLTA**

*Type: CR For: Agreement  
 38.141-2 v16.4.0 CR-0202 Cat: A (Rel-16)  
  
 Source: CATT*

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

**R4-2009967 On the criteria for selecting a proper CLTA**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Co-location antenna physical size considerations

**Discussion:**

The contribution was discussed during email thread [96e][303] NR\_NewRAT\_Conformance\_BS. The discussion was recorded in R4-2012719.

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

**R4-2009968 CR to TS 38.141-2: Improvement of out-of-band CLTA characteristics**

*Type: CR For: Agreement  
 38.141-2 v15.6.0 CR-0207 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

Correction to the CLTA length

**Discussion:**

The contribution was discussed during email thread [96e][303] NR\_NewRAT\_Conformance\_BS. The discussion was recorded in R4-2012719.

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

**R4-2009969 CR to TS 38.141-2: Improvement of out-of-band CLTA characteristics**

*Type: CR For: Agreement  
 38.141-2 v16.4.0 CR-0208 Cat: A (Rel-16)  
  
 Source: Ericsson*

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

**R4-2010846 Increase of step size for FR2 in-band blocking conformance test**

*Type: CR For: Agreement  
 38.141-2 v15.6.0 CR-0215 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

The in-band blocking conformance test states that the test should be carried out in steps of 1MHz for both FR1 and FR2.

For FR2, the width of the operating band together with ΔfOOB is large and testing in steps of 1MHz will lead to excessive testing, running into tens of thousands of steps when considering the full band and all test directions. Stepping in the order of each channel bandwidth will give the same amount of test coverage.

**Discussion:**

The contribution was discussed during email thread [96e][303] NR\_NewRAT\_Conformance\_BS. The discussion was recorded in R4-2012719.

**Decision:** The document was **revised to R4-2012592**.

**R4-2012592 Increase of step size for FR2 in-band blocking conformance test**

*Type: CR For: Agreement  
 38.141-2 v15.6.0 CR-0215 rev 1 Cat: F (Rel-15)  
  
 Source: Ericsson*

(Replaces R4-2010846)

**Abstract:**

The in-band blocking conformance test states that the test should be carried out in steps of 1MHz for both FR1 and FR2.

For FR2, the width of the operating band together with ΔfOOB is large and testing in steps of 1MHz will lead to excessive testing, running into tens of thousands of steps when considering the full band and all test directions. Stepping in the order of each channel bandwidth will give the same amount of test coverage.

**Discussion:**

The contribution was discussed during email thread [96e][303] NR\_NewRAT\_Conformance\_BS. The discussion was recorded in R4-2012719.

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

**R4-2010847 Increase of step size for FR2 in-band blocking conformance test**

*Type: CR For: Agreement  
 38.141-2 v16.4.0 CR-0216 Cat: A (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

The in-band blocking conformance test states that the test should be carried out in steps of 1MHz for both FR1 and FR2.

For FR2, the width of the operating band together with ΔfOOB is large and testing in steps of 1MHz will lead to excessive testing, running into tens of thousands of steps when considering the full band and all test directions. Stepping in the order of each channel bandwidth will give the same amount of test coverage.

**Discussion:**

The contribution was discussed during email thread [96e][303] NR\_NewRAT\_Conformance\_BS. The discussion was recorded in R4-2012719.

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

### 4.6 BS EMC [NR\_newRAT-Core]

#### 4.6.1 Core requirements [NR\_newRAT-Core]

##### 4.6.1.1 Emission requirements [NR\_newRAT-Core]

##### 4.6.1.2 Immunity requirements [NR\_newRAT-Core]

#### 4.6.2 Performance requirements [NR\_newRAT-Perf]

**R4-2011264 CR to TS 38.113: direct field strength measurements for the EMC RE, Rel-15**

*Type: CR For: Agreement  
 38.113 v15.10.0 CR-0021 Cat: F (Rel-15)  
  
 Source: Huawei*

**Abstract:**

Direct field strength approach is proposed to measure EMC radiated emission from the enclosure port of BS equipped with the antenna connectors / TAB connectors. Referring to meeting minutes in R4-2008873, there were comments received from one company to the previous version of this CR in R4-2008727.

In this updated CR, comments to the site valdation were addressed. EMC site validation is not within RAN4 work area and is subject to external specifications such as CISPR 32. Therefore, related text mentioning site validation was removed from the CR to avoid unnecessary confusions.

Note 5 and 6 in section clause 8.2.1.3 were provided as background for the requirement limit derivation. This kind of information could be also captured in the OTA testing TR 37.941, instead.

Last meeting, there was also some discussion on the potential TR inputs on the EMC test site validation. Before providing any such inputs to the TR (with the TR 37.941 being proposed as the placeholder), we need to first have the TS CR approver – otherwise any input to TR is not needed.

**Discussion:**

The contribution was discussed during email thread [96e][304] NR\_EMC. The discussion was recorded in R4-2012717.

**Decision:** The document was **revised to R4-2012577**.

**R4-2012577 CR to TS 38.113: direct field strength measurements for the EMC RE, Rel-15**

*Type: CR For: Agreement  
 38.113 v15.10.0 CR-0021 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei*

(Replaces R4-2011264)

**Abstract:**

Direct field strength approach is proposed to measure EMC radiated emission from the enclosure port of BS equipped with the antenna connectors / TAB connectors. Referring to meeting minutes in R4-2008873, there were comments received from one company to the previous version of this CR in R4-2008727.

In this updated CR, comments to the site valdation were addressed. EMC site validation is not within RAN4 work area and is subject to external specifications such as CISPR 32. Therefore, related text mentioning site validation was removed from the CR to avoid unnecessary confusions.

Note 5 and 6 in section clause 8.2.1.3 were provided as background for the requirement limit derivation. This kind of information could be also captured in the OTA testing TR 37.941, instead.

Last meeting, there was also some discussion on the potential TR inputs on the EMC test site validation. Before providing any such inputs to the TR (with the TR 37.941 being proposed as the placeholder), we need to first have the TS CR approver – otherwise any input to TR is not needed.

**Discussion:**

The contribution was discussed during email thread [96e][304] NR\_EMC. The discussion was recorded in R4-2012717.

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

**R4-2011265 CR to TS 38.113: direct field strength measurements for the EMC RE, Rel-16**

*Type: CR For: Agreement  
 38.113 v16.0.0 CR-0022 Cat: A (Rel-16)  
  
 Source: Huawei*

**Abstract:**

Direct field strength approach is proposed to measure EMC radiated emission from the enclosure port of BS equipped with the antenna connectors / TAB connectors. Referring to meeting minutes in R4-2008873, there were comments received from one company to the previous version of this CR in R4-2008727.

In this updated CR, comments to the site valdation were addressed. EMC site validation is not within RAN4 work area and is subject to external specifications such as CISPR 32. Therefore, related text mentioning site validation was removed from the CR to avoid unnecessary confusions.

Note 5 and 6 in section clause 8.2.1.3 were provided as background for the requirement limit derivation. This kind of information could be also captured in the OTA testing TR 37.941, instead.

Last meeting, there was also some discussion on the potential TR inputs on the EMC test site validation. Before providing any such inputs to the TR (with the TR 37.941 being proposed as the placeholder), we need to first have the TS CR approver – otherwise any input to TR is not needed.

**Discussion:**

The contribution was discussed during email thread [96e][304] NR\_EMC. The discussion was recorded in R4-2012717.

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

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

**R4-2012032 Email discussion summary for [95e][201] NR\_NewRAT\_RRM\_Core**

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

**Discussion:**

The contribution summarized email discussion thread [96e][201] NR\_NewRAT\_RRM\_Core. The topic areas for discussion were RRM Core maintenance. The email thread was moderated by Xizeng Dai (Huawei). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

*1st round email discussion conclusions*

**Topic #1: UE measurement capability**

**Topic #2: Signaling characteristics: Scell activation/de-activation**

Issue 2-2: Whether and how RAN4 would specify the starting point and ending point of interruption range for SCell de-activation

Agreement:

* No ACK/NACK is needed for the case of timer-based deactivation, and hence the deactivation timelines can be different for the two cases.
* Update SCell deactivation requirements as in Table 1.

Table 1: Suggested SCell deactivation requirements

|  |  |  |
| --- | --- | --- |
|  | Delay | Start of interruption window |
| MAC CE based | n+THARQ+3ms | Between (n+1+ THARQ) and (n+1+ THARQ+3ms) |
| Timer based | n+3ms | Between (n+1) and (n+1+3ms) |

**Decision:** The document was **revised to R4-2012202**.

**R4-2012202 Email discussion summary for [95e][201] NR\_NewRAT\_RRM\_Core**

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

(Replaces R4-2012032)

**Discussion:**

The contribution summarized email discussion thread [96e][201] NR\_NewRAT\_RRM\_Core. The topic areas for discussion were RRM Core maintenance. The email thread was moderated by Xizeng Dai (Huawei). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

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

#### 4.7.1 UE measurement capability (38.133/36.133) [NR\_newRAT-Core]

**R4-2010030 CR on Inter-RAT RSTD measurements (section 9.4.4)**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-0962 Cat: F (Rel-15)  
  
 Source: MediaTek inc.*

**Abstract:**

In current spec., TMIB=0 when nr-LTE-SFN-Offset is provided in the E-UTRA OTDOA assistance data.

CGI reading will be needed with the condition that cellGlobalId is included in OTDOA-ReferenceCellInfo and the UE is not aware of the ECGI of this cell.

However, in LTE, if UE wants to decode control channel to acquire the DCI information for SIB1, UE had to know the occasions of PHICH which is captured in MIB. Thus, once UE needs SIB1 decoding(CGI reading), MIB decoding will be a mandatory component no matter whether nr-LTE-SFN-Offset provided or not.

**Discussion:**

The contribution was discussed during email thread [96e][201] NR\_NewRAT\_RRM\_Core. The discussion was recorded in R4-2012202.

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

**R4-2010031 CR on Inter-RAT RSTD measurements (section 9.4.4)**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0963 Cat: A (Rel-16)  
  
 Source: MediaTek inc.*

**Abstract:**

In current spec., TMIB=0 when nr-LTE-SFN-Offset is provided in the E-UTRA OTDOA assistance data.

CGI reading will be needed with the condition that cellGlobalId is included in OTDOA-ReferenceCellInfo and the UE is not aware of the ECGI of this cell.

However, in LTE, if UE wants to decode control channel to acquire the DCI information for SIB1, UE had to know the occasions of PHICH which is captured in MIB. Thus, once UE needs SIB1 decoding(CGI reading), MIB decoding will be a mandatory component no matter whether nr-LTE-SFN-Offset provided or not.

**Discussion:**

The contribution was discussed during email thread [96e][201] NR\_NewRAT\_RRM\_Core. The discussion was recorded in R4-2012202.

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

**R4-2011092 Discussion on reporting criteria in 38.133**

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

**Discussion:**

The contribution was discussed during email thread [96e][201] NR\_NewRAT\_RRM\_Core. The discussion was recorded in R4-2012202.

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

**R4-2011093 CR on reporting criteria for EN-DC in 38.133 R15**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-1047 Cat: F (Rel-15)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

The NR reporting criteria for EN-DC defined in TS 38.133 is not clear.

**Discussion:**

The contribution was discussed during email thread [96e][201] NR\_NewRAT\_RRM\_Core. The discussion was recorded in R4-2012202.

**Decision:** The document was **revised to R4-2012245**.

**R4-2012245 CR on reporting criteria for EN-DC in 38.133 R15**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-1047 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei, Hisilicon*

(Replaces R4-2011093)

**Abstract:**

The NR reporting criteria for EN-DC defined in TS 38.133 is not clear.

**Discussion:**

The contribution was discussed during email thread [96e][201] NR\_NewRAT\_RRM\_Core. The discussion was recorded in R4-2012202.

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

**R4-2012279 CR on reporting criteria for EN-DC in 38.133 R15**

*Type: other For: Agreement  
 Source: Huawei, Hisilicon*

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

**R4-2011094 CR on reporting criteria for EN-DC in 38.133 R15**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1048 Cat: A (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

The NR reporting criteria for EN-DC defined in TS 38.133 is not clear.

**Discussion:**

The contribution was discussed during email thread [96e][201] NR\_NewRAT\_RRM\_Core. The discussion was recorded in R4-2012202.

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

**R4-2011130 Correction on UE measurement capability in NR idle mode R15**

*Type: CR For: Agreement  
 36.133 v15.10.0 CR-6940 Cat: F (Rel-15)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

In LTE before NR is introduced, the 8 frequency layers includes the serving layer.

After NR carriers is introcuded, whether the 10 effective carrier frequency layers supported by UE includes serving carrier is not clear.

**Discussion:**

The contribution was discussed during email thread [96e][201] NR\_NewRAT\_RRM\_Core. The discussion was recorded in R4-2012202.

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

**R4-2011131 Correction on UE measurement capability in NR idle mode R16**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6941 Cat: A (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

In LTE before NR is introduced, the 8 frequency layers includes the serving layer.

After NR carriers is introcuded, whether the 10 effective carrier frequency layers supported by UE includes serving carrier is not clear.

**Discussion:**

The contribution was discussed during email thread [96e][201] NR\_NewRAT\_RRM\_Core. The discussion was recorded in R4-2012202.

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

**R4-2011134 CR to measurement capability for NE-DC in 36133 R15**

*Type: CR For: Agreement  
 36.133 v15.10.0 CR-6942 Cat: F (Rel-15)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

For NE-DC, the inter-RAT E-UTRA measurement are configured by NR PCell instead of LTE PSCell, and inter-frequency E-UTRA measurement are configured by LTE PSCell instead of NR PCell.

Also, E-UTRA RSTD measurement can only be configured via NR PCell via LPP which is inter-RAT measurement.

**Discussion:**

The contribution was discussed during email thread [96e][201] NR\_NewRAT\_RRM\_Core. The discussion was recorded in R4-2012202.

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

**R4-2011135 CR to measurement capability for NE-DC in 36133 R16**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6943 Cat: A (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

For NE-DC, the inter-RAT E-UTRA measurement are configured by NR PCell instead of LTE PSCell, and inter-frequency E-UTRA measurement are configured by LTE PSCell instead of NR PCell.

Also, E-UTRA RSTD measurement can only be configured via NR PCell via LPP which is inter-RAT measurement.

**Discussion:**

The contribution was discussed during email thread [96e][201] NR\_NewRAT\_RRM\_Core. The discussion was recorded in R4-2012202.

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

**R4-2009904 CR on FR2 measurement capability for R15**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-0955 Cat: F (Rel-15)  
  
 Source: Apple*

**Abstract:**

The NR-DC mode is missing in current UE FR2 measurement capabilty.

**Discussion:**

The contribution was discussed during email thread [96e][201] NR\_NewRAT\_RRM\_Core. The discussion was recorded in R4-2012202.

**Decision:** The document was **revised to R4-2012066**.

**R4-2012066 CR on FR2 measurement capability for R15**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-0955 rev 1 Cat: F (Rel-15)  
  
 Source: Apple*

(Replaces R4-2009904)

**Abstract:**

The NR-DC mode is missing in current UE FR2 measurement capabilty.

**Discussion:**

The contribution was discussed during email thread [96e][201] NR\_NewRAT\_RRM\_Core. The discussion was recorded in R4-2012202.

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

**R4-2009905 CR on FR2 measurement capability for R16**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0956 Cat: A (Rel-16)  
  
 Source: Apple*

**Abstract:**

The NR-DC mode is missing in current UE FR2 measurement capabilty.

**Discussion:**

The contribution was discussed during email thread [96e][201] NR\_NewRAT\_RRM\_Core. The discussion was recorded in R4-2012202.

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

#### 4.7.2 Connected state mobility (38.133/36.133) [NR\_newRAT-Core]

#### 4.7.3 Signaling characteristics (38.133/36.133) [NR\_newRAT-Core]

**R4-2010032 CR on active BWP switch in R15**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-0964 Cat: F (Rel-15)  
  
 Source: MediaTek inc.*

**Abstract:**

UE could be configured with one or more than one BWP configuration(s) and different BWP switch types, e.g. DCI based, timer based and RRC based. However, in current specificaiton, the application scenarios of the number of BWP configurations is not clear in different BWP switch types. Thus, to be accurate, the sentences in clasue 8.6 TS 38.133 shall be modified.

**Discussion:**

The contribution was discussed during email thread [96e][201] NR\_NewRAT\_RRM\_Core. The discussion was recorded in R4-2012202.

**Decision:** The document was **revised to R4-2012280**.

**R4-2012280 CR on active BWP switch in R15**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-0964 rev 1 Cat: F (Rel-15)  
  
 Source: MediaTek inc.*

(Replaces R4-2010032)

**Abstract:**

UE could be configured with one or more than one BWP configuration(s) and different BWP switch types, e.g. DCI based, timer based and RRC based. However, in current specificaiton, the application scenarios of the number of BWP configurations is not clear in different BWP switch types. Thus, to be accurate, the sentences in clasue 8.6 TS 38.133 shall be modified.

**Discussion:**

The contribution was discussed during email thread [96e][201] NR\_NewRAT\_RRM\_Core. The discussion was recorded in R4-2012202.

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

**R4-2010033 CR on active BWP switch in R16**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0965 Cat: A (Rel-16)  
  
 Source: MediaTek inc.*

**Abstract:**

UE could be configured with one or more than one BWP configuration(s) and different BWP switch types, e.g. DCI based, timer based and RRC based. However, in current specificaiton, the application scenarios of the number of BWP configurations is not clear in different BWP switch types. Thus, to be accurate, the sentences in clasue 8.6 TS 38.133 shall be modified.

**Discussion:**

The contribution was discussed during email thread [96e][201] NR\_NewRAT\_RRM\_Core. The discussion was recorded in R4-2012202.

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

**R4-2010034 Remaining issues on signalling characteristics**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

The contribution was discussed during email thread [96e][201] NR\_NewRAT\_RRM\_Core. The discussion was recorded in R4-2012202.

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

**R4-2010116 CR to T parameters in 8.3.2 of 38.133**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-0977 Cat: F (Rel-15)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

TFirstSSB and TFirstSSB\_MAX in the current version 38.133 spec include an entire SSB burst rather than a specific SSB associated with acitve TCI state.

**Discussion:**

The contribution was discussed during email thread [96e][201] NR\_NewRAT\_RRM\_Core. The discussion was recorded in R4-2012202.

**Decision:** The document was **postponed**.

**R4-2012064 CR to T parameters in 8.3.2 of 38.133**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1115 Cat: A (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Discussion:**

The contribution was discussed during email thread [96e][201] NR\_NewRAT\_RRM\_Core. The discussion was recorded in R4-2012202.

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

**R4-2012240 WF on Restriction of Rel-15 FR1 SCell activation delay requirement**

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

**Discussion:**

The contribution was discussed during email thread [96e][201] NR\_NewRAT\_RRM\_Core. The discussion was recorded in R4-2012202.

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

**R4-2010183 CR on Active BWP switch and Active TCI State Switching requirements - Rel15**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-0978 Cat: F (Rel-15)  
  
 Source: Apple*

**Abstract:**

Currently during RRC based active BWP switch and TCI state switch UE is not required to transmit or receive during entire switching delay. The UE needs to transmit ACK/NACK at a minimum for the received PDSCH. The restriction should start after THARQ rather than the slot when PDSCH is received. In cases where THARQ is larger than TRRCProcessing, the UE might not have chance to transmit ACK/NACK and network gets no indication of UE’s successful reception of the RRC message. Hence the requirements should apply only when THARQ ≤ TRRCProcessing .

**Discussion:**

The contribution was discussed during email thread [96e][201] NR\_NewRAT\_RRM\_Core. The discussion was recorded in R4-2012202.

**Decision:** The document was **revised to R4-2012244**.

**R4-2012244 CR on Active BWP switch and Active TCI State Switching requirements - Rel15**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-0978 rev 1 Cat: F (Rel-15)  
  
 Source: Apple*

(Replaces R4-2010183)

**Abstract:**

Currently during RRC based active BWP switch and TCI state switch UE UE behavior for case when THARQ > TRRCProcessing is captured. When THARQ > TRRCProcessing , UE would not be able to send ACK/NACK and network would not know if UE successfully received PDSCH carrying RRC message. Hence the requirements should apply only when THARQ ≤ TRRCProcessing .

**Discussion:**

The contribution was discussed during email thread [96e][201] NR\_NewRAT\_RRM\_Core. The discussion was recorded in R4-2012202.

**Decision:** The document was **postponed**.

**R4-2010184 CR on Active BWP switch and Active TCI State Switching requirements - Rel15**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0979 Cat: A (Rel-16)  
  
 Source: Apple*

**Abstract:**

Currently during RRC based active BWP switch and TCI state switch UE UE behavior for case when THARQ > TRRCProcessing is captured. When THARQ > TRRCProcessing , UE would not be able to send ACK/NACK and network would not know if UE successfully received PDSCH carrying RRC message. Hence the requirements should apply only when THARQ ≤ TRRCProcessing .

**Discussion:**

The contribution was discussed during email thread [96e][201] NR\_NewRAT\_RRM\_Core. The discussion was recorded in R4-2012202.

**Decision:** The document was **postponed**.

**R4-2010206 CR for SCell activation delay in FR2 in R15**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-0985 Cat: F (Rel-15)  
  
 Source: MediaTek inc.*

**Abstract:**

Amendments on the description of TFineTiming , in response to the agreement in RAN4#93:

Agreement

Fine time tracking will not depend on the SP CSI-RS activation used for CSI reporting

**Discussion:**

The contribution was discussed during email thread [96e][201] NR\_NewRAT\_RRM\_Core. The discussion was recorded in R4-2012202.

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

**R4-2010207 CR for SCell activation delay in FR2 in R16**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0986 Cat: A (Rel-16)  
  
 Source: MediaTek inc.*

**Discussion:**

The contribution was discussed during email thread [96e][201] NR\_NewRAT\_RRM\_Core. The discussion was recorded in R4-2012202.

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

**R4-2010208 CR on TCI state switch delay in R15**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-0987 Cat: F (Rel-15)  
  
 Source: MediaTek inc.*

**Abstract:**

On 8.10.3,

T L1-RSRP is redundant in FR1.

On 8.10.6,

For active TCI state list update, TOk is redundant and equals to 1, because the new target TCI state should not be in the old active TCI state list. Otherwise, this update is not necessary.

**Discussion:**

The contribution was discussed during email thread [96e][201] NR\_NewRAT\_RRM\_Core. The discussion was recorded in R4-2012202.

**Decision:** The document was **revised to R4-2012239**.

**R4-2012239 CR on TCI state switch delay in R15**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-0987 rev 1 Cat: F (Rel-15)  
  
 Source: MediaTek inc., ZTE*

(Replaces R4-2010208)

**Abstract:**

On 8.10.3,

T L1-RSRP is redundant in FR1.

**Discussion:**

The contribution was discussed during email thread [96e][201] NR\_NewRAT\_RRM\_Core. The discussion was recorded in R4-2012202.

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

**R4-2010209 CR on TCI state switch delay in R16**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0988 Cat: A (Rel-16)  
  
 Source: MediaTek inc.*

**Abstract:**

On 8.10.3,

T L1-RSRP is redundant in FR1.

**Discussion:**

The contribution was discussed during email thread [96e][201] NR\_NewRAT\_RRM\_Core. The discussion was recorded in R4-2012202.

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

**R4-2011136 Discussion on remaining issues in SCell activation and BWP switching**

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

**Discussion:**

The contribution was discussed during email thread [96e][201] NR\_NewRAT\_RRM\_Core. The discussion was recorded in R4-2012202.

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

**R4-2011137 CR on SCell activation requirements R15**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-1071 Cat: F (Rel-15)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

Current SCell deactivation requirements have some issues

The delay and interruption is defined same for MAC CE based and timer based, but for timer based there is no HARQ-ACK feedback.

The way how interruption window is defined is not aligned with latest requirement for activation.

The interruption due to SCell deactivation cannot be X+SMTC duration for intra-band case, as AGC is not involved in deactivation.

**Discussion:**

The contribution was discussed during email thread [96e][201] NR\_NewRAT\_RRM\_Core. The discussion was recorded in R4-2012202.

**Decision:** The document was **revised to R4-2012241**.

**R4-2012241 CR on SCell activation requirements R15**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-1071 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei, Hisilicon*

(Replaces R4-2011137)

**Abstract:**

Current SCell deactivation requirements have some issues

The delay is defined same for MAC CE based and timer based, but for timer based there is no HARQ-ACK feedback.

The way how interruption window is defined is not aligned with latest requirement for activation.

**Discussion:**

The contribution was discussed during email thread [96e][201] NR\_NewRAT\_RRM\_Core. The discussion was recorded in R4-2012202.

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

**R4-2011138 CR on SCell activation requirements R16**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1072 Cat: A (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

Current SCell deactivation requirements have some issues

The delay is defined same for MAC CE based and timer based, but for timer based there is no HARQ-ACK feedback.

The way how interruption window is defined is not aligned with latest requirement for activation.

**Discussion:**

The contribution was discussed during email thread [96e][201] NR\_NewRAT\_RRM\_Core. The discussion was recorded in R4-2012202.

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

**R4-2011139 CR on BWP switching delay requirements R15**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-1073 Cat: F (Rel-15)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

DCI based BWP switching can be triggered by cross-carrier scheduling. However, cross-carrier scheduling scenario was not considered when Rel-15 BWP switching requirements were specified. The existing Rel-15 requirements cannot be directly applied for the cross-carrier scheduling scenario due to signalling delay for UE internal cross-CC communication and receive time difference.

**Discussion:**

The contribution was discussed during email thread [96e][201] NR\_NewRAT\_RRM\_Core. The discussion was recorded in R4-2012202.

**Decision:** The document was **revised to R4-2012242**.

**R4-2012242 CR on BWP switching delay requirements R15**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-1073 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei, Hisilicon*

(Replaces R4-2011139)

**Abstract:**

DCI based BWP switching can be triggered by cross-carrier scheduling. However, cross-carrier scheduling scenario was not considered when Rel-15 BWP switching requirements were specified. The existing Rel-15 requirements cannot be directly applied for the cross-carrier scheduling scenario due to signalling delay for UE internal cross-CC communication and receive time difference.

**Discussion:**

The contribution was discussed during email thread [96e][201] NR\_NewRAT\_RRM\_Core. The discussion was recorded in R4-2012202.

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

**R4-2012232 CR on BWP switching delay requirements R16**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1117 Cat: A (Rel-16)  
  
 Source: ZTE*

**Abstract:**

DCI based BWP switching can be triggered by cross-carrier scheduling. However, cross-carrier scheduling scenario was not considered when Rel-15 BWP switching requirements were specified. The existing Rel-15 requirements cannot be directly applied for the cross-carrier scheduling scenario due to signalling delay for UE internal cross-CC communication and receive time difference.

**Discussion:**

The contribution was discussed during email thread [96e][201] NR\_NewRAT\_RRM\_Core. The discussion was recorded in R4-2012202.

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

**R4-2011305 CR to 38.133 correction to TCI state switch delay requirements**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1095 Cat: A (Rel-16)  
  
 Source: ZTE*

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

**R4-2011306 CR to 38.133: Correction to RRC basd BWP switch delay requirements**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-1096 Cat: F (Rel-15)  
  
 Source: ZTE*

**Abstract:**

In Rel-15 TS 38.133, the RRC based BWP switching delay is defined as time from the beginning of DL slot n (blue) containing RRC command and a DL/UL slot right after a time duration in the units of ms. So if new BWP and old BWP has different SCS, the requirements is unclear.

Based on old BWP the purple slot is the slot right have delay duration. However, on new BWP it is not clear whether yellow slot or green slot is allowed for transmission/reception.

**Discussion:**

The contribution was discussed during email thread [96e][201] NR\_NewRAT\_RRM\_Core. The discussion was recorded in R4-2012202.

**Decision:** The document was **revised to R4-2012243**.

**R4-2012243 CR to 38.133: Correction to RRC basd BWP switch delay requirements**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-1096 rev 1 Cat: F (Rel-15)  
  
 Source: ZTE*

(Replaces R4-2011306)

**Abstract:**

In Rel-15 TS 38.133, the RRC based BWP switching delay is defined as time from the beginning of DL slot n (blue) containing RRC command and a DL/UL slot right after a time duration in the units of ms. So if new BWP and old BWP has different SCS, the requirements is unclear.

Based on old BWP the purple slot is the slot right have delay duration. However, on new BWP it is not clear whether yellow slot or green slot is allowed for transmission/reception.

**Discussion:**

The contribution was discussed during email thread [96e][201] NR\_NewRAT\_RRM\_Core. The discussion was recorded in R4-2012202.

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

**R4-2011307 CR to 38.133 correction to RRC based BWP switch delay requirements**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1097 Cat: A (Rel-16)  
  
 Source: ZTE*

**Discussion:**

The contribution was discussed during email thread [96e][201] NR\_NewRAT\_RRM\_Core. The discussion was recorded in R4-2012202.

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

**R4-2009601 CR on Active BWP switch and Active TCI State Switching requirements - Rel15**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-0915 Cat: F (Rel-15)  
  
 Source: Apple*

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

**R4-2009602 CR on Active BWP switch and Active TCI State Switching requirements - Rel16**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0916 Cat: A (Rel-16)  
  
 Source: Apple*

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

**R4-2009803 CR for TS38.133 Rel-16, Corrction for SCell activation delay requirement**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0931 Cat: F (Rel-16)  
  
 Source: CATT*

**Abstract:**

A function of max{} is missed in 8.3.2SCell Activation Delay Requirement for Deactivated SCell.

**Discussion:**

The contribution was discussed during email thread [96e][201] NR\_NewRAT\_RRM\_Core. The discussion was recorded in R4-2012202.

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

**R4-2009902 CR on SCell deactivation requirement for R15**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-0953 Cat: F (Rel-15)  
  
 Source: Apple*

**Abstract:**

The interruption duration may cause that the ending point of interruption exceed the interruption window range in SCell deactivation requirement, and therefore the interrutption window definition for SCell deactivation shall be revised.

**Discussion:**

The contribution was discussed during email thread [96e][201] NR\_NewRAT\_RRM\_Core. The discussion was recorded in R4-2012202.

**Decision:** The document was **merged**.

**R4-2009903 CR on SCell deactivation requirement for R16**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0954 Cat: F (Rel-16)  
  
 Source: Apple*

**Abstract:**

The interruption duration may cause that the ending point of interruption exceed the interruption window range in SCell deactivation requirement, and therefore the interrutption window definition for SCell deactivation shall be revised.

**Discussion:**

The contribution was discussed during email thread [96e][201] NR\_NewRAT\_RRM\_Core. The discussion was recorded in R4-2012202.

**Decision:** The document was **merged**.

**R4-2009906 Further discussion on R15 BWP switching delay requirement**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: Apple*

**Discussion:**

The contribution was discussed during email thread [96e][201] NR\_NewRAT\_RRM\_Core. The discussion was recorded in R4-2012202.

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

**R4-2011304 CR to 38.133: Correction to TCI state switch delay requirements**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-1094 Cat: F (Rel-15)  
  
 Source: ZTE*

**Abstract:**

In Rel-15 TS 38.133, TL1-RSRP for MAC-CE based TCI state switch delay is specified as follows.

Where T L1-RSRP is the time for L1-RSRP measurement for Rx beam refinement, …

TL1-RSRP\_Measurement\_Period\_SSB = 0 for SSB in FR2 and TL1-RSRP\_Measurement\_Period\_CSI-RS = 0 for CSI-RS in FR2, provided that the TCI state switching involves QCL-TypeA, QCL-TypeB or QCL-TypeC only.

There are two issues with current requirements.

TL1-RSRP for SSB in FR1 and for CSI-RS in FR1 should be 0 since there is no Rx beam refinement being needed in FR1. However extra unecessary delay is introduced for TCI state switch in FR1 with current requirements.

The structure of the requirements looks like TL1-RSRP\_Measurement\_Period\_SSB and TL1-RSRP\_Measurement\_Period\_CSI-RS are re-specifed for some use cases, which shouldn’t be.

**Discussion:**

The contribution was discussed during email thread [96e][201] NR\_NewRAT\_RRM\_Core. The discussion was recorded in R4-2012202.

**Decision:** The document was **merged**.

#### 4.7.4 Other requirements [NR\_newRAT-Core]

**R4-2011109 Correction to inter-RAT measurement on NR serving carrier**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-1061 Cat: F (Rel-15)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

In TS 36.133 clause 8.17.4.1 it is specified that the when UE is configured with EN-DC the intra-RAT NR measurement on NR serving carrier should obey requirements for NR intra-frequency measurements. On the other hand. Intra-frequency measurement shall be performed without MG if SSB

Is completely contained by active BWP. As a result, it implies that intra-RAT measurement on NR serving carrier shall also be performed without MG in some cases.

However, It conflicts with the calculation of CSSFoutside\_gap given in 38.133. cl. 9.1.5.1. One can observe that in RAN4’s understanding only intra-frequency meansurements are considered in CSSFoutside\_gap in Rel-15. Then UE don’t know how to calculate CSSF for inter-RAT NR measurments on serving carriers. Measurement delay requirement for inter-RAT measurement on serving carrier is unclear.

The carrier-specific scaling factor CSSFoutside\_gap,i for measurement object i derived in this chapter is applied to following measurement types:

-Intra-frequency measurement with no measurement gap in clause 9.2.5, when none of the SMTC occasions of this intra-frequency measurement object are overlapped by the measurement gap.

-Intra-frequency measurement with no measurement gap in clause 9.2.5, when part of the SMTC occasions of this intra-frequency measurement object are overlapped by the measurement gap.

UE is expected to conduct the measurement of this measurement object i only outside the measurement gaps.

For UE configured with the E-UTRA-NR dual connectivity operation, the carrier-specific scaling factor CSSFoutside\_gap,i for intra-frequency SSB-based measurements performed outside measurements gaps will be as specified in Table 9.1.5.1.1-1.

**Discussion:**

The contribution was discussed during email thread [96e][201] NR\_NewRAT\_RRM\_Core. The discussion was recorded in R4-2012202.

**Decision:** The document was **postponed**.

**R4-2011110 Correction to inter-RAT measurement on NR serving carrrier\_r16**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1062 Cat: A (Rel-16)  
  
 Source: Huawei, Hisilicon*

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

**R4-2011132 CR on correction to CSSF within gap R15**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-1069 Cat: F (Rel-15)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

There are some errors in the descriptions about which MOs are candidate for gap based measurement for caculation of CSSF within gap:

For EN-DC, it is mentioned inter-RAT measurement configured by PSCell is candidate, but in EN-DC PSCell cannot configure any inter-RAT measurement.

For NR SA, it is mentioned inter-frequency SFTD is candiate, but inter-frequency SFTD can be measrued without gap (interruption based), in which case the MO should not be considered as candidate.

**Discussion:**

The contribution was discussed during email thread [96e][201] NR\_NewRAT\_RRM\_Core. The discussion was recorded in R4-2012202.

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

**R4-2011133 CR on correction to CSSF within gap R16**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1070 Cat: A (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

There are some errors in the descriptions about which MOs are candidate for gap based measurement for caculation of CSSF within gap:

For EN-DC, it is mentioned inter-RAT measurement configured by PSCell is candidate, but in EN-DC PSCell cannot configure any inter-RAT measurement.

For NR SA, it is mentioned inter-frequency SFTD is candiate, but inter-frequency SFTD can be measrued without gap (interruption based), in which case the MO should not be considered as candidate.

**Discussion:**

The contribution was discussed during email thread [96e][201] NR\_NewRAT\_RRM\_Core. The discussion was recorded in R4-2012202.

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

**R4-2011308 CR to 38.133: Correction to interruption requirements for per-FR gap in FR2**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-1098 Cat: F (Rel-15)  
  
 Source: ZTE*

**Abstract:**

In TS 38.133, the reference time for per-FR gap in FR2 in NE-DC or NR-DC is based on refServCellIndicator.

refServCellIndicator

Indicates the serving cell whose SFN and subframe are used for gap calculation for this gap pattern. Value pCell corresponds to the PCell, pSCell corresponds to the PSCell, and mcg-FR2 corresponds to a serving cell on FR2 frequency in MCG.

NOTE 1: For gapFR2 configuration, for the UE in NE-DC or NR-DC, the SFN and subframe of the serving cell indicated by the refServCellIndicator in gapFR2 is used in the gap calculation. Otherwise, the SFN and subframe of a serving cell on FR2 frequency is used in the gap calculation

However in TS 38.133, the interruption of measurement gap is based on reference time of FR2 serving cell for per-FR gap in FR2 in NE-DC or NR-DC. No interruption requirements are specified if reference time for per-FR gap in FR2 is based on FR1 serving cell.

**Discussion:**

The contribution was discussed during email thread [96e][201] NR\_NewRAT\_RRM\_Core. The discussion was recorded in R4-2012202.

**Decision:** The document was **revised to R4-2012065**.

**R4-2012065 CR to 38.133: Correction to interruption requirements for per-FR gap in FR2**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-1098 rev 1 Cat: F (Rel-15)  
  
 Source: ZTE*

(Replaces R4-2011308)

**Abstract:**

In TS 38.331, the reference time for per-FR gap in FR2 in NE-DC or NR-DC is based on refServCellIndicator.

refServCellIndicator

Indicates the serving cell whose SFN and subframe are used for gap calculation for this gap pattern. Value pCell corresponds to the PCell, pSCell corresponds to the PSCell, and mcg-FR2 corresponds to a serving cell on FR2 frequency in MCG.

NOTE 1: For gapFR2 configuration, for the UE in NE-DC or NR-DC, the SFN and subframe of the serving cell indicated by the refServCellIndicator in gapFR2 is used in the gap calculation. Otherwise, the SFN and subframe of a serving cell on FR2 frequency is used in the gap calculation

However in TS 38.133, the interruption of measurement gap is based on reference time of FR2 serving cell for per-FR gap in FR2 in NE-DC or NR-DC. No interruption requirements are specified if reference time for per-FR gap in FR2 is based on FR1 serving cell.

**Discussion:**

The contribution was discussed during email thread [96e][201] NR\_NewRAT\_RRM\_Core. The discussion was recorded in R4-2012202.

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

**R4-2011309 CR to 38.133 correction to interruption requirements for per-FR gap in FR2**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1099 Cat: A (Rel-16)  
  
 Source: ZTE*

**Discussion:**

The contribution was discussed during email thread [96e][201] NR\_NewRAT\_RRM\_Core. The discussion was recorded in R4-2012202.

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

**R4-2009804 CR for TS38.133 Rel-15, Correction for RRM core requirements**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-0932 Cat: F (Rel-15)  
  
 Source: CATT*

**Abstract:**

1. In sub-clause 3.6.2.4, “with 1 in PCell” is not correct.

2. For NR FR2- NR FR1 Handover in clause 6.1.1.3, “intra-frequency” is not applied.

3. Abbreviations “PTAG” and “STAG” are incorrect.

4. Some formulas in RLM/BFD/CBD/L1-RSRP measurement requirements are incorrect.

**Discussion:**

The contribution was discussed during email thread [96e][201] NR\_NewRAT\_RRM\_Core. The discussion was recorded in R4-2012202.

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

**R4-2009805 CR for TS38.133 Rel-16, Correction for RRM core requirements**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0933 Cat: A (Rel-16)  
  
 Source: CATT*

**Abstract:**

1. In sub-clause 3.6.2.4, “with 1 in PCell” is not correct.

2. For NR FR2- NR FR1 Handover in clause 6.1.1.3, “intra-frequency” is not applied.

3. Abbreviations “PTAG” and “STAG” are incorrect.

4. Some formulas in RLM/BFD/CBD/L1-RSRP measurement requirements are incorrect.

**Discussion:**

The contribution was discussed during email thread [96e][201] NR\_NewRAT\_RRM\_Core. The discussion was recorded in R4-2012202.

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

**R4-2013033 [CR] Replacing x in references with correct numbers (Core R15 Cat F)**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-1110 Cat: F (Rel-15)  
  
 Source: ZTE*

**Abstract:**

There are several places in the spec with ‘.x’ in the reference to another clause. As guided by the Secretary we prepare such a CR to replace the ‘.x’ with correct numbers to increase readability of the spec.

**Discussion:**

The contribution was discussed during email thread [96e][201] NR\_NewRAT\_RRM\_Core. The discussion was recorded in R4-2012202.

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

**R4-2013036 [CR] Replacing x in references with correct numbers (Core R16 Cat A)**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1113 Cat: A (Rel-16)  
  
 Source: ZTE*

**Abstract:**

There are several places in the spec with ‘.x’ in the reference to another clause. As guided by the Secretary we prepare such a CR to replace the ‘.x’ with correct numbers to increase readability of the spec.

**Discussion:**

The contribution was discussed during email thread [96e][201] NR\_NewRAT\_RRM\_Core. The discussion was recorded in R4-2012202.

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

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

**R4-2012033 Email discussion summary for [96e][202] NR\_NewRAT\_RRM\_Perf**

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

**Discussion:**

The contribution summarized email discussion thread [96e][202] NR\_NewRAT\_RRM\_Perf. The topic areas for discussion were RRM Perf. maintenance. The email thread was moderated by Muhammad Kazmi (Ericsson). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel)

**Decision:** The document was **revised to R4-2012203**.

**R4-2012203 Email discussion summary for [96e][202] NR\_NewRAT\_RRM\_Perf**

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

(Replaces R4-2012033)

**Discussion:**

The contribution summarized email discussion thread [96e][202] NR\_NewRAT\_RRM\_Perf. The topic areas for discussion were RRM Perf. maintenance. The email thread was moderated by Muhammad Kazmi (Ericsson). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel)

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

#### 4.8.1 General [NR\_newRAT-Perf]

**R4-2010857 CR to TS 38.133: Corrections to CSI-RS configurations in A.3.14 (Rel-15)**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-1024 Cat: F (Rel-15)  
  
 Source: Rohde & Schwarz*

**Abstract:**

The nzp-CSI-RS-Resource IDs in the CSI-RS tables use different resource IDs for each CSI-RS RMC (0, 10-11, 20-21, 30-37). There does not seem to be an obvious reason why this is required. These IDs seem arbitrary and do not seem to have any impact in the test Furthermore, they also deviate from the default IDs used for SIG and RF test cases in RAN5, which start from 0 and increment consecutively (0-7).

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2010858 CR to TS 38.133: Corrections to CSI-RS configurations in A.3.14 (Rel-16)**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1025 Cat: A (Rel-16)  
  
 Source: Rohde & Schwarz*

**Abstract:**

Cat-A Rel-16 mirror CR of the Cat-F Rel-15 agreed CR in R4-2010857

The nzp-CSI-RS-Resource IDs in the CSI-RS tables use different resource IDs for each CSI-RS RMC (0, 10-11, 20-21, 30-37). There does not seem to be an obvious reason why this is required. These IDs seem arbitrary and do not seem to have any impact in the test Furthermore, they also deviate from the default IDs used for SIG and RF test cases in RAN5, which start from 0 and increment consecutively (0-7).

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2011099 Addition of new default configurations for RMC scheduling**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-1051 Cat: F (Rel-15)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

In current default configuration for RMC shceduling (CCR.1.1 TDD/FDD), 24 RBs are allocated for CORESET and Aggregation level is set to 8. These setting are incompatible with test frequencies setting given in 38.508-1 under some cases.

Take band n3 for example. Test frequency for band n3 mid range is given in 38.508-1 Table 4.3.1.1.1.3-1 as follows

So SSB for mid range of band n3 is 102 RB+2 subcarrier away from point A. If we want to verify TC A.6.6.1.3 on this band, then the start position of active DL BWP (DLBWP.1.2 is used in 6.6.1.3) shall be 103 RB away from point A according to table A.3.9.2.2-1 note 1.

Note 1:RBb is the lowest PRB index to guarantee the BWP not fully overlapped with SSB PRB index (RBJ, RBJ+1,.…, RBJ+19) which is defined in Clause A.3.10.

Note 2:RBa is the lowest PRB index to guarantee the BWP including SSB PRB index (RBJ, RBJ+1,.…, RBJ+19) which is defined in Clause A.3.10.

However, according to RAN1 specs, start position and allocated RB size of CORESET for scheduling RMC shall both be multiple of 6 RBs. As a result, start position of CORESET for scheduling RMC can only be 108 RBs away from point A. Then the 24RB CORESET can not be completely contained in active DL BWP, active DL BWP can only contain a 18 RB CORESET, But 18 RB is not enough for a PDCCH with aggregation level = 8 because 6 (CCE size)/2(duration of CORESET)\*8(Aggregation level) = 24RB are needed.

To solve this issue and avoid impact to RAN5’s other test works. there seems to be no other way but introduce a new configuration of 18RB size and Aggregation level = 4 for RMC scheduling, and use this new configuration in TC A.4.6.1.3/4/6 and A.6.1.1.3/4/6.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

**Decision:** The document was **revised to R4-2012067**.

**R4-2012067 Addition of new default configurations for RMC scheduling**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-1051 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei, Hisilicon*

(Replaces R4-2011099)

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2011100 Addition of new default configurations for RMC scheduling\_r16**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1052 Cat: A (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

Cat. A CR of R4-2012067

In current default configuration for RMC shceduling (CCR.1.1 TDD/FDD), 24 RBs are allocated for CORESET and Aggregation level is set to 8. These setting are incompatible with test frequencies setting given in 38.508-1 under some cases.

Take band n3 for example. Test frequency for band n3 mid range is given in 38.508-1 Table 4.3.1.1.1.3-1 as follows

So SSB for mid range of band n3 is 102 RB+2 subcarrier away from point A. If we want to verify TC A.6.6.1.3 on this band, then the start position of active DL BWP (DLBWP.1.2 is used in 6.6.1.3) shall be 103 RB away from point A according to table A.3.9.2.2-1 note 1.

Note 1:RBb is the lowest PRB index to guarantee the BWP not fully overlapped with SSB PRB index (RBJ, RBJ+1,.…, RBJ+19) which is defined in Clause A.3.10.

Note 2:RBa is the lowest PRB index to guarantee the BWP including SSB PRB index (RBJ, RBJ+1,.…, RBJ+19) which is defined in Clause A.3.10.

However, according to RAN1 specs, start position and allocated RB size of CORESET for scheduling RMC shall both be multiple of 6 RBs. As a result, start position of CORESET for scheduling RMC can only be 108 RBs away from point A. Then the 24RB CORESET can not be completely contained in active DL BWP, active DL BWP can only contain a 18 RB CORESET, But 18 RB is not enough for a PDCCH with aggregation level = 8 because 6 (CCE size)/2(duration of CORESET)\*8(Aggregation level) = 24RB are needed.

To solve this issue and avoid impact to RAN5’s other test works. there seems to be no other way but introduce a new configuration of 18RB size and Aggregation level = 4 for RMC scheduling, and use this new configuration in TC A.4.6.1.3/4/6 and A.6.1.1.3/4/6.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2011140 CR on UL BWP configuration for RRM test cases R15**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-1074 Cat: F (Rel-15)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

The initial UL BWP configuration for RRM test cases is defined to be same as RMSI CORESET. This is confusing because RMSI CORESET is for DL only. Similarly, the dedicated UL BWP configuration is defined to include or not include SSB, while SSB is DL only.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

**Decision:** The document was **revised to R4-2012068**.

**R4-2012068 CR on UL BWP configuration for RRM test cases R15**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-1074 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei, Hisilicon*

(Replaces R4-2011140)

**Abstract:**

The initial UL BWP configuration for RRM test cases is defined to be same as RMSI CORESET. This is confusing because RMSI CORESET is for DL only. Similarly, the dedicated UL BWP configuration is defined to include or not include SSB, while SSB is DL only.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2011141 CR on UL BWP configuration for RRM test cases R16**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1075 Cat: A (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

The initial UL BWP configuration for RRM test cases is defined to be same as RMSI CORESET. This is confusing because RMSI CORESET is for DL only. Similarly, the dedicated UL BWP configuration is defined to include or not include SSB, while SSB is DL only.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2009573 Update to FR2 Annex B RRM side conditions**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-0910 Cat: F (Rel-15)  
  
 Source: ANRITSU LTD*

**Abstract:**

a) The Rel-15 FR2 multi-band requirement framework was updated in R4-2006352, and introduces a maximum cap to the per-band relaxation factors. Annex B needs to be aligned to these changes.

b) The formula to calculate Minimum SSB\_RP values for angle of arrival within Spherical coverage, for power classes and operating bands other than the baseline of PC3 and n260, is wrong.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2009574 Update to FR2 Annex B RRM side conditions**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0911 Cat: A (Rel-16)  
  
 Source: ANRITSU LTD*

**Abstract:**

a) The Rel-16 FR2 multi-band requirement framework was updated in R4-2006313, and introduces a maximum cap to the per-band relaxation factors. Annex B was partially aligned to these changes, but some were missed.

b) The formula to calculate Minimum SSB\_RP values for angle of arrival within Spherical coverage, for power classes and operating bands other than the baseline of PC3 and n260, is wrong.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

#### 4.8.2 RRM test cases [NR\_newRAT-Perf]

**R4-2010035 CR on active TCI state switch test case (section A.5.5.8.1, A.7.5.8.1)**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-0966 Cat: F (Rel-15)  
  
 Source: MediaTek inc.*

**Abstract:**

RAN4 had already agreed a CR on active TCI state in core requirement. The UE shall be able to receive PDCCH with the old TCI state until slot n+ THARQ + 3ms. There is a mismatch between the test case and the core requirement.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

**Decision:** The document was **merged**.

**R4-2010036 CR on active TCI state switch test case**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0967 Cat: A (Rel-16)  
  
 Source: MediaTek inc.*

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

**R4-2010185 CR on Requirement for MAC-CE based TCI State Switch-EN-DC-Rel15**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-0980 Cat: F (Rel-15)  
  
 Source: Apple*

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

**R4-2010186 CR on Requirement for MAC-CE based TCI State Switch-EN-DC-Rel16**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0981 Cat: A (Rel-16)  
  
 Source: Apple*

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

**R4-2010187 CR on Requirement for MAC-CE based TCI State Switch-SA-Rel15**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-0982 Cat: F (Rel-15)  
  
 Source: Apple*

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

**R4-2010188 CR on Requirement for MAC-CE based TCI State Switch-SA-Rel16**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0983 Cat: A (Rel-16)  
  
 Source: Apple*

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

**R4-2010382 Fine/rough beam assumption for idle mode and measurement procedure test case**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-1002 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

Capture fine or rough beam assumption for idle mode and for measurement procedure test cases in line with the agreed way forward R4-2008538

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

**Decision:** The document was **revised to R4-2012073**.

**R4-2012073 Fine/rough beam assumption for idle mode and measurement procedure test case**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-1002 rev 1 Cat: F (Rel-15)  
  
 Source: Ericsson*

(Replaces R4-2010382)

**Abstract:**

Capture fine or rough beam assumption for idle mode and for measurement procedure test cases in line with the agreed way forward R4-2008538

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2012074 Fine/rough beam assumption for idle mode and measurement procedure test case**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1116 Cat: A (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Capture fine or rough beam assumption for idle mode and for measurement procedure test cases in line with the agreed way forward R4-2008538

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2010779 Clarification of SNR values in RLM Test cases**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-1022 Cat: F (Rel-15)  
  
 Source: ANRITSU LTD*

**Abstract:**

The assumptions used when choosing the SNR levels for RLM test cases are not stated in the test cases. The missing information prevents RAN5 from designing the test cases reliably including uncertainties.

When designing the RLM test cases the Noc level was chosen to be 6dB above the UE internal noise, giving a maximum of 1dB degradation in SNR. The SNRs, which need to be decisively above or below Qin/Qout, were originally simulated in RAN4 at UE baseband.

For SNRs intended to be above Qin/Qout, the applied SNR was increased by 1dB, to counteract the 1dB degradation and meet the original SNR target at UE baseband. For example during T1, Applied SNR of +2dB might get degraded to +1dB at UE baseband, therefore meeting the original baseband target of +1dB to be decisively above Qin.

For SNRs intended to be below Qin/Qout, the applied SNR was not changed, as the 1dB degradation can only make the baseband SNR further below the original SNR target at UE baseband. If the applied SNR was increased, a UE with very good (low) internal noise might not be decisively below Qout.

In Test case A.5.5.1.8 only, [ ] remain for the propagation condition

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2010780 Clarification of SNR values in RLM Test cases**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1023 Cat: A (Rel-16)  
  
 Source: ANRITSU LTD*

**Abstract:**

The assumptions used when choosing the SNR levels for RLM test cases are not stated in the test cases. The missing information prevents RAN5 from designing the test cases reliably including uncertainties.

When designing the RLM test cases the Noc level was chosen to be 6dB above the UE internal noise, giving a maximum of 1dB degradation in SNR. The SNRs, which need to be decisively above or below Qin/Qout, were originally simulated in RAN4 at UE baseband.

For SNRs intended to be above Qin/Qout, the applied SNR was increased by 1dB, to counteract the 1dB degradation and meet the original SNR target at UE baseband. For example during T1, Applied SNR of +2dB might get degraded to +1dB at UE baseband, therefore meeting the original baseband target of +1dB to be decisively above Qin.

For SNRs intended to be below Qin/Qout, the applied SNR was not changed, as the 1dB degradation can only make the baseband SNR further below the original SNR target at UE baseband. If the applied SNR was increased, a UE with very good (low) internal noise might not be decisively below Qout.

In Test case A.5.5.1.6 only, [ ] remain for the propagation condition

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2010859 CR to TS 38.133: Corrections to event triggered test cases (Rel-15)**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-1026 Cat: F (Rel-15)  
  
 Source: Rohde & Schwarz*

**Abstract:**

Intra-frequency event measurement test cases in A.4.6.1 (EN-DC), do not consider different duplex modes of the LTE anchor cell in the test configurations.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2010860 CR to TS 38.133: Corrections to event triggered test cases (Rel-16)**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1027 Cat: A (Rel-16)  
  
 Source: Rohde & Schwarz*

**Abstract:**

Cat-A Rel-16 mirror CR of the Cat-F Rel-15 agreed CR in R4-2010859

Intra-frequency event measurement test cases in A.4.6.1 (EN-DC), do not consider different duplex modes of the LTE anchor cell in the test configurations.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2010861 CR to TS 38.133: Corrections to inter-RAT test cases (Rel-15)**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-1028 Cat: F (Rel-15)  
  
 Source: Rohde & Schwarz*

**Abstract:**

Some test configurations are missing in the test case parameter tables.

In TC A.8.5.2.1.1 some calculated SS-RSRP values are wrong.

In TC A.8.5.2.3.1 square brackets are still remaing. In addition with the Noc of -80 dBm, the Io for Test Configurations 3 and 6 goes well above the maximum total Io of -50 dBm, which is a side condition for the core SS-SINR accuracy requirements.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2010862 CR to TS 38.133: Corrections to inter-RAT test cases (Rel-16)**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1029 Cat: A (Rel-16)  
  
 Source: Rohde & Schwarz*

**Abstract:**

Cat-A Rel-16 mirror CR of the Cat-F Rel-15 agreed CR in R4-2010861

Some test configurations are missing in the test case parameter tables.

In TC A.8.5.2.1.1 some calculated SS-RSRP values are wrong.

In TC A.8.5.2.3.1 square brackets are still remaing. In addition with the Noc of -80 dBm, the Io for Test Configurations 3 and 6 goes well above the maximum total Io of -50 dBm, which is a side condition for the core SS-SINR accuracy requirements.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2010863 CR to TS 38.133: Corrections to AoA setup information in some test cases (Rel-15)**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-1030 Cat: F (Rel-15)  
  
 Source: Rohde & Schwarz*

**Abstract:**

Incorrect AoA setup information present in some TCs:

A.5.7.3.2 -> Conflicting Setup 3 & 1 informaiton, though Setup 1 was defined

A.7.5.1.9 -> Setup 3 information twice present

A.7.7.3.2-> Conflicting Setup 3 & 1 informaiton, though Setup 1 was defined

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2010864 CR to TS 38.133: Corrections to AoA setup information in some test cases (Rel-16)**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1031 Cat: A (Rel-16)  
  
 Source: Rohde & Schwarz*

**Abstract:**

Cat-A Rel-16 mirror CR of the Cat-F Rel-15 agreed CR in R4-2010863

Incorrect AoA setup information present in some TCs:

A.5.7.3.2 -> Editorial issues

A.7.5.1.9 -> Setup 3 information twice present

A.7.7.3.2-> Conflicting Setup 3 & 1 informaiton, though Setup 1 was defined

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2011047 CR on maintaining handover tests in Rel-15**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-1032 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

The values of Tinterrupt in some handover tests are not ailgned with the definition of handover core requirements.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

**Decision:** The document was **revised to R4-2012075**.

**R4-2012075 CR on maintaining handover tests in Rel-15**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-1032 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2011047)

**Abstract:**

The values of Tinterrupt in some handover tests are not ailgned with the definition of handover core requirements.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2011048 CR on maintaining handover tests in Rel-16**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1033 Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

The values of Tinterrupt in some handover tests are not ailgned with the definition of handover core requirements.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2011095 CR on test cases for Active TCI state switch delay R15**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-1049 Cat: F (Rel-15)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

The UE shall be able to receive PDCCH with the old TCI state until slot n+ THARQ + instead of n+ THARQ + + Tfirst-SSB according to the agreements in RAN4#95e meeting.

There is no need to configured PSCell in the test cases in SA.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

**Decision:** The document was **revised to R4-2012076**.

**R4-2012076 CR on test cases for Active TCI state switch delay R15**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-1049 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei, Hisilicon*

(Replaces R4-2011095)

**Abstract:**

The UE shall be able to receive PDCCH with the old TCI state until slot n+ THARQ + instead of n+ THARQ + + Tfirst-SSB according to the agreements in RAN4#95e meeting.

There is no need to configured PSCell in the test cases in SA.

The brackets shall be removed.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2011096 CR on test cases for Active TCI state switch delay R15**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1050 Cat: A (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

The UE shall be able to receive PDCCH with the old TCI state until slot n+ THARQ + instead of n+ THARQ + + Tfirst-SSB according to the agreements in RAN4#95e meeting.

There is no need to configured PSCell in the test cases in SA.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2011101 Correction to beam failure detection and link recovery test cases**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-1053 Cat: F (Rel-15)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

In RAN4 #95, CR R4-2007669 is submitted. During the meeting comments from other companies that removal of MG configuration in A.X.5.5.1 is against consensus reached in previous meeting .So R4-2007669 is revised to undo these changes and finally agreed in R4-2008544. Unfortunately, voiding of table A.X.5.5.1.1-4 is forgot to be reversed.

Considering adding table A.X.5.5.1.1-4 back is against 3GPP drafting rule, So we suggest to move gap parameters in table A.X.5.5.1.1-4 to general test parameter table.

In Cell-specific test parameters table (Table A.X.5.5.Y.1-3), SNR of CBD-RS in q1 is given. It is a copy-and-paste mistake caused by reusing RLM test parameters. UE performs L1-RSRP measurements on RS in q1 and compares it with rsrp-Threshold (which is also a RSRP value according to 38.331). Obviously it doesn’t make sense to compare a SNR value to a RSRP value.

So we purpose to also add L1 RSRP level of CBD-RS in parameter tables and keep SNR of q1 since it is needed during TT analysis in RAN5.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

**Decision:** The document was **revised to R4-2012077**.

**R4-2012077 Correction to beam failure detection and link recovery test cases**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-1053 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei, Hisilicon*

(Replaces R4-2011101)

**Abstract:**

In RAN4 #95, CR R4-2007669 is submitted. During the meeting comments from other companies that removal of MG configuration in A.X.5.5.1 is against consensus reached in previous meeting .So R4-2007669 is revised to undo these changes and finally agreed in R4-2008544. Unfortunately, voiding of table A.X.5.5.1.1-4 is forgot to be reversed.

Considering adding table A.X.5.5.1.1-4 back is against 3GPP drafting rule, So we suggest to move gap parameters in table A.X.5.5.1.1-4 to general test parameter table.

In Cell-specific test parameters table (Table A.X.5.5.Y.1-3), SNR of CBD-RS in q1 is given. It is a copy-and-paste mistake caused by reusing RLM test parameters. UE performs L1-RSRP measurements on RS in q1 and compares it with rsrp-Threshold (which is also a RSRP value according to 38.331). Obviously it doesn’t make sense to compare a SNR value to a RSRP value.

So we purpose to also add L1 RSRP level of CBD-RS in parameter tables and keep SNR of q1 since it is needed during TT analysis in RAN5.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2011102 Correction to beam failure detection and link recovery test cases\_r16**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1054 Cat: A (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

Cat.A CR of R4-2012077

In RAN4 #95, CR R4-2007669 is submitted. During the meeting comments from other companies that removal of MG configuration in A.X.5.5.1 is against consensus reached in previous meeting .So R4-2007669 is revised to undo these changes and finally agreed in R4-2008544. Unfortunately, voiding of table A.X.5.5.1.1-4 is forgot to be reversed.

Considering adding table A.X.5.5.1.1-4 back is against 3GPP drafting rule, So we suggest to move gap parameters in table A.X.5.5.1.1-4 to general test parameter table.

In Cell-specific test parameters table (Table A.X.5.5.Y.1-3), SNR of CBD-RS in q1 is given. It is a copy-and-paste mistake caused by reusing RLM test parameters. UE performs L1-RSRP measurements on RS in q1 and compares it with rsrp-Threshold (which is also a RSRP value according to 38.331). Obviously it doesn’t make sense to compare a SNR value to a RSRP value.

So we purpose to also add L1 RSRP level of CBD-RS in parameter tables and keep SNR of q1 since it is needed during TT analysis in RAN5.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2011103 Correction to BWP switching delay test cases**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-1055 Cat: F (Rel-15)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

There are still TBD and [ ] in test parameters.

SS-RSRP for FR1 test configuration with 30kHz SCS in several BWP test cases are incorrect.

TDD UL/DL configuration for FR1 test configuration with 30kHz SCS in several BWP test cases are incorrect.

There exists typos in TCs;

Test procedure description used in TCs are not aligned with core specs.

It is not correct to ask UE sent ACK/NACK in DL slots.

In timer-based BWP switch TCs, the beginning slot of the subframe immediately after Timer expiry is used as the starting point of delay caculation for timer based BWP switch delay. However, according to 38.213. UE shall use the beginning slot of the half subframe immediately after Timer expiry as the starting point:

38.213 cl.12

For a cell where a UE changes an active DL BWP due to a BWP inactivity timer expiration and for accommodating a delay in the active DL BWP change or the active UL BWP change required by the UE [10, TS 38.133], the UE is not required to receive or transmit in the cell during a time duration from the beginning of a subframe for FR1, or of half of a subframe for FR2, that is immediately after the BWP inactivity timer expires until the beginning of a slot where the UE can receive or transmit.

It is incorrect to use the moment UE sending RRCReconfigurationComplete as the ending point of BWP switching delay in RRC-based BWP switch TCs. Because TRRCBWPSwitchingDelay is not counted.

Active BWP configuration for SCell is missing in SA BWP switch TCs;

BWP index for SCell is wrong in SA BWP switch TCs.

According to core specs,for FR2 EN-DC BWP switch TCs and FR1+FR2 SA BWP switch TCs, whether interruption is allowed on E-UTRA/ NR victim cell in the different FR with aggressor NR Cell depends on UE’s capability. Interruption is allowed only when UE doesn’t support per-FR gap. So it is inappropiate to allow interruption for per-FR gap capable UEs.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

**Decision:** The document was **revised to R4-2012078**.

**R4-2012078 Correction to BWP switching delay test cases**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-1055 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei, Hisilicon*

(Replaces R4-2011103)

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2011104 Correction to BWP switching delay test cases\_r16**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1056 Cat: A (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

Cat.A CR of R4-2012078

There are still TBD and [ ] in test parameters.

SS-RSRP for FR1 test configuration with 30kHz SCS in several BWP test cases are incorrect.

TDD UL/DL configuration for FR1 test configuration with 30kHz SCS in several BWP test cases are incorrect.

There exists typos in TCs;

Test procedure description used in TCs are not aligned with core specs.

It is not correct to ask UE sent ACK/NACK in DL slots.

In timer-based BWP switch TCs, the beginning slot of the subframe immediately after Timer expiry is used as the starting point of delay caculation for timer based BWP switch delay. However, according to 38.213. UE shall use the beginning slot of the half subframe immediately after Timer expiry as the starting point:

38.213 cl.12

For a cell where a UE changes an active DL BWP due to a BWP inactivity timer expiration and for accommodating a delay in the active DL BWP change or the active UL BWP change required by the UE [10, TS 38.133], the UE is not required to receive or transmit in the cell during a time duration from the beginning of a subframe for FR1, or of half of a subframe for FR2, that is immediately after the BWP inactivity timer expires until the beginning of a slot where the UE can receive or transmit.

It is incorrect to use the moment UE sending RRCReconfigurationComplete as the ending point of BWP switching delay in RRC-based BWP switch TCs. Because TRRCBWPSwitchingDelay is not counted.

Active BWP configuration for SCell is missing in SA BWP switch TCs;

BWP index for SCell is wrong in SA BWP switch TCs.

According to core specs,for FR2 EN-DC BWP switch TCs and FR1+FR2 SA BWP switch TCs, whether interruption is allowed on E-UTRA/ NR victim cell in the different FR with aggressor NR Cell depends on UE’s capability. Interruption is allowed only when UE doesn’t support per-FR gap. So it is inappropiate to allow interruption for per-FR gap capable UEs.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2011105 Correction to FR1 intra-frequency measurement with gap test cases**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-1057 Cat: F (Rel-15)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

CSI-RS configuration CSI-RS.X.2.FDD/TDD are used as RLM-RS in intra-frequency measurement with gap test cases. According to A.3.14 two CSI-RS resources in CSI-RS.X.2 are QCLed with SSB #0 and #1, respectively.

However, The SSB configuration (SSB.1/2 FR1) used in these TCs only contain 1 SSB per burst (SSB #0). As a result, CSI-RS.X.2.FDD/TDD resource #2 doesn’t have its QCL-source (should have been SSB #1 according to A.3.14). It’s a bad implementation because UE expects a CSI-RS for BM shall be QCLed to a SSB or TRS according to 38.214:

38.214 cl.5.1.5:

For a CSI-RS resource in a NZP-CSI-RS-ResourceSet configured with higher layer parameter repetition, the UE shall expect that a TCI-State indicates one of the following quasi co-location type(s):

-'QCL-TypeA' with a CSI-RS resource in a NZP-CSI-RS-ResourceSet configured with higher layer parameter trs-Info and, when applicable, 'QCL-TypeD' with the same CSI-RS resource, or

-'QCL-TypeA' with a CSI-RS resource in a NZP-CSI-RS-ResourceSet configured with higher layer parameter trs-Info and, when applicable, 'QCL-TypeD' with a CSI-RS resource in a NZP-CSI-RS-ResourceSet configured with higher layer parameter repetition, or

-'QCL-TypeC' with an SS/PBCH block and, when applicable, 'QCL-TypeD' with the same SS/PBCH block.

Considering RLM can only be performed on periodic CSI-RS with single port. It is not correct to use CSI-RS.X.1.FDD/TDD. It seems that the only way is to only use CSI-RS.X.2.FDD/TDD resource #0 in these TCs.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2012079 Correction to FR1 intra-frequency measurement with gap test cases**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-1057 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei, Hisilicon*

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

**R4-2011106 Correction to FR1 intra-frequency measurement with gap test cases\_r16**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1058 Cat: A (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

Cat.A CR of R4-2011105

CSI-RS configuration CSI-RS.X.2.FDD/TDD are used as RLM-RS in intra-frequency measurement with gap test cases. According to A.3.14 two CSI-RS resources in CSI-RS.X.2 are QCLed with SSB #0 and #1, respectively.

However, The SSB configuration (SSB.1/2 FR1) used in these TCs only contain 1 SSB per burst (SSB #0). As a result, CSI-RS.X.2.FDD/TDD resource #2 doesn’t have its QCL-source (should have been SSB #1 according to A.3.14). It’s a bad implementation because UE expects a CSI-RS for BM shall be QCLed to a SSB or TRS according to 38.214:

38.214 cl.5.1.5:

For a CSI-RS resource in a NZP-CSI-RS-ResourceSet configured with higher layer parameter repetition, the UE shall expect that a TCI-State indicates one of the following quasi co-location type(s):

-'QCL-TypeA' with a CSI-RS resource in a NZP-CSI-RS-ResourceSet configured with higher layer parameter trs-Info and, when applicable, 'QCL-TypeD' with the same CSI-RS resource, or

-'QCL-TypeA' with a CSI-RS resource in a NZP-CSI-RS-ResourceSet configured with higher layer parameter trs-Info and, when applicable, 'QCL-TypeD' with a CSI-RS resource in a NZP-CSI-RS-ResourceSet configured with higher layer parameter repetition, or

-'QCL-TypeC' with an SS/PBCH block and, when applicable, 'QCL-TypeD' with the same SS/PBCH block.

Considering RLM can only be performed on periodic CSI-RS with single port. It is not correct to use CSI-RS.X.1.FDD/TDD. It seems that the only way is to only use CSI-RS.X.2.FDD/TDD resource #0 in these TCs.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2011107 Correction to inter-RAT HO test cases**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-1059 Cat: F (Rel-15)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

In time period T2 of inter-RAT HO TC A.6.3.1.4, UE is configured to keep measuring LTE neighbour cell and report measurement results to PCell. To be more specific, MeasurementReport message is sent through SRB1 and SRB1 is mapped to a AM RLC entity in RLC layer. So UE shall keep receiving STATUS PDU (mapped to PDSCH in PHY layer) sent from PCell to decide whether retransmission of RLC PDU is needed.

However, SNR is -6dB in T2, which is too low for PDSCH demodulation. So UE will keep retransmitting RLC PDU containing MeasurementReport when it fails to to receive STATUS PDU. RLF will be triggered when the number of ReTx reaches the maximum ReTx number. So it is nessecary to raise the SNR in T2 to ensure UE can successfully sent measurementReport message.

We suggest:

reduce Noc of T2 to -110dBm/15kHz

raise Es/Noc of T2 to 6dB

and modify Io and Es/Iot of T2 accordingly. Then threshold of B2 event can be kept unchanged.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

**Decision:** The document was **revised to R4-2012080**.

**R4-2012080 Correction to inter-RAT HO test cases**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-1059 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei, Hisilicon*

(Replaces R4-2011107)

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

**R4-2011108 Correction to inter-RAT HO test cases\_r16**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1060 Cat: A (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

Cat.A CR of R4-2012080

In time period T2 of inter-RAT HO TC A.6.3.1.4, UE is configured to keep measuring LTE neighbour cell and report measurement results to PCell. To be more specific, MeasurementReport message is sent through SRB1 and SRB1 is mapped to a AM RLC entity in RLC layer. So UE shall keep receiving STATUS PDU (mapped to PDSCH in PHY layer) sent from PCell to decide whether retransmission of RLC PDU is needed.

However, SNR is -6dB in T2, which is too low for PDSCH demodulation. So UE will keep retransmitting RLC PDU containing MeasurementReport when it fails to to receive STATUS PDU. RLF will be triggered when the number of ReTx reaches the maximum ReTx number. So it is nessecary to raise the SNR in T2 to ensure UE can successfully sent measurementReport message.

We suggest:

reduce Noc of T2 to -104dBm/15kHz

raise Es/Noc of T2 to 0dB

and modify Io and Es/Iot of T2 accordingly. Then threshold of B2 event can be kept unchanged.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2011142 CR to add UE beam assumption for TC in A.5.6 R15**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-1076 Cat: F (Rel-15)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

As agreed in WF R4-2008538 in RAN4#95-e, UE beam assumptions (fine or rough) for RRM test cases are to be added for each FR2 test case. According to work split, this CR add the information for 16 test cases in A.5.6.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

**Decision:** The document was **revised to R4-2012262**.

**R4-2012262 CR to add UE beam assumption for TC in A.5.6 R15**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-1076 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei, Hisilicon*

(Replaces R4-2011142)

**Abstract:**

As agreed in WF R4-2008538 in RAN4#95-e, UE beam assumptions (fine or rough) for RRM test cases are to be added for each FR2 test case. According to work split, this CR add the information for 16 test cases in A.5.6.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2011143 CR to add UE beam assumption for TC in A.5.6 R16**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1077 Cat: A (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

As agreed in WF R4-2008538 in RAN4#95-e, UE beam assumptions (fine or rough) for RRM test cases are to be added for each FR2 test case. According to work split, this CR add the information for 16 test cases in A.5.6.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2009542 CR to Redirection from NR in FR1 to E-UTRAN**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-0888 Cat: F (Rel-15)  
  
 Source: ANRITSU LTD*

**Abstract:**

Test Configuration IDs 4, 5, 6 are missing in cell specific test parameters for cell 1.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2009543 CR to Redirection from NR in FR1 to E-UTRAN**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0889 Cat: A (Rel-16)  
  
 Source: ANRITSU LTD*

**Abstract:**

Test Configuration IDs 4, 5, 6 are missing in cell specific test parameters for cell 1.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2009544 CR to timing advance adjustment accuracy in FR1**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-0890 Cat: F (Rel-15)  
  
 Source: ANRITSU LTD*

**Abstract:**

SRS Schedule is not designated to a UL slot.

According to the TDD UL/DL configuration for SCS = 15 kHz in Table A.3.1.4-1 , TDD UL/DL pattern 1 is defined as ‘DSUU’.

Therefore to congifure SRS to a UL slot, slot number needs to be 2 instead of 0.

Also for SCS 30kHz, TDD UL/DL pattern 1 is ‘3D1S4U’ in Table A.3.1.4-2 and thus the SRS slot number should be 4 instead of 0.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2009545 CR to timing advance adjustment accuracy in FR1**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0891 Cat: A (Rel-16)  
  
 Source: ANRITSU LTD*

**Abstract:**

SRS Schedule is not designated to a UL slot.

According to the TDD UL/DL configuration for SCS = 15 kHz in Table A.3.1.4-1 , TDD UL/DL pattern 1 is defined as ‘DSUU’.

Therefore to congifure SRS to a UL slot, slot number needs to be 2 instead of 0.

Also for SCS 30kHz, TDD UL/DL pattern 1 is ‘3D1S4U’ in Table A.3.1.4-2 and thus the SRS slot number should be 4 instead of 0.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2009548 CR to SA event triggered reporting tests with per-UE gaps**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-0892 Cat: F (Rel-15)  
  
 Source: ANRITSU LTD*

**Abstract:**

Event triggered reporting test cases with per-UE gaps are configured with two BWPs in Cell 1. BWP1 contains the SSB, and BWP2 which does not contain SSB. BWP2 is scheduled as the active BWP for the UE.

In addition, Cell 1 is configured with RLM-RS = CSI-RS, and the General test parameters Table includes CSI-RS parameters. The specified CSI-RS parameters CSI-RS.1.2 or 2.2 use TCI States with resource #0 and resource #1, which is not compatible.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

**Decision:** The document was **postponed**.

**R4-2012069 CR to SA event triggered reporting tests with per-UE gaps**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-0892 rev 1 Cat: F (Rel-15)  
  
 Source: ANRITSU LTD*

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

**R4-2009549 CR to SA event triggered reporting tests with per-UE gaps**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0893 Cat: A (Rel-16)  
  
 Source: ANRITSU LTD*

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

**R4-2009550 CR to SS-RSRQ Intra-Frequency and Inter-frequency FR1 measurement accuracy**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-0894 Cat: F (Rel-15)  
  
 Source: ANRITSU LTD*

**Abstract:**

- TRS configuration should also be applied to SS-RSRQ test cases similar with other periodical measurement accuracy test cases for consistency (SS-RSRP, SS-RSRQ, SS-SINR)

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2009551 CR to SS-RSRQ Intra-Frequency and Inter-frequency FR1 measurement accuracy**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0895 Cat: A (Rel-16)  
  
 Source: ANRITSU LTD*

**Abstract:**

- TRS configuration should also be applied to SS-RSRQ test cases similar with other periodical measurement accuracy test cases for consistency (SS-RSRP, SS-RSRQ, SS-SINR)

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2009552 Update to FR2 240kHz SSB Configurations**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-0896 Cat: F (Rel-15)  
  
 Source: ANRITSU LTD*

**Abstract:**

The SSB Configurations in A.3.10 have a parameter “RB numbers containing SSBs within channel BW”, which is based on the assumption that the SSB SCS is the same as the data SCS. For 240kHs SSB SCS this is not possible, as in TS 38.101-2 Table 5.3.2-1 the Maximum transmission bandwidth configuration NRB is only defined for SCS up to 120kHz.

From TS 38.101-2 Table 5.3.2-1 we also understand that NRB concept and PRBs is related to data SCS.

TS 38.211 clause7.4.3.1 states that the SS/PBCH block consists of 240 contiguous subcarriers. For 240kHz SSB SCS, this would occupy 57.6MHz.

240kHz SSB Patterns SSB.2 FR2, SSB.4 FR2, SSB.6 FR2 and SSB.8 FR2 currently state that the RB numbers containing SSBs within channel BW are RBJ, RBJ+1,.…, RBJ+19, which would only allow 28.8MHz with data SCS =120kz.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2009553 Update to FR2 240kHz SSB Configurations**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0897 Cat: A (Rel-16)  
  
 Source: ANRITSU LTD*

**Abstract:**

The SSB Configurations in A.3.10 have a parameter “RB numbers containing SSBs within channel BW”, which is based on the assumption that the SSB SCS is the same as the data SCS. For 240kHs SSB SCS this is not possible, as in TS 38.101-2 Table 5.3.2-1 the Maximum transmission bandwidth configuration NRB is only defined for SCS up to 120kHz.

From TS 38.101-2 Table 5.3.2-1 we also understand that NRB concept and PRBs is related to data SCS.

TS 38.211 clause 7.4.3.1 states that the SS/PBCH block consists of 240 contiguous subcarriers. For 240kHz SSB SCS, this would occupy 57.6MHz.

240kHz SSB Patterns SSB.2 FR2, SSB.4 FR2, SSB.6 FR2 and SSB.8 FR2 currently state that the RB numbers containing SSBs within channel BW are RBJ, RBJ+1,.…, RBJ+19, which would only allow 28.8MHz with data SCS =120kz.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2009554 FR2 PRACH Test cases in 38.133 Annex A**

*Type: discussion For: Endorsement  
 Source: ANRITSU LTD*

**Abstract:**

FR2 PRACH Test cases in Annex A of TS 38.133 are incomplete, and not in a form that RAN5 could implement.

This discussion document looks at the main issues and proposes principles for test case updates:

a) A fixed value for rsrp-ThresholdSSB is not practi

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2009558 Update of FR2 Random Access Test cases**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-0898 Cat: F (Rel-15)  
  
 Source: ANRITSU LTD*

**Abstract:**

a) SSB pattern 1 in FR2 already has the correct number of SSBs per SS-burst and SS/PBCH block index, so no exceptions are needed.

b) OCNG pattern occupies 66RBs, but 24RBs are needed to reduce Io.

c) PDSCH parameters are undefined

d) There is only one configuration Config 1, but Config 2 is refered to

e) A signalled value for ss-PBCH-BlockPower is needed for UE to calculate PRACH power, but no value is defined

f) The values of rsrp-ThresholdSSB and preambleReceivedTargetPower are different from the default values in FR2 PRACH configuration 1, so exceptions are needed

g) AoA setup 2b (Single AoA in non Rx beam peak direction with change in direction) is defined, but the uplink power core requirements are only defined in Rx Beam Peak direction

h) The SSB\_RP values for index 0 and index 1 are not finalised

i) The large variation in UE gain G means that a fixed value for rsrp-ThresholdSSB is not practical

j) The large range of uplink power tolerance and small range of uplink power mean that a fixed value for ss-PBCH-BlockPower is not practical

k) Some General test parameters are missing

l) The number of transmitted Random Access Preambles is too high for the available uplink power range

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2009559 Update of FR2 Random Access Test cases**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0899 Cat: A (Rel-16)  
  
 Source: ANRITSU LTD*

**Abstract:**

a) SSB pattern 1 in FR2 already has the correct number of SSBs per SS-burst and SS/PBCH block index, so no exceptions are needed.

b) OCNG pattern occupies 66RBs, but 24RBs are needed to reduce Io.

c) PDSCH parameters are undefined

d) There is only one configuration Config 1, but Config 2 is refered to

e) A signalled value for ss-PBCH-BlockPower is needed for UE to calculate PRACH power, but no value is defined

f) The values of rsrp-ThresholdSSB and preambleReceivedTargetPower are different from the default values in FR2 PRACH configuration 1, so exceptions are needed

g) AoA setup 2b (Single AoA in non Rx beam peak direction with change in direction) is defined, but the uplink power core requirements are only defined in Rx Beam Peak direction

h) The SSB\_RP values for index 0 and index 1 are not finalised

i) The large variation in UE gain G means that a fixed value for rsrp-ThresholdSSB is not practical

j) The large range of uplink power tolerance and small range of uplink power mean that a fixed value for ss-PBCH-BlockPower is not practical

k) Some General test parameters are missing

l) The number of transmitted Random Access Preambles is too high for the available uplink power range

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2009563 Update to FR2 event-triggered reporting RRM Test cases in A.5.6 and A.7.6**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-0900 Cat: F (Rel-15)  
  
 Source: ANRITSU LTD*

**Abstract:**

a) Many FR2 Event-triggered reporting Test cases specify 2 SSBs per SS-burst, but this is not necessary to fulfil the test purpose and causes unnecessary complexity in the test case.

b) FR2 Intra-frequency Event-triggered reporting Test cases do not specify anything about the number of RBs in the channel BW.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2009564 Update to FR2 event-triggered reporting RRM Test cases in A.5.6 and A.7.6**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0901 Cat: A (Rel-16)  
  
 Source: ANRITSU LTD*

**Abstract:**

a) Many FR2 Event-triggered reporting Test cases specify 2 SSBs per SS-burst, but this is not necessary to fulfil the test purpose and causes unnecessary complexity in the test case.

b) FR2 Intra-frequency Event-triggered reporting Test cases do not specify anything about the number of RBs in the channel BW.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2009565 Update to FR2 SS-RSRP RRM Test cases in A.5.7 and A.7.7**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-0902 Cat: F (Rel-15)  
  
 Source: ANRITSU LTD*

**Abstract:**

The Rel-15 FR2 multi-band requirement framework was updated in R4-2006352, and introduces a maximum cap to the per-band relaxation factors.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2009566 Update to FR2 SS-RSRP RRM Test cases in A.5.7 and A.7.7**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0903 Cat: A (Rel-16)  
  
 Source: ANRITSU LTD*

**Abstract:**

The Rel-15 FR2 multi-band requirement framework was updated in R4-2006352, and introduces a maximum cap to the per-band relaxation factors.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2009567 CR to EN-DC timing advance adjustment accuracy in FR2**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-0904 Cat: F (Rel-15)  
  
 Source: ANRITSU LTD*

**Abstract:**

SRS Schedule is not designated to a UL slot.

According to the TDD UL/DL configuration for SCS = 120 kHz in Table A.3.1.4-3 , TDD UL/DL pattern 1 is defined as ‘DDDSU’.

Therefore to congifure SRS to a UL slot, slot number needs to be 4 instead of 0.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2009568 CR to EN-DC timing advance adjustment accuracy in FR2**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0905 Cat: A (Rel-16)  
  
 Source: ANRITSU LTD*

**Abstract:**

SRS Schedule is not designated to a UL slot.

According to the TDD UL/DL configuration for SCS = 120 kHz in Table A.3.1.4-3 , TDD UL/DL pattern 1 is defined as ‘DDDSU’.

Therefore to congifure SRS to a UL slot, slot number needs to be 4 instead of 0..

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2009569 CR to configuration of CSI-RS for tracking**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-0906 Cat: F (Rel-15)  
  
 Source: ANRITSU LTD*

**Abstract:**

As described in TS 38.214 below, the UE is not expected to transmit CSI-RS for TrackingRS with the periodicity of 80 slots when the SCS is 120 kHz (u=3) and the active BWP is configured with more than 52RBs. Since A.3.17.2 is defined with the periodicity of 80 slots, there can be a conflict because some RRM test cases have an active BWP >52RBs.

TS38.214 clause 5.1.6.1.1 CSI-RS for tracking

-the UE is not expected to be configured with the periodicity of slots if the bandwidth of CSI-RS resource is larger than 52 resource blocks.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2009570 CR to configuration of CSI-RS for tracking**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0907 Cat: A (Rel-16)  
  
 Source: ANRITSU LTD*

**Abstract:**

As described in TS 38.214 below, the UE is not expected to transmit CSI-RS for TrackingRS with the periodicity of 80 slots when the SCS is 120 kHz (u=3) and the active BWP is configured with more than 52RBs. Since A.3.17.2 is defined with the periodicity of 80 slots, there can be a conflict because some RRM test cases have an active BWP >52RBs.

TS38.214 clause 5.1.6.1.1 CSI-RS for tracking

-the UE is not expected to be configured with the periodicity of slots if the bandwidth of CSI-RS resource is larger than 52 resource blocks.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2009571 Update of RRC-based Active BWP Switch test cases**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-0908 Cat: F (Rel-15)  
  
 Source: ANRITSU LTD*

**Abstract:**

In RRC-based Active BWP Switch test cases, before test starts, PSCell is configured with bandwidth part BWP-1. During test, bandwidth part will be changed. This procedure is not well clarified in the description.

There is duplicated text in the Test Requirements

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

**Decision:** The document was **revised to R4-2012070**.

**R4-2012070 Update of RRC-based Active BWP Switch test cases**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-0908 rev 1 Cat: F (Rel-15)  
  
 Source: ANRITSU LTD*

(Replaces R4-2009571)

**Abstract:**

In RRC-based Active BWP Switch test cases, before test starts, PSCell is configured with bandwidth part BWP-1. During test, bandwidth part will be changed. This procedure is not well clarified in the description.

There is duplicated text in the Test Requirements

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2009572 Update of RRC-based Active BWP Switch test cases**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0909 Cat: A (Rel-16)  
  
 Source: ANRITSU LTD*

**Abstract:**

In RRC-based Active BWP Switch test cases, before test starts, PSCell is configured with bandwidth part BWP-1. During test, bandwidth part will be changed. This procedure is not well clarified in the description.

There is duplicated text in the Test Requirements

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2009575 Add UE Beam assumption for RRM Test cases in A.5.5**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-0912 Cat: F (Rel-15)  
  
 Source: ANRITSU LTD*

**Abstract:**

a) RRM test cases were designed using an assumption about the type of beam used by the UE, listed in R4-2008538 at RAN4#95-e. To analyse and implement the RRM Test cases, RAN5 needs to calculate UE internal noise, and therefore the assumption whether the UE uses a fine beam or a rough beam should be stated in each test case. It is currently missing.

b) In Tables A.5.5.2.3.2-2 and A.5.5.2.4.2-2 on Interruption duration, the title mistakenly includes the word “not” (in the same band).

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2009576 Add UE Beam assumption for RRM Test cases in A.5.5**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0913 Cat: A (Rel-16)  
  
 Source: ANRITSU LTD*

**Abstract:**

a) RRM test cases were designed using an assumption about the type of beam used by the UE, listed in R4-2008538 at RAN4#95-e. To analyse and implement the RRM Test cases, RAN5 needs to calculate UE internal noise, and therefore the assumption whether the UE uses a fine beam or a rough beam should be stated in each test case. It is currently missing.

b) In Tables A.5.5.2.3.2-2 and A.5.5.2.4.2-2 on Interruption duration, the title mistakenly includes the word “not” (in the same band).

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2009603 CR on Requirement for MAC-CE based TCI State Switch-EN-DC-Rel15**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-0917 Cat: F (Rel-15)  
  
 Source: Apple*

**Abstract:**

In RAN4#95e CR for Active TCI state switch was approved in R4-2008531, where the change was made that UE shall be able to receive PDCCH with the old TCI state until slot n+ THARQ + . The corresponding testcase was not updated to reflect the change in core requirement. This CR updates the test case to match core requirement.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.s

**Decision:** The document was **merged**.

**R4-2009604 CR on Requirement for MAC-CE based TCI State Switch-EN-DC-Rel16**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0918 Cat: A (Rel-16)  
  
 Source: Apple*

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

**R4-2009605 CR on Requirement for MAC-CE based TCI State Switch-SA-Rel15**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-0919 Cat: F (Rel-15)  
  
 Source: Apple*

**Abstract:**

In RAN4#95e CR for Active TCI state switch was approved in R4-2008531, where the change was made that UE shall be able to receive PDCCH with the old TCI state until slot n+ THARQ + . The corresponding testcase was not updated to reflect the change in core requirement. This CR updates the test case to match core requirement.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

**Decision:** The document was **merged**.

**R4-2009606 CR on Requirement for MAC-CE based TCI State Switch-SA-Rel16**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0920 Cat: A (Rel-16)  
  
 Source: Apple*

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

**R4-2009668 Add UE Beam assumption for RRM Test cases in A.7.5 Rel-15**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-0921 Cat: F (Rel-15)  
  
 Source: Samsung*

**Abstract:**

RRM test cases were designed using an assumption about the type of beam used by the UE, listed in R4-2008538 at RAN4#95-e. To analyse and implement the RRM Test cases, RAN5 needs to calculate UE internal noise, and therefore the assumption whether the UE uses a fine beam or a rough beam should be stated in each test case. It is currently missing.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2009669 Add UE Beam assumption for RRM Test cases in A.7.5 Rel-16**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0922 Cat: A (Rel-16)  
  
 Source: Samsung*

**Abstract:**

Cat-A Rel-16 mirror CR of the Cat-F Rel-15 agreed CR in R4-2009668

RRM test cases were designed using an assumption about the type of beam used by the UE, listed in R4-2008538 at RAN4#95-e. To analyse and implement the RRM Test cases, RAN5 needs to calculate UE internal noise, and therefore the assumption whether the UE uses a fine beam or a rough beam should be stated in each test case. It is currently missing.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2009806 CR for TS38.133 Rel-15, Correction for test cases of BWP switching**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-0934 Cat: F (Rel-15)  
  
 Source: CATT*

**Abstract:**

The Noc and Io in test cases of BWP switching are not correct.

Some contents are redundancy.

There are some errors.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

**Decision:** The document was **revised to R4-2012071**.

**R4-2012071 CR for TS38.133 Rel-15, Correction for test cases of BWP switching**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-0934 rev 1 Cat: F (Rel-15)  
  
 Source: CATT*

(Replaces R4-2009806)

**Abstract:**

The Noc and Io in test cases of BWP switching are not correct.

Some contents are redundancy.

There are some errors.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2009807 CR for TS38.133 Rel-16, Correction for test cases of BWP switching**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0935 Cat: A (Rel-16)  
  
 Source: CATT*

**Abstract:**

The Noc and Io in test cases of BWP switching are not correct.

Some contents are redundancy.

There are some errors.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2009887 CR on TS38.133 for handover test cases**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-0945 Cat: F (Rel-15)  
  
 Source: MediaTek inc., Intel*

**Abstract:**

The RRC procedure delay in test case A.6.3.1.2 is wrong.

Tinterrupt should be modified based on the updated PRACH configurations, it also impacts the overall handover delay.

The PRACH configuration is not given in test case A.8.3.1.1 and the handover delay requirement can not be drived.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

**Decision:** The document was **revised to R4-2012072**.

**R4-2012072 CR on TS38.133 for handover test cases**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-0945 rev 1 Cat: F (Rel-15)  
  
 Source: MediaTek inc., Intel*

(Replaces R4-2009887)

**Abstract:**

Tinterrupt should be modified based on the updated PRACH configurations, it also impacts the overall handover delay.

The PRACH configuration is not given in test case A.8.3.1.1 and the handover delay requirement can not be drived.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2009888 CR on TS38.133 for handover test cases**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0946 Cat: A (Rel-16)  
  
 Source: MediaTek inc., Intel*

**Abstract:**

Tinterrupt should be modified based on the updated PRACH configurations, it also impacts the overall handover delay.

The PRACH configuration is not given in test case A.8.3.1.1 and the handover delay requirement can not be drived.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2009889 CR on TS38.133 for introducing the PDSCH RMC configuration in cell re-selection test cases**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-0947 Cat: F (Rel-15)  
  
 Source: MediaTek inc.*

**Abstract:**

The PDSCH RMC configuration of Cell2 is missing in test cases A.6.1.1.1.2-3, A.6.1.1.2.2-3, A.7.1.1.1.2-3 and A.7.1.1.2.2-3. It should be introduced to align with RAN5 specification and it shall be the same as Cell1’s configuration.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2009890 CR on TS38.133 for introducing the PDSCH RMC configuration in cell re-selection test cases**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0948 Cat: A (Rel-16)  
  
 Source: MediaTek inc.*

**Abstract:**

The PDSCH RMC configuration of Cell2 is missing in test cases A.6.1.1.1.2-3, A.6.1.1.2.2-3, A.7.1.1.1.2-3 and A.7.1.1.2.2-3. It should be introduced to align with RAN5 specification and it shall be the same as Cell1’s configuration.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2013035 [CR] Replacing x in references with correct numbers (Perf R15 Cat F)**

*Type: CR For: Agreement  
 38.133 v15.10.0 CR-1112 Cat: F (Rel-15)  
  
 Source: ZTE*

**Abstract:**

There are several places in the spec with ‘.x’ in the reference to another clause. As guided by the Secretary we prepare such a CR to replace the ‘.x’ with correct numbers to increase readability of the spec.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

**R4-2013037 [CR] Replacing x in references with correct numbers (Perf R16 Cat A)**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1114 Cat: A (Rel-16)  
  
 Source: ZTE*

**Abstract:**

There are several places in the spec with ‘.x’ in the reference to another clause. As guided by the Secretary we prepare such a CR to replace the ‘.x’ with correct numbers to increase readability of the spec.

**Discussion:**

The contribution was discussed during email thread [96e][202] NR\_NewRAT\_RRM\_Perf. The discussion was recorded in R4-2012203.

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

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

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

**R4-2012535 Email discussion summary for [96e][313] Demod\_Maintenance**

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

**Discussion:**

The contribution summarized email discussion thread [96e][313] Demod\_Maintenance . The topic areas for discussion were Rel-15 NR BS,UE demodulation and CSI

Rel-16 NR maintenance (Demo d)

LTE maintenance (up to Rel-15, Demod)

Rel-16 LTE maintenance (Demod). The email thread was moderated by Dmitry Belov (Intel). All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2012720**.

**R4-2012720 Email discussion summary for [96e][313] Demod\_Maintenance**

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

(Replaces R4-2012535)

**Discussion:**

The contribution summarized email discussion thread [96e][313] Demod\_Maintenance . The topic areas for discussion were Rel-15 NR BS,UE demodulation and CSI

Rel-16 NR maintenance (Demo d)

LTE maintenance (up to Rel-15, Demod)

Rel-16 LTE maintenance (Demod). The email thread was moderated by Dmitry Belov (Intel). All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

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

**R4-2010798 Reintroduction of missing FR1 RMC**

*Type: CR For: Agreement  
 38.101-4 v15.6.0 CR-0065 Cat: F (Rel-15)  
  
 Source: Rohde & Schwarz*

**Abstract:**

The RMC R.PDSCH.1-1.4 FDD is required for several TCs, however it is missing from the specification. It seems to have been removed by accident in version 15.2.0 of the spec. Therefore the RMC needs to be reintroduced.

**Discussion:**

The contribution was discussed during email thread [96e][313] Demod\_Maintenance . The discussion was recorded in R4-2012720.

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

**R4-2010799 Reintroduction of missing FR1 RMC**

*Type: CR For: Agreement  
 38.101-4 v16.1.0 CR-0066 Cat: A (Rel-16)  
  
 Source: Rohde & Schwarz*

**Discussion:**

The contribution was discussed during email thread [96e][313] Demod\_Maintenance . The discussion was recorded in R4-2012720.

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

**R4-2011401 CR on Corrections in 38.101-4**

*Type: CR For: Agreement  
 38.101-4 v15.6.0 CR-0077 Cat: F (Rel-15)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

PDCCH allocation for LTE-NR coexistence PDSCH tests is not clear.

Test 2-1 in Section 5.2.3.1.1 should have 4 HARQ processes

PDSCH precoding configuration for FR2 SDR tests is incorrect.

Editor’s note in Annex C.3.1 and Annex C.5.1 is not needed.

**Discussion:**

The contribution was discussed during email thread [96e][313] Demod\_Maintenance . The discussion was recorded in R4-2012720.

**Decision:** The document was **revised to R4-2012593**.

**R4-2012593 CR on Corrections in 38.101-4**

*Type: CR For: Agreement  
 38.101-4 v15.6.0 CR-0077 rev 1 Cat: F (Rel-15)  
  
 Source: Qualcomm Incorporated*

(Replaces R4-2011401)

**Abstract:**

PDCCH allocation for LTE-NR coexistence PDSCH tests is not clear.

Test 2-1 in Section 5.2.3.1.1 should have 4 HARQ processes

PDSCH precoding configuration for FR2 SDR tests is incorrect.

Editor’s note in Annex C.3.1 and Annex C.5.1 is not needed.

**Discussion:**

The contribution was discussed during email thread [96e][313] Demod\_Maintenance . The discussion was recorded in R4-2012720.

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

**R4-2012595 CR on Corrections in 38.101-4**

*Type: CR For: Agreement  
 38.101-4 v16.1.0 CR-0078 Cat: A (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

Changes correspond to Rel-15 CR R4-2012593.

PDCCH allocation for LTE-NR coexistence PDSCH tests is not clear.

Test 2-1 in Section 5.2.3.1.1 should have 4 HARQ processes

PDSCH precoding configuration for FR2 SDR tests is incorrect.

Editor’s note in Annex C.3.1 and Annex C.5.1 is not needed.

**Discussion:**

The contribution was discussed during email thread [96e][313] Demod\_Maintenance . The discussion was recorded in R4-2012720.

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

**R4-2009540 CR to 2Rx PDSCH mapping type B**

*Type: CR For: Agreement  
 38.101-4 v15.6.0 CR-0060 Cat: F (Rel-15)  
  
 Source: ANRITSU LTD*

**Abstract:**

Since the reference channel R.PDSCH.1-1.4 was removed from Table A.3.2.1.1-1, there is a need to switch to another reference channel in 5.2.2.1.3 and 5.2.3.1.3. R.PDSCH.1-1.3 FDD is applicable since PDSCH configuration length (L) is equal to 7 same as R.PDSCH.1-1.4.

**Discussion:**

The contribution was discussed during email thread [96e][313] Demod\_Maintenance . The discussion was recorded in R4-2012720.

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

**R4-2009541 CR to 2Rx PDSCH mapping type B**

*Type: CR For: Agreement  
 38.101-4 v16.1.0 CR-0061 Cat: A (Rel-16)  
  
 Source: ANRITSU LTD*

**Abstract:**

Since the reference channel R.PDSCH.1-1.4 was removed fromTable A.3.2.1.1-1, there is a need to switch to another reference channel in 5.2.2.1.3 and 5.2.3.1.3. R.PDSCH.1-1.3 FDD is applicable since PDSCH configuration length (L) is equal to 7 same as R.PDSCH.1-1.4.

**Discussion:**

The contribution was discussed during email thread [96e][313] Demod\_Maintenance . The discussion was recorded in R4-2012720.

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

#### 4.9.2 CSI requirements [NR\_newRAT-Perf]

**R4-2009538 CR to ZP-CSI-RS configuration**

*Type: CR For: Agreement  
 38.101-4 v15.6.0 CR-0058 Cat: F (Rel-15)  
  
 Source: ANRITSU LTD*

**Abstract:**

With the current test configuration, Aperiodic ZP-CSI-RS cannot be scheduled hence test cannot be carried out properly.

Details :

Aperiodic ZP-CSI-RS is scheduled with DCI Format 1-1(DL grant, i.e. with PDSCH)(Ref. 38.212 / 7.3.1.2.2) on slot#1 according to test parameter.

Aperiodic NZP-CSI-RS is sent on slot#1 according to test parameter.

Annex A.4 Note 2 says, PDSCH is not scheduled on slots containing CSI-RS.

Annex A.4

Note 2: PDSCH is not scheduled on slots containing CSI-RS or slots which are not full DL

According to 2), slot#1 includes NZP-CSI-RS, then PDSCH cannot be scheuled according to 3). Hence, Aperiodic ZP-CSI-RS scheduling 1), which requires DCI 1-1 (DL Grant, with PDSCH), cannot be carried on slot#1.

ZP CSI RS trigger for ZP CSI-RS configuration is not necessary any more since it is associated with “aperiodic” ZP CSI-RS and now we configure “periodic” ZP CSI-RS.

**Discussion:**

The contribution was discussed during email thread [96e][313] Demod\_Maintenance . The discussion was recorded in R4-2012720.

**Decision:** The document was **revised to R4-2012594**.

**R4-2012594 CR to ZP-CSI-RS configuration**

*Type: CR For: Agreement  
 38.101-4 v15.6.0 CR-0058 rev 1 Cat: F (Rel-15)  
  
 Source: ANRITSU LTD*

(Replaces R4-2009538)

**Abstract:**

With the current test configuration, the test cannot be carried out as intended. Aperiodic ZP-CSI-RS is scheduled with DCI Format 1-1 (DL grant, i.e. with PDSCH) on slot#1, but Annex A.4 Note 2 says that PDSCH is not scheduled on slots containing CSI-RS.

**Discussion:**

The contribution was discussed during email thread [96e][313] Demod\_Maintenance . The discussion was recorded in R4-2012720.

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

**R4-2009539 CR to ZP-CSI-RS configuration**

*Type: CR For: Agreement  
 38.101-4 v16.1.0 CR-0059 Cat: A (Rel-16)  
  
 Source: ANRITSU LTD*

**Abstract:**

With the current test configuration, the test cannot be carried out as intended. Aperiodic ZP-CSI-RS is scheduled with DCI Format 1-1 (DL grant, i.e. with PDSCH) on slot#1, but Annex A.4 Note 2 says that PDSCH is not scheduled on slots containing CSI-RS.

**Discussion:**

The contribution was discussed during email thread [96e][313] Demod\_Maintenance . The discussion was recorded in R4-2012720.

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

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

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

**R4-2012036 Email discussion summary for [96e][205] NR\_NewRAT\_Positioning**

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

**Discussion:**

The contribution summarized email discussion thread [96e][205] NR\_NewRAT\_Positioning. The topic areas for discussion were Maintenance of the Positioning specs (36.171, 37.171 and 36.171). The email thread was moderated by Richard Catmur (Spirent Communications). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

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

**R4-2010918 Changes to TS 37.171 title removing references to individual RATs**

*Type: CR For: Agreement  
 37.171 v13.1.0 CR-0033 Cat: F (Rel-13)  
  
 Source: NextNav*

**Abstract:**

TS 21.900 states that 37-series specifications are for multi-RAT aspects. MCC has indicated that this implies that the specification titles should not contain references to individual RATs and that RAN working groups should therefore remove references to individual RATs in the specification titles.

Referencing individual RATs in the title is especially problematic when additional RATs (e.g. NR) are added and still applicable for the specification.

**Discussion:**

The contribution was discussed during email thread [96e][205] NR\_NewRAT\_Positioning. The discussion was recorded in R4-2012036.

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

**R4-2010933 Changes to TS 37.171 title removing references to individual RATs**

*Type: CR For: Agreement  
 37.171 v14.6.0 CR-0034 Cat: A (Rel-14)  
  
 Source: NextNav*

**Abstract:**

TS 21.900 states that 37-series specifications are for multi-RAT aspects. MCC has indicated that this implies that the specification titles should not contain references to individual RATs and that RAN working groups should therefore remove references to individual RATs in the specification titles.

Referencing individual RATs in the title is especially problematic when additional RATs (e.g. NR) are added and still applicable for the specification.

**Discussion:**

The contribution was discussed during email thread [96e][205] NR\_NewRAT\_Positioning. The discussion was recorded in R4-2012036.

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

**R4-2010934 Changes to TS 37.171 title removing references to individual RATs**

*Type: CR For: Agreement  
 37.171 v15.3.0 CR-0035 Cat: A (Rel-15)  
  
 Source: NextNav*

**Abstract:**

TS 21.900 states that 37-series specifications are for multi-RAT aspects. MCC has indicated that this implies that the specification titles should not contain references to individual RATs and that RAN working groups should therefore remove references to individual RATs in the specification titles.

References to individual RATs (UTRA, E-UTRA) are deleted from the TS 37.171 title block. The missing Bluetooth trademark statement is also added.

**Discussion:**

The contribution was discussed during email thread [96e][205] NR\_NewRAT\_Positioning. The discussion was recorded in R4-2012036.

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

**R4-2010935 Changes to TS 37.171 title removing references to individual RATs**

*Type: CR For: Agreement  
 37.171 v16.0.0 CR-0036 Cat: A (Rel-16)  
  
 Source: NextNav*

**Abstract:**

TS 21.900 states that 37-series specifications are for multi-RAT aspects. MCC has indicated that this implies that the specification titles should not contain references to individual RATs and that RAN working groups should therefore remove references to individual RATs in the specification titles.

Referencing individual RATs in the title is especially problematic when additional RATs (e.g. NR) are added and still applicable for the specification.

**Discussion:**

The contribution was discussed during email thread [96e][205] NR\_NewRAT\_Positioning. The discussion was recorded in R4-2012036.

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

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

**R4-2011414 Beam correspondence – SRS configuration corrections in section 5.2.1.3.7**

*Type: CR For: Agreement  
 38.810 v16.5.0 CR-0013 Cat: F (Rel-16)  
  
 Source: Keysight Technologies UK Ltd*

**Abstract:**

For beam correspondence capability [bit-0] DUTs, in TR 38.810 section 5.1.2.3.7 “TX Beam Peak direction search and EIRP Spherical Coverage” it is required to use up to 8 SRS resources. However, it is not explicit the ‘usage’ to be set for those resources. According to 38.331 Section 6.3.2 for SRS-Config IE, ‘usage’ can have 4 different values: beamManagement, codebook or nonCodebook based transmission or antenna switching. Based on the beam correspondence procedure goal, ‘usage’ should be set to ‘beamManagement’.

In the beam correspondence procedure defined in the above-mentioned section in TR 38.810, it is also indicated that “SS chooses the best SRS beam which is indicated in the field of SRS Resource Indicator (SRI) in the scheduling grant for PUSCH”. However, in TS 38.212 section 7.3.1.1.2, SRI definition only considers ‘codeBook’ or ‘non-codeBook’ values for usage: “SRS resource set associated with the higher layer parameter usage of value 'codeBook' or 'nonCodeBook'”, i.e. ‘beamManagement’ resource set cannot be directly used for best beam reporting pruposes.

In addition, TS 38.214, section 6.2.1 specifies that “When the higher layer parameter usage is set to 'beamManagement', only one SRS resource in each of multiple SRS sets may be transmitted at a given time instant, but the SRS resources in different SRS resource sets with the same time domain behaviour in the same BWP may be transmitted simultaneously.”

For that reason, in order to perform Tx beam peak direction search procedure defined in TR 38.810 section 5.2.1.3.7 for beam correspondence capability [bit-0] DUTs, it is required to create 2 SRS resource sets, one with 8 SRS resources with ‘usage’ set to ‘beamManagement’ and another resource set with ‘usage’ set to ‘codebook’ (default value used in TS 38.508-1).

The new SRS resource set shall be semi-persistent as, according to TS 38.321, section 6.1.3.17, and 38.214, section 6.2.1, it is the only one that can be controlled by the network to change dynamically the spatial relationship for a given SRS resource via a MAC CE during the semi-persistent SRS activation. When setting the spatial relation for the target semi-persistent SRS resource, the reference RS to be set can be an “SRS resource configured on serving cell and uplink bandwidth part indicated by Resource Serving Cell ID field and Resource BWP ID field in the activation command if present, same serving cell and bandwidth part as the SRS resource set otherwise.”.

To sum up, the SRS Resource Indicator (SRI) field in the scheduling grant

for PUSCH will indicate the semi-persistent SRS ‘codebook’ resource whose spatial relationship information has been set, via the MAC CE activation, to refer to the best ‘beamManagement’ SRS resource measured and selected by the SS.

**Discussion:**

The contribution was discussed during email thread [96e][329] NR\_MIMO\_OTA. The discussion was recorded in R4-2012743.

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

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

### 5.1 BS RF requirements [WI code or TEI]

**R4-2012536 Email discussion summary for [96e][301] LTE\_maintenance\_RF\_BS**

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

**Discussion:**

The contribution summarized email discussion thread [96e][301] LTE\_maintenance\_RF\_BS. The topic areas for discussion were LTE maintenance (up to Rel-15, BS RF)

LTE maintenance (Rel-16, BS RF). The email thread was moderated by Chunhui Zhang (Ericsson)

. All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2012721**.

**R4-2012721 Email discussion summary for [96e][301] LTE\_maintenance\_RF\_BS**

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

(Replaces R4-2012536)

**Discussion:**

The contribution summarized email discussion thread [96e][301] LTE\_maintenance\_RF\_BS. The topic areas for discussion were LTE maintenance (up to Rel-15, BS RF)

LTE maintenance (Rel-16, BS RF). The email thread was moderated by Chunhui Zhang (Ericsson)

. All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

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

**R4-2012567 WF on the introducing the new testing methodology on EDT testing**

*Type: other For: discussion  
 Source: Nokia*

**Discussion:**

The contribution was discussed during email thread [96e][301] LTE\_maintenance\_RF\_BS. The discussion was recorded in R4-2012721.

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

**R4-2010731 On energy detection threshold for LAA and eLAA in conformance specification**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

In this contribution, we further discuss issue of energy detection threshold in conformance tests for LAA/eLAA.

**Discussion:**

The contribution was discussed during email thread [96e][301] LTE\_maintenance\_RF\_BS. The discussion was recorded in R4-2012721.

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

**R4-2010732 CR to 37.107 with correction of EDT level Rel-15**

*Type: CR For: Agreement  
 37.107 v15.2.0 CR-0004 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This CR introduces corrrection for interfering signal of energy detection accuracy (EDT) to align with RAN1 specification TS 37.213. Details of this changes are described in [1].

1] R4-2010731, On energy detection threshold for LAA and eLAA in conformance specification, Nokia, Nokia Shanghai Bell

**Discussion:**

The contribution was discussed during email thread [96e][301] LTE\_maintenance\_RF\_BS. The discussion was recorded in R4-2012721.

**Decision:** The document was **revised to R4-2012568**.

**R4-2012568 CR to 37.107 with correction of EDT level Rel-15**

*Type: CR For: Agreement  
 37.107 v15.2.0 CR-0004 rev 1 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2010732)

**Abstract:**

This CR introduces corrrection of referencies in 37.107 perfromance part to TS 37.213 specifications.

**Discussion:**

The contribution was discussed during email thread [96e][301] LTE\_maintenance\_RF\_BS. The discussion was recorded in R4-2012721.

**Decision:** The document was **revised to R4-2012759**.

**R4-2012759 CR to 37.107 with correction of references to TS 37.213 Rel-15**

*Type: CR For: Agreement  
 37.107 v15.2.0 CR-0004 rev 2 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2012568)

**Abstract:**

This CR introduces corrrection of referencies in 37.107 perfromance part to TS 37.213 specifications.

**Discussion:**

The contribution was discussed during email thread [96e][301] LTE\_maintenance\_RF\_BS. The discussion was recorded in R4-2012721.

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

**R4-2010733 CR to 37.107 with correction of references to TS 37.213 Rel-16**

*Type: CR For: Agreement  
 37.107 v16.0.0 CR-0005 Cat: A (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This CR introduces corrrection of referencies in 37.107 perfromance part to TS 37.213 specifications.

**Discussion:**

The contribution was discussed during email thread [96e][301] LTE\_maintenance\_RF\_BS. The discussion was recorded in R4-2012721.

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

**R4-2010734 CR to 36.141 with correction of EDT level Rel-13**

*Type: CR For: Agreement  
 36.141 v13.14.0 CR-1269 Cat: F (Rel-13)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This CR introduces corrrection for interfering signal of energy detection accuracy (EDT) to align with RAN1 specification TS 37.213. Details of this changes are described in [1].

[1] R4-2010731, On energy detection threshold for LAA and eLAA in conformance specification, Nokia, Nokia Shanghai Bell

**Discussion:**

The contribution was discussed during email thread [96e][301] LTE\_maintenance\_RF\_BS. The discussion was recorded in R4-2012721.

**Decision:** The document was **revised to R4-2012570**.

**R4-2012570 CR to 36.141 with correction of EDT level Rel-13**

*Type: CR For: Agreement  
 36.141 v13.14.0 CR-1269 rev 1 Cat: F (Rel-13)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2010734)

**Discussion:**

The contribution was discussed during email thread [96e][301] LTE\_maintenance\_RF\_BS. The discussion was recorded in R4-2012721.

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

**R4-2010735 CR to 36.141 with correction of EDT level Rel-14**

*Type: CR For: Agreement  
 36.141 v14.11.0 CR-1270 Cat: A (Rel-14)  
  
 Source: Nokia, Nokia Shanghai Bell*

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

**R4-2010736 CR to 36.104 with correction of EDT level Rel-13**

*Type: CR For: Agreement  
 36.104 v13.13.0 CR-4905 Cat: F (Rel-13)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This CR introduces corrrection for interfering signal of energy detection accuracy (EDT) to align with RAN1 specification TS 37.213. Details of this changes are described in [1].

[1] R4-2010731, On energy detection threshold for LAA and eLAA in conformance specification, Nokia, Nokia Shanghai Bell

**Discussion:**

The contribution was discussed during email thread [96e][301] LTE\_maintenance\_RF\_BS. The discussion was recorded in R4-2012721.

**Decision:** The document was **revised to R4-2012571**.

**R4-2012571 CR to 36.104 with correction of EDT level Rel-13**

*Type: CR For: Agreement  
 36.104 v13.13.0 CR-4905 rev 1 Cat: F (Rel-13)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2010736)

**Discussion:**

The contribution was discussed during email thread [96e][301] LTE\_maintenance\_RF\_BS. The discussion was recorded in R4-2012721.

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

**R4-2010737 CR to 36.104 with correction of EDT level Rel-14**

*Type: CR For: Agreement  
 36.104 v14.9.0 CR-4906 Cat: A (Rel-14)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This CR introduces corrrection for interfering signal of energy detection accuracy (EDT) to align with RAN1 specification TS 37.213.

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

**R4-2010741 CR to TS 37.106 with correction to referencies to TS 37.213 Rel-15**

*Type: CR For: Agreement  
 37.106 v15.0.0 CR-0002 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This CR introduces corrrection of referencies to TS 37.213 specifications.

**Discussion:**

The contribution was discussed during email thread [96e][301] LTE\_maintenance\_RF\_BS. The discussion was recorded in R4-2012721.

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

**R4-2010742 CR to TS 37.106 with correction to referencies to TS 37.213 Rel-16**

*Type: CR For: Agreement  
 37.106 v16.0.0 CR-0003 Cat: A (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This CR introduces corrrection of referencies to TS 37.213 specifications.

**Discussion:**

The contribution was discussed during email thread [96e][301] LTE\_maintenance\_RF\_BS. The discussion was recorded in R4-2012721.

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

**R4-2011189 CR to TS 36.141: Corrections of table note for shortened TTI test models**

*Type: CR For: Agreement  
 36.141 v15.9.0 CR-1272 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

For E-UTRA Test Model 3.3, ‘Note 1’ in table 6.1.1.6-1 shall only be applied for 1.4MHz channel bandwidth, where the PBCH or synchronisation signal REs cover all 6RBs leaving no PDSCH PRBs for boosting/deboosting. Therefore, this note is not needed for the corresponding shortened TTI test models where 1.4MHz channel bandwidth is not included.

**Discussion:**

The contribution was discussed during email thread [96e][301] LTE\_maintenance\_RF\_BS. The discussion was recorded in R4-2012721.

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

**R4-2011190 CR to TS 36.141: Corrections of table note for shortened TTI test models**

*Type: CR For: Agreement  
 36.141 v16.6.0 CR-1273 Cat: A (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

For E-UTRA Test Model 3.3, ‘Note 1’ in table 6.1.1.6-1 shall only be applied for 1.4MHz channel bandwidth, where the PBCH or synchronisation signal REs cover all 6RBs leaving no PDSCH PRBs for boosting/deboosting. Therefore, this note is not needed for the corresponding shortened TTI test models where 1.4MHz channel bandwidth is not included.

**Discussion:**

The contribution was discussed during email thread [96e][301] LTE\_maintenance\_RF\_BS. The discussion was recorded in R4-2012721.

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

**R4-2011191 CR to TS 37.141: Clarification on manufacturer's declaration of the number of supported NB-IoT carriers**

*Type: CR For: Agreement  
 37.141 v13.13.0 CR-0943 Cat: F (Rel-13)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

The term ‘NB-IoT PRBs’ is used for the manufacturer’s declaration on the number of supported NB-IoT carriers, while the term ‘NB-IoT carriers’ is used in the test configurations for NB-IoT standalone operation. This would create ambiguity whether the two terms are equivalent, or this manufacturer’s declaration applies to NB-IoT in-band or guard band operation but not NB-IoT standalone operation. In TS 36.141, the term ‘NB-IoT carriers’ is used for the manufacturer’s declaration on the number of supported NB-IoT carriers.

**Discussion:**

The contribution was discussed during email thread [96e][301] LTE\_maintenance\_RF\_BS. The discussion was recorded in R4-2012721.

**Decision:** The document was **revised to R4-2012573**.

**R4-2012573 CR to TS 37.141: Clarification on manufacturer's declaration of the number of supported NB-IoT carriers**

*Type: CR For: Agreement  
 37.141 v13.13.0 CR-0943 rev 1 Cat: F (Rel-13)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2011191)

**Abstract:**

The term ‘NB-IoT PRBs’ is used for the manufacturer’s declaration on the number of supported NB-IoT carriers, while the term ‘NB-IoT carriers’ is used in the test configurations for NB-IoT standalone operation. This would create ambiguity whether the two terms are equivalent, or this manufacturer’s declaration applies to NB-IoT in-band or guard band operation but not NB-IoT standalone operation.

**Discussion:**

The contribution was discussed during email thread [96e][301] LTE\_maintenance\_RF\_BS. The discussion was recorded in R4-2012721.

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

**R4-2011192 CR to TS 37.141: Clarification on manufacturer's declaration of the number of supported NB-IoT carriers**

*Type: CR For: Agreement  
 37.141 v14.11.0 CR-0944 Cat: A (Rel-14)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

The term ‘NB-IoT PRBs’ is used for the manufacturer’s declaration on the number of supported NB-IoT carriers, while the term ‘NB-IoT carriers’ is used in the test configurations for NB-IoT standalone operation. This would create ambiguity whether the two terms are equivalent, or this manufacturer’s declaration applies to NB-IoT in-band or guard band operation but not NB-IoT standalone operation. In TS 36.141, the term ‘NB-IoT carriers’ is used for the manufacturer’s declaration on the number of supported NB-IoT carriers.

**Discussion:**

The contribution was discussed during email thread [96e][301] LTE\_maintenance\_RF\_BS. The discussion was recorded in R4-2012721.

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

**R4-2011193 CR to TS 37.141: Clarification on manufacturer's declaration of the number of supported NB-IoT carriers**

*Type: CR For: Agreement  
 37.141 v15.11.0 CR-0945 Cat: A (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

The term ‘NB-IoT PRBs’ is used for the manufacturer’s declaration on the number of supported NB-IoT carriers, while the term ‘NB-IoT carriers’ is used in the test configurations for NB-IoT standalone operation. This would create ambiguity whether the two terms are equivalent, or this manufacturer’s declaration applies to NB-IoT in-band or guard band operation but not NB-IoT standalone operation. In TS 36.141, the term ‘NB-IoT carriers’ is used for the manufacturer’s declaration on the number of supported NB-IoT carriers.

**Discussion:**

The contribution was discussed during email thread [96e][301] LTE\_maintenance\_RF\_BS. The discussion was recorded in R4-2012721.

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

**R4-2011194 CR to TS 37.141: Clarification on manufacturer's declaration of the number of supported NB-IoT carriers**

*Type: CR For: Agreement  
 37.141 v16.6.0 CR-0946 Cat: A (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

The term ‘NB-IoT PRBs’ is used for the manufacturer’s declaration on the number of supported NB-IoT carriers, while the term ‘NB-IoT carriers’ is used in the test configurations for NB-IoT standalone operation. This would create ambiguity whether the two terms are equivalent, or this manufacturer’s declaration applies to NB-IoT in-band or guard band operation but not NB-IoT standalone operation. In TS 36.141, the term ‘NB-IoT carriers’ is used for the manufacturer’s declaration on the number of supported NB-IoT carriers.

**Discussion:**

The contribution was discussed during email thread [96e][301] LTE\_maintenance\_RF\_BS. The discussion was recorded in R4-2012721.

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

**R4-2011269 CR to TS 37.105 + motivation: Rel-13 non-AAS CRs mirroring to Rel-13 AAS**

*Type: CR For: Agreement  
 37.105 v13.10.0 CR-0188 Cat: F (Rel-13)  
  
 Source: Huawei*

**Abstract:**

This CR mirrors Rel-13 non-AAS BS CRs (e.g. EUTRA BS, MSR BS) into Rel-13 AAS BS core specification. This work was triggered by related task in ETSI TFES, where AAS BS HS is under construction and requires updated AAS BS test specification (and its baseli

**Discussion:**

The contribution was discussed during email thread [96e][301] LTE\_maintenance\_RF\_BS. The discussion was recorded in R4-2012721.

**Decision:** The document was **revised to R4-2012574**.

**R4-2012574 CR to TS 37.105: Rel-13 non-AAS CRs mirroring, Rel-13**

*Type: CR For: Agreement  
 37.105 v13.10.0 CR-0188 rev 1 Cat: F (Rel-13)  
  
 Source: Huawei*

(Replaces R4-2011269)

**Abstract:**

The following two CRs of the MB\_MSR\_RF-Core WI were implemented into TS 37.104 (Rel-13):

R4-1707142Operating band unwanted emissions for MB MSR BS (TS 37.104)

R4-1712005Corrections for MB MSR BS supporting non-contiguous spectrum operation (TS 37.104)

It was observed that those CRs are impacting AAS BS specification and were not implemented into TS 37.105. Even though AAS implementation may not be too attractive below 1 GHz, it is seen necessary to align the MSR BS and AAS BS specificattions.

For more background on the process behind the non-AAS CRs mirroring, refer to the discussion part of R4-2011269.

**Discussion:**

The contribution was discussed during email thread [96e][301] LTE\_maintenance\_RF\_BS. The discussion was recorded in R4-2012721.

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

**R4-2011270 CR to TS 37.105: Rel-13 non-AAS CRs mirroring, Rel-14**

*Type: CR For: Agreement  
 37.105 v14.6.0 CR-0189 Cat: A (Rel-14)  
  
 Source: Huawei*

**Abstract:**

The following two CRs of the MB\_MSR\_RF-Core WI were implemented into TS 37.104 (Rel-13):

R4-1707142Operating band unwanted emissions for MB MSR BS (TS 37.104)

R4-1712005Corrections for MB MSR BS supporting non-contiguous spectrum operation (TS 37.104)

It was observed that those CRs are impacting AAS BS specification and were not implemented into TS 37.105. Even though AAS implementation may not be too attractive below 1 GHz, it is seen necessary to align the MSR BS and AAS BS specificattions.

For more background on the process behind the non-AAS CRs mirroring, refer to the discussion part of R4-2011269.

**Discussion:**

The contribution was discussed during email thread [96e][301] LTE\_maintenance\_RF\_BS. The discussion was recorded in R4-2012721.

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

**R4-2011271 CR to TS 37.105: Rel-13 non-AAS CRs mirroring, Rel-15**

*Type: CR For: Agreement  
 37.105 v15.9.0 CR-0190 Cat: A (Rel-15)  
  
 Source: Huawei*

**Abstract:**

The following two CRs of the MB\_MSR\_RF-Core WI were implemented into TS 37.104 (Rel-13):

R4-1707142Operating band unwanted emissions for MB MSR BS (TS 37.104)

R4-1712005Corrections for MB MSR BS supporting non-contiguous spectrum operation (TS 37.104)

It was observed that those CRs are impacting AAS BS specification and were not implemented into TS 37.105. Even though AAS implementation may not be too attractive below 1 GHz, it is seen necessary to align the MSR BS and AAS BS specificattions.

For more background on the process behind the non-AAS CRs mirroring, refer to the discussion part of R4-2011269.

**Discussion:**

The contribution was discussed during email thread [96e][301] LTE\_maintenance\_RF\_BS. The discussion was recorded in R4-2012721.

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

**R4-2011272 CR to TS 37.105: Rel-13 non-AAS CRs mirroring, Rel-16**

*Type: CR For: Agreement  
 37.105 v16.4.0 CR-0191 Cat: A (Rel-16)  
  
 Source: Huawei*

**Abstract:**

The following two CRs of the MB\_MSR\_RF-Core WI were implemented into TS 37.104 (Rel-13):

R4-1707142Operating band unwanted emissions for MB MSR BS (TS 37.104)

R4-1712005Corrections for MB MSR BS supporting non-contiguous spectrum operation (TS 37.104)

It was observed that those CRs are impacting AAS BS specification and were not implemented into TS 37.105. Even though AAS implementation may not be too attractive below 1 GHz, it is seen necessary to align the MSR BS and AAS BS specificattions.

For more background on the process behind the non-AAS CRs mirroring, refer to the discussion part of R4-2011269.

**Discussion:**

The contribution was discussed during email thread [96e][301] LTE\_maintenance\_RF\_BS. The discussion was recorded in R4-2012721.

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

**R4-2011273 CR to TS 37.105: Rel-14 non-AAS CRs mirroring, Rel-14**

*Type: CR For: Agreement  
 37.105 v14.6.0 CR-0192 Cat: F (Rel-14)  
  
 Source: Huawei*

**Abstract:**

The following CRs were implemented into TS 36.104 and TS 37.104 (Rel-14). Source WI codes are provided below in brackets:

R4-1610741Necessary changes to the core requirements for Multi-Band Base Station testing with three or more bands (MB\_BS\_test\_3B-Core)

R4-1610742Necessary changes to the core requirements for Multi-Band Base Station testing with three or more bands (MB\_BS\_test\_3B-Core)

R4-1704043Intorduction of new bands for NB-IoT in 36.104 (NB\_IOT\_R14\_bands-Core)

R4-1704044Intorduction of new bands for NB-IoT in 37.104 (NB\_IOT\_R14\_bands-Core)

R4-1704059CR to 36.104: Introduction of FeMBMS numerologies (MBMS\_LTE\_enh2-Core)

It was observed that those CRs are impacting AAS BS specification and were not implemented into TS 37.105.

For more background on the process behind the non-AAS CRs mirroring, refer to the discussion part of R4-2011269.

**Discussion:**

The contribution was discussed during email thread [96e][301] LTE\_maintenance\_RF\_BS. The discussion was recorded in R4-2012721.

**Decision:** The document was **revised to R4-2012755**.

**R4-2012755 CR to TS 37.105: Rel-14 non-AAS CRs mirroring, Rel-14**

*Type: CR For: Agreement  
 37.105 v14.6.0 CR-0192 rev 1 Cat: F (Rel-14)  
  
 Source: Huawei*

(Replaces R4-2011273)

**Abstract:**

The following CRs were implemented into TS 36.104 and TS 37.104 (Rel-14). Source WI codes are provided below in brackets:

R4-1610741Necessary changes to the core requirements for Multi-Band Base Station testing with three or more bands (MB\_BS\_test\_3B-Core)

R4-1610742Necessary changes to the core requirements for Multi-Band Base Station testing with three or more bands (MB\_BS\_test\_3B-Core)

R4-1704059CR to 36.104: Introduction of FeMBMS numerologies (MBMS\_LTE\_enh2-Core)

It was observed that those CRs are impacting AAS BS specification and were not implemented into TS 37.105.

For more background on the process behind the non-AAS CRs mirroring, refer to the discussion part of R4-2011269.

**Discussion:**

The contribution was discussed during email thread [96e][301] LTE\_maintenance\_RF\_BS. The discussion was recorded in R4-2012721.

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

**R4-2011274 CR to TS 37.105: Rel-14 non-AAS CRs mirroring, Rel-15**

*Type: CR For: Agreement  
 37.105 v15.9.0 CR-0193 Cat: A (Rel-15)  
  
 Source: Huawei*

**Abstract:**

The following CRs were implemented into TS 36.104 and TS 37.104 (Rel-14). Source WI codes are provided below in brackets:

R4-1610741Necessary changes to the core requirements for Multi-Band Base Station testing with three or more bands (MB\_BS\_test\_3B-Core)

R4-1610742Necessary changes to the core requirements for Multi-Band Base Station testing with three or more bands (MB\_BS\_test\_3B-Core)

R4-1704059CR to 36.104: Introduction of FeMBMS numerologies (MBMS\_LTE\_enh2-Core)

It was observed that those CRs are impacting AAS BS specification and were not implemented into TS 37.105.

For more background on the process behind the non-AAS CRs mirroring, refer to the discussion part of R4-2011269.

**Discussion:**

The contribution was discussed during email thread [96e][301] LTE\_maintenance\_RF\_BS. The discussion was recorded in R4-2012721.

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

**R4-2011275 CR to TS 37.105: Rel-14 non-AAS CRs mirroring, Rel-16**

*Type: CR For: Agreement  
 37.105 v16.4.0 CR-0194 Cat: A (Rel-16)  
  
 Source: Huawei*

**Abstract:**

The following CRs were implemented into TS 36.104 and TS 37.104 (Rel-14). Source WI codes are provided below in brackets:

R4-1610741Necessary changes to the core requirements for Multi-Band Base Station testing with three or more bands (MB\_BS\_test\_3B-Core)

R4-1610742Necessary changes to the core requirements for Multi-Band Base Station testing with three or more bands (MB\_BS\_test\_3B-Core)

R4-1704059CR to 36.104: Introduction of FeMBMS numerologies (MBMS\_LTE\_enh2-Core)

It was observed that those CRs are impacting AAS BS specification and were not implemented into TS 37.105.

For more background on the process behind the non-AAS CRs mirroring, refer to the discussion part of R4-2011269.

**Discussion:**

The contribution was discussed during email thread [96e][301] LTE\_maintenance\_RF\_BS. The discussion was recorded in R4-2012721.

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

**R4-2011276 CR to TS 37.105: Rel-15 non-AAS CRs mirroring, Rel-15**

*Type: CR For: Agreement  
 37.105 v15.9.0 CR-0195 Cat: F (Rel-15)  
  
 Source: Huawei*

**Abstract:**

The following CRs were implemented into TS 25.104, TS 36.104, TS 37.104 or TS 38.104 (Rel-15). Source WI codes are provided below in brackets:

R4-170865936.104 CR for BS IC receiver – Definitions (LTE\_IC\_BS-Perf)

R4-1708753CR to 36.104: Introduction of B75 and B76 (LTE\_SDL\_1500ext-Core)

R4-1708754CR to 37.104: Introduction of B75 and B76 (LTE\_SDL\_1500ext-Core)

R4-1708777Introduction of the FDD L-band (Band 74) into TS 25.104 (LTE\_FDD\_L\_Band-Core)

R4-1708783Introduction of the FDD L-band (Band 74) into TS 36.104 (LTE\_FDD\_L\_Band-Core)

R4-1708785Introduction of the FDD L-band (Band 74) into TS 37.104 (LTE\_FDD\_L\_Band-Core)

R4-1708805Introduction of TDD L-band into TS 37.104 (LTE\_FDD\_L\_Band-Core)

R4-1708920Introduction of TDD L-band into TS 36.104 (LTE\_FDD\_L\_Band-Core)

R4-1803227CR to 37.104: Introduction of new additional unwanted emission limit for L-Band (TEI15)

R4-1815474Addition of NR band n74 (NR\_newRAT-Core)

R4-1906323CR to TS 38.104 Combined updates from RAN4 #90bis and RAN4#91 (NR\_newRAT-Core)

R4-1908338CR to TS 37.104 some clarification as blocking test range (NR\_newRAT-Core)

R4-1908440CR to T 38.104: Implementation of endorsed draft CRs from RAN4#92 (Rel-15) (NR\_newRAT-Core)

R4-1910417CR to TS 37.104 TX&RX spurious emission range subclause 6.6.1.1&7.6.1 (NR\_newRAT-Core)

R4-1916074CR to TS 38.104: Clarification for the number of interfering signals (NR\_newRAT-Core)

R4-2002527CR to TS 38.104: Corrections on rated carrier output power symbols (NR\_newRAT-Core)

It was observed that those CRs are impacting AAS BS specification and were not implemented into TS 37.105.

For more background on the process behind the non-AAS CRs mirroring, refer to the discussion part of R4-2011269.

**Discussion:**

The contribution was discussed during email thread [96e][301] LTE\_maintenance\_RF\_BS. The discussion was recorded in R4-2012721.

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

**R4-2011277 CR to TS 37.105: Rel-15 non-AAS CRs mirroring, Rel-16**

*Type: CR For: Agreement  
 37.105 v16.4.0 CR-0196 Cat: A (Rel-16)  
  
 Source: Huawei*

**Abstract:**

The following CRs were implemented into TS 25.104, TS 36.104, TS 37.104 or TS 38.104 (Rel-15). Source WI codes are provided below in brackets:

R4-170865936.104 CR for BS IC receiver – Definitions (LTE\_IC\_BS-Perf)

R4-1708753CR to 36.104: Introduction of B75 and B76 (LTE\_SDL\_1500ext-Core)

R4-1708754CR to 37.104: Introduction of B75 and B76 (LTE\_SDL\_1500ext-Core)

R4-1708777Introduction of the FDD L-band (Band 74) into TS 25.104 (LTE\_FDD\_L\_Band-Core)

R4-1708783Introduction of the FDD L-band (Band 74) into TS 36.104 (LTE\_FDD\_L\_Band-Core)

R4-1708785Introduction of the FDD L-band (Band 74) into TS 37.104 (LTE\_FDD\_L\_Band-Core)

R4-1708805Introduction of TDD L-band into TS 37.104 (LTE\_FDD\_L\_Band-Core)

R4-1708920Introduction of TDD L-band into TS 36.104 (LTE\_FDD\_L\_Band-Core)

R4-1803227CR to 37.104: Introduction of new additional unwanted emission limit for L-Band (TEI15)

R4-1815474Addition of NR band n74 (NR\_newRAT-Core)

R4-1906323CR to TS 38.104 Combined updates from RAN4 #90bis and RAN4#91 (NR\_newRAT-Core)

R4-1908338CR to TS 37.104 some clarification as blocking test range (NR\_newRAT-Core)

R4-1908440CR to T 38.104: Implementation of endorsed draft CRs from RAN4#92 (Rel-15) (NR\_newRAT-Core)

R4-1910417CR to TS 37.104 TX&RX spurious emission range subclause 6.6.1.1&7.6.1 (NR\_newRAT-Core)

R4-1916074CR to TS 38.104: Clarification for the number of interfering signals (NR\_newRAT-Core)

R4-2002527CR to TS 38.104: Corrections on rated carrier output power symbols (NR\_newRAT-Core)

It was observed that those CRs are impacting AAS BS specification and were not implemented into TS 37.105.

For more background on the process behind the non-AAS CRs mirroring, refer to the discussion part of R4-2011269.

**Discussion:**

The contribution was discussed during email thread [96e][301] LTE\_maintenance\_RF\_BS. The discussion was recorded in R4-2012721.

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

**R4-2011278 CR to TS 37.105: Rel-15 non-AAS CRs mirroring, Rel-15**

*Type: CR For: Agreement  
 37.105 v16.4.0 CR-0197 Cat: F (Rel-16)  
  
 Source: Huawei*

**Abstract:**

The following CRs were implemented into TS 25.104, TS 36.104, TS 37.104 or TS 38.104 (Rel-15). Source WI codes are provided below in brackets:

R4-1815668CR to 37.104: Introduction of Band 53 (LTE\_TDD\_2400\_US-Core)

R4-1905107CR to 36.104: Introduction of Band 87 and 88 (LTE410\_Europe\_PPDR-Core)

R4-1905476Protection of SUL band n89 to TS 25.104 (NR\_SUL\_UL\_n5-Perf)

R4-1905971Introduction of band n30 - CR to TS 38.104 (NR\_n30-Core)

R4-1907043CR to 25.104: Introduction of co-existence requirements with Band 87 and 88 (LTE410\_Europe\_PPDR-Core)

R4-1907054CR to 38.104: Introduction of n48 (NR\_n48-Core)

R4-1907805CR to TS38.104 to introducing spectrum sharing on band n41 (NR\_n41\_LTE\_41\_coex-Core)

R4-1908947CR on Introduction and Protection of SUL band n89 into TS 38.104 (NR\_SUL\_UL\_n5-Core)

R4-1908952CR on Protection of SUL band n89 to TS 37.104 (NR\_SUL\_UL\_n5-Core)

R4-1909234n29 introduction to 36.104 (NR\_n29-Core)

R4-1910515n29 introduction to 37.104 (NR\_n29-Core)

R4-1910521CR on Protection of SUL band n89 to TS 36.104 (NR\_SUL\_UL\_n5-Core)

It was observed that those CRs are impacting AAS BS specification and were not implemented into TS 37.105.

**Discussion:**

The contribution was discussed during email thread [96e][301] LTE\_maintenance\_RF\_BS. The discussion was recorded in R4-2012721.

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

### 5.2 UE RF requirements [WI code or TEI]

**R4-2011538 Email discussion summary for [96e][105] LTE\_Maintenance**

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

**Discussion:**

The contribution summarized email discussion thread [96e][105] LTE\_Maintenance. The email thread was moderated by Dominique Brunel (Skyworks Solutions Inc.) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **revised to R4-2011845**.

**R4-2011845 Email discussion summary for [96e][105] LTE\_Maintenance**

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

(Replaces R4-2011538)

**Discussion:**

The contribution summarized email discussion thread [96e][105] LTE\_Maintenance. The email thread was moderated by Dominique Brunel (Skyworks Solutions Inc.) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **revised to R4-2011940**.

**R4-2011940 Email discussion summary for [96e][105] LTE\_Maintenance**

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

(Replaces R4-2011845)

**Discussion:**

The contribution was discussed during email thread [96e][105] LTE\_Maintenance. The discussion was recorded in R4-2011940.

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

**R4-2011911 LS on NB-IoT certification testing**

*Type: LS out For: Approval  
 to The US Federal Communications Commission  
 Source: : T-Mobile USA*

**Discussion:**

The contribution was discussed during email thread [96e][105] LTE\_Maintenance. The discussion was recorded in R4-2011940.

**Decision:** The document was **revised to R4-2011913**.

**R4-2011913 LS on NB-IoT certification testing**

*Type: LS out For: Approval  
 to The US Federal Communications Commission  
 Source: RAN4*

(Replaces R4-2011911)

**Discussion:**

The contribution was discussed during email thread [96e][105] LTE\_Maintenance. The discussion was recorded in R4-2011940.

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

**R4-2010581 NBIOT standalone operation for FCC regulation considerations**

*Type: discussion For: Discussion  
 36.101 v..  
 Source: MediaTek Inc.*

**Discussion:**

The contribution was discussed during email thread [96e][105] LTE\_Maintenance. The discussion was recorded in R4-2011940.

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

**R4-2010582 CR for TS 36.101: CR for category NB1 against FCC regulation in standalone mode**

*Type: CR For: Agreement  
 36.101 v14.15.0 CR-5664 Cat: F (Rel-14)  
  
 Source: MediaTek Inc.*

**Abstract:**

For category NB1 and NB2 device for operating bands 2, 3, 4, 5, 12, 17, 25, 26, 66, 71, 85. The lower limit and upper limit of operating bands are 100KHz narrower from both lower and upper band edge defined in Table 5.5-1 to account for the FCC regulations

**Discussion:**

The contribution was discussed during email thread [96e][105] LTE\_Maintenance. The discussion was recorded in R4-2011940.

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

**R4-2011696 CR for TS 36.101: CR for category NB1 against FCC regulation in standalone mode**

*Type: CR For: Agreement  
 36.101 v14.15.0 CR-5664 rev 1 Cat: F (Rel-14)  
  
 Source: MediaTek Inc.*

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

**R4-2010583 CR for TS 36.101: CR for category NB1 against FCC regulation in standalone mode**

*Type: CR For: Agreement  
 36.101 v15.11.0 CR-5665 Cat: A (Rel-15)  
  
 Source: MediaTek Inc.*

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

**R4-2010584 CR for TS 36.101: CR for category NB1 against FCC regulation in standalone mode**

*Type: CR For: Agreement  
 36.101 v16.6.0 CR-5666 Cat: A (Rel-16)  
  
 Source: MediaTek Inc.*

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

**R4-2010937 Update to NB-IOT aggregate power control tolerance for TDD**

*Type: CR For: Agreement  
 36.101 v15.11.0 CR-5668 Cat: F (Rel-15)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

Compared with FDD, it takes longer to complete the required UL transmissions in TDD mode owing to the reduced UL subframe resources. The transmission durations in the current spec are not applicable to TDD.

**Discussion:**

The contribution was discussed during email thread [96e][105] LTE\_Maintenance. The discussion was recorded in R4-2011940.

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

**R4-2010963 Update to NB-IOT aggregate power control tolerance for TDD**

*Type: CR For: Agreement  
 36.101 v16.6.0 CR-5670 Cat: A (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

Compared with FDD, it takes longer to complete the required UL transmissions in TDD mode owing to the reduced UL subframe resources. The transmission durations in the current spec are not applicable to TDD.

**Discussion:**

The contribution was discussed during email thread [96e][105] LTE\_Maintenance. The discussion was recorded in R4-2011940.

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

**R4-2011336 Further considerations on NB-IoT to meet FCC regulatory requirements**

*Type: discussion For: (not specified)  
 Source: Qualcomm Incorporated*

**Discussion:**

The contribution was discussed during email thread [96e][105] LTE\_Maintenance. The discussion was recorded in R4-2011940.

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

**R4-2011400 Test frequencies for NB-IOT UE in standalone operation**

*Type: other For: Discussion  
 Source: Sony*

**Discussion:**

The contribution was discussed during email thread [96e][105] LTE\_Maintenance. The discussion was recorded in R4-2011940.

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

**R4-2009546 Correction to band 85 spurious emission limits UE co-existence**

*Type: CR For: Agreement  
 36.101 v15.11.0 CR-5652 Cat: F (Rel-15)  
  
 Source: Sequans Communications*

**Abstract:**

Band 85 second harmonic falls into DL band 51

**Discussion:**

The contribution was discussed during email thread [96e][105] LTE\_Maintenance. The discussion was recorded in R4-2011940.

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

**R4-2009547 Correction to band 85 spurious emission limits UE co-existence**

*Type: CR For: Agreement  
 36.101 v16.6.0 CR-5653 Cat: A (Rel-16)  
  
 Source: Sequans Communications*

**Abstract:**

Spurious emission limits for band 85 into protected DL band 51 should be listed with Note 2

**Discussion:**

The contribution was discussed during email thread [96e][105] LTE\_Maintenance. The discussion was recorded in R4-2011940.

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

### 5.3 RRM requirements [WI code or TEI]

**R4-2012034 Email discussion summary for [96e][203] LTE\_RRM\_maintenance**

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

**Discussion:**

The contribution summarized email discussion thread [96e][203] LTE\_RRM\_maintenance. The email thread was moderated by Chris Callender (Ericsson). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2012204**.

**R4-2012204 Email discussion summary for [96e][203] LTE\_RRM\_maintenance**

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

(Replaces R4-2012034)

**Discussion:**

The contribution summarized email discussion thread [96e][203] LTE\_RRM\_maintenance. The email thread was moderated by Chris Callender (Ericsson). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

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

**R4-2010561 Search threshold applicability in euCA**

*Type: discussion For: Approval  
 36.133 v..  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

The contribution was discussed during email thread [96e][203] LTE\_RRM\_maintenance. The discussion was recorded in R4-2012204.

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

**R4-2010562 CR clarifying S-measure thresholds for EMR carriers.**

*Type: CR For: Agreement  
 36.133 v15.10.0 CR-6926 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Clarification on the use of s-Measure thresholds for carriers measured for idle mode reporting.

**Discussion:**

The contribution was discussed during email thread [96e][203] LTE\_RRM\_maintenance. The discussion was recorded in R4-2012204.

**Decision:** The document was **postponed**.

**R4-2012083 CR clarifying S-measure thresholds for EMR carriers**

*Type: CR For: Agreement  
 36.133 v15.10.0 CR-6926 rev 1 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

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

**R4-2010563 CR clarifying S-measure thresholds for EMR carriers**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6927 Cat: A (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

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

**R4-2010564 Measurement Performance Requirements test for euCA**

*Type: discussion For: Approval  
 36.133 v..  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

The contribution was discussed during email thread [96e][203] LTE\_RRM\_maintenance. The discussion was recorded in R4-2012204.

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

**R4-2010565 CR on performance requirements tests for euCA.**

*Type: CR For: Agreement  
 36.133 v15.10.0 CR-6928 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Missing accuracy requirements for the euCA RSRP and RSRQ measurements.

**Discussion:**

The contribution was discussed during email thread [96e][203] LTE\_RRM\_maintenance. The discussion was recorded in R4-2012204.

**Decision:** The document was **postponed**.

**R4-2012084 CR on performance requirements tests for euCA**

*Type: CR For: Agreement  
 36.133 v15.10.0 CR-6928 rev 1 Cat: F (Rel-15)  
  
 Source: Nokia, Nokia Shanghai Bell*

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

**R4-2010566 CR on performance requirements tests for euCA**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6929 Cat: A (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

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

**R4-2011097 CR on NB-IoT Intra frequency with serving cell measurement relaxation test case 4.2.38 R15**

*Type: CR For: Agreement  
 36.133 v15.10.0 CR-6935 Cat: F (Rel-15)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

One of the conditions for serving cell measurement relaxation is that the relaxed monitoring criteria for neighor cell in TS 36.304 is fulfilled, when UE may choose not to perform intra-frequency and inter-frequency measurement.

Under the configuration of NRSRP for nCell1 in T1 and T2 will, the relaxed monitoring criteria for neighor cell is still fulfilled (-81 dB-(-85 dB)) < SSearchDeltaP, thus UE choose not to perform neighbour cell measurement.

UE may not reselect to nCell2 in the test.

**Discussion:**

The contribution was discussed during email thread [96e][203] LTE\_RRM\_maintenance. The discussion was recorded in R4-2012204.

**Decision:** The document was **revised to R4-2012085**.

**R4-2012085 CR on NB-IoT Intra frequency with serving cell measurement relaxation test case 4.2.38 R15**

*Type: CR For: Agreement  
 36.133 v15.10.0 CR-6935 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei, Hisilicon*

(Replaces R4-2011097)

**Abstract:**

One of the conditions for serving cell measurement relaxation is that the relaxed monitoring criteria for neighor cell in TS 36.304 is fulfilled, when UE may choose not to perform intra-frequency and inter-frequency measurement.

Under the configuration of NRSRP for nCell1 in T1 and T2 will, the relaxed monitoring criteria for neighor cell is still fulfilled (-81 dB-(-85 dB)) < SSearchDeltaP, thus UE choose not to perform neighbour cell measurement.

UE may not reselect to nCell2 in the test.

**Discussion:**

The contribution was discussed during email thread [96e][203] LTE\_RRM\_maintenance. The discussion was recorded in R4-2012204.

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

**R4-2011098 CR on NB-IoT Intra frequency with serving cell measurement relaxation test case 4.2.38 R16 (Cat A)**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6936 Cat: A (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

One of the conditions for serving cell measurement relaxation is that the relaxed monitoring criteria for neighor cell in TS 36.304 is fulfilled, when UE may choose not to perform intra-frequency and inter-frequency measurement.

Under the configuration of NRSRP for nCell1 in T1 and T2 will, the relaxed monitoring criteria for neighor cell is still fulfilled (-81 dB-(-85 dB)) < SSearchDeltaP, thus UE choose not to perform neighbour cell measurement.

UE may not reselect to nCell2 in the test.

**Discussion:**

The contribution was discussed during email thread [96e][203] LTE\_RRM\_maintenance. The discussion was recorded in R4-2012204.

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

**R4-2009534 Correction to intra-frequency event triggered reporting test case in CEModeA**

*Type: CR For: Agreement  
 36.133 v13.19.0 CR-6913 Cat: F (Rel-13)  
  
 Source: ANRITSU LTD*

**Abstract:**

In eMTC RLM DRX test cases, the sr-ConfigIndex is defined as 10 which means a SR periodicity of 10 ms. This short period is causing practical issue for the test implementation as explained below.

The test requires RRC Reconfiguration before T1. Upon receiving the RRC Reconfiguration Request, the UE applies it, while the Network / TE does not apply it immediately. During this time interval, there is a configuration mismatch between the UE and the TE, due to which the UE does not receive the UL grants sent by the TE (MPDCCH configuration mismatch). As such the UE starts sending SRs to the TE, but due to the short periodicity of 10ms the UE soon runs out of them and start sending PRACH, while the expected test metric in PUSCH.

The above can be avoided increasing the duration of SRs cycles from 10ms to 20 ms, which will avoid the UE ending up to send PRACH, though the temporary RRC configuration mismatch.

RAN5 has already identified this situation and is using 20ms periodicity in the default SR\_Index config in TS 36.508 (which is though overwritten by the RAN4 values), so this configuration can be reused in RAN4.

**Discussion:**

The contribution was discussed during email thread [96e][203] LTE\_RRM\_maintenance. The discussion was recorded in R4-2012204.

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

**R4-2009535 Correction to intra-frequency event triggered reporting test case in CEModeA**

*Type: CR For: Agreement  
 36.133 v14.15.0 CR-6914 Cat: A (Rel-14)  
  
 Source: ANRITSU LTD*

**Abstract:**

In eMTC RLM DRX test cases, the sr-ConfigIndex is defined as 10 which means a SR periodicity of 10 ms. This short period is causing practical issue for the test implementation as explained below.

The test requires RRC Reconfiguration before T1. Upon receiving the RRC Reconfiguration Request, the UE applies it, while the Network / TE does not apply it immediately. During this time interval, there is a configuration mismatch between the UE and the TE, due to which the UE does not receive the UL grants sent by the TE (MPDCCH configuration mismatch). As such the UE starts sending SRs to the TE, but due to the short periodicity of 10ms the UE soon runs out of them and start sending PRACH, while the expected test metric in PUSCH.

The above can be avoided increasing the duration of SRs cycles from 10ms to 20 ms, which will avoid the UE ending up to send PRACH, though the temporary RRC configuration mismatch.

RAN5 has already identified this situation and is using 20ms periodicity in the default SR\_Index config in TS 36.508 (which is though overwritten by the RAN4 values), so this configuration can be reused in RAN4.

**Discussion:**

The contribution was discussed during email thread [96e][203] LTE\_RRM\_maintenance. The discussion was recorded in R4-2012204.

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

**R4-2009536 Correction to intra-frequency event triggered reporting test case in CEModeA**

*Type: CR For: Agreement  
 36.133 v15.10.0 CR-6915 Cat: A (Rel-15)  
  
 Source: ANRITSU LTD*

**Abstract:**

In eMTC RLM DRX test cases, the sr-ConfigIndex is defined as 10 which means a SR periodicity of 10 ms. This short period is causing practical issue for the test implementation as explained below.

The test requires RRC Reconfiguration before T1. Upon receiving the RRC Reconfiguration Request, the UE applies it, while the Network / TE does not apply it immediately. During this time interval, there is a configuration mismatch between the UE and the TE, due to which the UE does not receive the UL grants sent by the TE (MPDCCH configuration mismatch). As such the UE starts sending SRs to the TE, but due to the short periodicity of 10ms the UE soon runs out of them and start sending PRACH, while the expected test metric in PUSCH.

The above can be avoided increasing the duration of SRs cycles from 10ms to 20 ms, which will avoid the UE ending up to send PRACH, though the temporary RRC configuration mismatch.

RAN5 has already identified this situation and is using 20ms periodicity in the default SR\_Index config in TS 36.508 (which is though overwritten by the RAN4 values), so this configuration can be reused in RAN4.

**Discussion:**

The contribution was discussed during email thread [96e][203] LTE\_RRM\_maintenance. The discussion was recorded in R4-2012204.

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

**R4-2009537 Correction to intra-frequency event triggered reporting test case in CEModeA**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6916 Cat: A (Rel-16)  
  
 Source: ANRITSU LTD*

**Abstract:**

In eMTC RLM DRX test cases, the sr-ConfigIndex is defined as 10 which means a SR periodicity of 10 ms. This short period is causing practical issue for the test implementation as explained below.

The test requires RRC Reconfiguration before T1. Upon receiving the RRC Reconfiguration Request, the UE applies it, while the Network / TE does not apply it immediately. During this time interval, there is a configuration mismatch between the UE and the TE, due to which the UE does not receive the UL grants sent by the TE (MPDCCH configuration mismatch). As such the UE starts sending SRs to the TE, but due to the short periodicity of 10ms the UE soon runs out of them and start sending PRACH, while the expected test metric in PUSCH.

The above can be avoided increasing the duration of SRs cycles from 10ms to 20 ms, which will avoid the UE ending up to send PRACH, though the temporary RRC configuration mismatch.

RAN5 has already identified this situation and is using 20ms periodicity in the default SR\_Index config in TS 36.508 (which is though overwritten by the RAN4 values), so this configuration can be reused in RAN4.

**Discussion:**

The contribution was discussed during email thread [96e][203] LTE\_RRM\_maintenance. The discussion was recorded in R4-2012204.

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

**R4-2009891 CR on TS36.133 for measurement capability of IDLE mode CA measurement (Section 4.9.2.2)**

*Type: CR For: Agreement  
 36.133 v15.10.0 CR-6920 Cat: F (Rel-15)  
  
 Source: MediaTek inc.*

**Abstract:**

The measurement capabilities for UE supporting inter-freq. EMR measurement in LTE IDLE mode are specified in different sections 4.2.2.9, 4.2.2.9a and 4.9.2.2. A clarification must be added to show that measurement capabilities in section 4.2.2.9, 4.2.2.9a and in section 4.9.2.2 should be simultaneously followed.

**Discussion:**

The contribution was discussed during email thread [96e][203] LTE\_RRM\_maintenance. The discussion was recorded in R4-2012204.

**Decision:** The document was **postponed**.

**R4-2012082 CR on TS36.133 for measurement capability of IDLE mode CA measurement**

*Type: CR For: Agreement  
 36.133 v15.10.0 CR-6920 rev 1 Cat: F (Rel-15)  
  
 Source: MediaTek inc.*

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

**R4-2009892 CR on TS36.133 for measurement capability of IDLE mode CA measurement**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6921 Cat: A (Rel-16)  
  
 Source: MediaTek inc.*

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

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

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

**R4-2010460 Correction of OCNG configuration for LAA SDR requirements**

*Type: CR For: Agreement  
 36.101 v14.15.0 CR-5657 Cat: F (Rel-14)  
  
 Source: Ericsson*

**Abstract:**

OCNG configuration for LAA CC is TBD for SDR requirements

**Discussion:**

The contribution was discussed during email thread [96e][313] Demod\_Maintenance . The discussion was recorded in R4-2012720.

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

**R4-2010461 Correction of OCNG configuration for LAA SDR requirements**

*Type: CR For: Agreement  
 36.101 v15.11.0 CR-5658 Cat: A (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

OCNG configuration for LAA CC is TBD for SDR requirements

**Discussion:**

The contribution was discussed during email thread [96e][313] Demod\_Maintenance . The discussion was recorded in R4-2012720.

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

**R4-2010462 Correction of OCNG configuration for LAA SDR requirements**

*Type: CR For: Agreement  
 36.101 v16.6.0 CR-5659 Cat: A (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

OCNG configuration for LAA CC is TBD for SDR requirements

**Discussion:**

The contribution was discussed during email thread [96e][313] Demod\_Maintenance . The discussion was recorded in R4-2012720.

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

**R4-2010463 Addition of applicability for MTC UE capable of 64QAM DL**

*Type: CR For: Agreement  
 36.101 v15.11.0 CR-5660 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

No applicability rule is specified for PDSCH demodulation requirements with 64QAM for MTC UE

**Discussion:**

The contribution was discussed during email thread [96e][313] Demod\_Maintenance . The discussion was recorded in R4-2012720.

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

**R4-2012596 Addition of applicability for MTC UE capable of 64QAM DL**

*Type: CR For: Agreement  
 36.101 v15.11.0 CR-5660 rev 1 Cat: F (Rel-15)  
  
 Source: Ericsson*

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

**R4-2010464 Addition of applicability for MTC UE capable of 64QAM DL**

*Type: CR For: Agreement  
 36.101 v16.6.0 CR-5661 Cat: A (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

No applicability rule is specified for PDSCH demodulation requirements with 64QAM for MTC UE

**Discussion:**

The contribution was discussed during email thread [96e][313] Demod\_Maintenance . The discussion was recorded in R4-2012720.

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

**R4-2010518 Introduction of LTE inter-band Carrier Aggregation for x bands DL (x=4, 5) with 1 band UL to TS36.101**

*Type: draftCR For: Endorsement  
 36.101 v16.6.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This is a big CR for the basket work item on LTE CA 4DL/1UL and 5DL/1UL.

**Discussion:**

The contribution was discussed during email thread [96e][313] Demod\_Maintenance . The discussion was recorded in R4-2012720.

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

#### 5.4.2 BS demodulation requirements [WI code or TEI]

## 6 Rel-16 Work Items for LTE

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

**R4-2012059 Email discussion summary for [96e][228] LTE\_eMTC5\_RRM**

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

**Discussion:**

The contribution summarized email discussion thread [96e][228] LTE\_eMTC5\_RRM. The topic areas for discussion were RRM requirements (Core maintenance and Perf). The email thread was moderated by Santhan Thangarasa (Ericsson). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

1st round email discussion conclusions

**Topic #1: Core requirements maintenance: RSS**

Issue 1-1: Correction to serving cell RSS measurement period in normal coverage in IDLE mode

Agreement: For serving cell measurement in NC, RSS measurement period is defined as 3 DRX cycles, and the requirements are only applicable for DRX cycle of 320ms and 640ms.

Issue 1-2: Correction to serving cell RSS measurement period in enhanced coverage in IDLE mode

Agreement: For serving cell measurement in EC, RSS measurement period is defined as 5 DRX cycles, and the requirements are only applicable for DRX cycle of 320ms and 640ms.

**Topic #2: Core requirements maintenance: PUR**

Issue 2-1: PUR and relaxed serving cell montoring

Agreement: For RSRP1 and RSRP2 in PUR requirements in clause 4.7.4.3, N=1 if relaxed serving cell monitoring is not in use.

**Topic #3: Core requirements maintenance: MPDCCH improvement**

**Topic #4: Core requirements maintenance: DL quality reporting**

**Topic #5: Performance: RSS measurement accuracy**

Agreement: RF margin to use for RSS measurement for BL UE is 4 dB.

**Topic #6: Performance: Test cases**

Issue 6-1: Test for DL channel quality reporting

Agreement: RAN4 to define RRM tests for DL channel quality reporting for both Msg3 based reporting in idle mode and MAC CE based reporting in connected mode.

Issue 6-2: Test parameters for DL channel quality reporting

Agreement: RAN4 to specify performance tests for DL channel quality reporting in 4-bit reporting mode according to Table 1.

Table 4-bit DL channel quality reporting tests for idle and connected states

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Index | State | Mode | Test | Note |
| 1 | Idle | A | AL = 24, RP > 1 | Tests for FDD/HD-FDD/TDD, AWGN |
| 2 | Idle | B | AL = 24, RP > 1 | Tests for FDD/HD-FDD/TDD, AWGN |
| 3 | Connected | A | AL < 24, RP = 1 | Tests for FDD/HD-FDD/TDD, AWGN |
| 4 | Connected | B | AL = 24, RP > 1 | Tests for FDD/HD-FDD/TDD, AWGN |

Issue 6-4: Test for MPDCCH improvement

Agreement: RAN4 to specify performance test for MPDCCH performance improvement when RLM out-of-sync is triggered.

**Issue 6-5: Test for mobility enhancement**

Agreement: RAN4 to define RRM tests for relaxed serving cell monitoring.

**Decision:** The document was **revised to R4-2012228**.

**R4-2012228 Email discussion summary for [96e][228] LTE\_eMTC5\_RRM**

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

(Replaces R4-2012059)

**Discussion:**

The contribution summarized email discussion thread [96e][228] LTE\_eMTC5\_RRM. The topic areas for discussion were RRM requirements (Core maintenance and Perf). The email thread was moderated by Santhan Thangarasa (Ericsson). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

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

#### 6.1.1 Core requirements maintenance [LTE\_eMTC5-Core]

##### 6.1.1.1 RF [LTE\_eMTC5-Core]

##### 6.1.1.2 RRM [LTE\_eMTC5-Core]

**R4-2011177 Discussion on remaining issues in eMTC RRM requirements**

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

**Discussion:**

The contribution was discussed during email thread [96e][228] LTE\_eMTC5\_RRM. The discussion was recorded in R4-2012228.

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

**R4-2011178 CR on RSS based measurement requriements**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6949 Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

There are some issues with RSS requirements:

For idle mode, the measurement period requriements are not correctly defined

For connected mode, the measurement condition and measurement period are not fully correct.

**Discussion:**

The contribution was discussed during email thread [96e][228] LTE\_eMTC5\_RRM. The discussion was recorded in R4-2012228.

**Decision:** The document was **revised to R4-2012187**.

**R4-2012187 CR on RSS based measurement requriements**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6949 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

(Replaces R4-2011178)

**Abstract:**

There are some issues with RSS requirements:

For idle mode, the measurement period requriements are not correctly defined

For connected mode, the measurement condition and measurement period are not fully correct.

**Discussion:**

The contribution was discussed during email thread [96e][228] LTE\_eMTC5\_RRM. The discussion was recorded in R4-2012228.

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

**R4-2011179 CR on RLM requriements based on enhanced MPDCCH**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6950 Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

Qout\_Cat M1 is based on enhanced MPDCCH performance when event E1 is triggered, and QE1\_out\_CatM1 based on enhanced PDCCH performance is not defined.

**Discussion:**

The contribution was discussed during email thread [96e][228] LTE\_eMTC5\_RRM. The discussion was recorded in R4-2012228.

**Decision:** The document was **revised to R4-2012189**.

**R4-2012189 CR on RLM requriements based on enhanced MPDCCH**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6950 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

(Replaces R4-2011179)

**Abstract:**

Qout\_Cat M1 is based on enhanced MPDCCH performance when event E1 is triggered, and QE1\_out\_CatM1 based on enhanced PDCCH performance is not defined.

**Discussion:**

The contribution was discussed during email thread [96e][228] LTE\_eMTC5\_RRM. The discussion was recorded in R4-2012228.

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

**R4-2011180 CR on PUR related requirements**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6951 Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

There are some issues with requirements in 4.7.4.3 related to PUR:

timing alignment validation and RSRP changed validation are two independent mechanisms, so when only rsrp-ChangeThresh is configured, the TA validation should not depend on timing alignment validation

TA validation with RSRP1 and RSRP2 are also defined in clause 5.3.3.19 of 36.331, instead of RAN4 36.133.

N value is not defined for the case when relaxed serving cell monitoring is not in use.

**Discussion:**

The contribution was discussed during email thread [96e][228] LTE\_eMTC5\_RRM. The discussion was recorded in R4-2012228.

**Decision:** The document was **revised to R4-2012188**.

**R4-2012188 CR on PUR related requirements**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6951 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

(Replaces R4-2011180)

**Abstract:**

There are some issues with requirements in 4.7.4.3 related to PUR:

TA validation with RSRP1 and RSRP2 are also defined in clause 5.3.3.19 of 36.331, instead of RAN4 36.133.

N value is not defined for the case when relaxed serving cell monitoring is not in use.

**Discussion:**

The contribution was discussed during email thread [96e][228] LTE\_eMTC5\_RRM. The discussion was recorded in R4-2012228.

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

**R4-2011208 Correction of eMTC DL channel quality report mapping table and RSS measurement requirements**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6954 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

For BL UE or UE in CE, channel quality is reported as Quality Report in MAC CE Downlink Channel Quality Report. The Quality Report is represented as 4-bit Codepoint/index. Mapping table should be also given as codepoint/index.

RSS change: Measurement delay requirements for RSS compared to CRS based RSRP measurement is clarified.

**Discussion:**

The contribution was discussed during email thread [96e][228] LTE\_eMTC5\_RRM. The discussion was recorded in R4-2012228.

**Decision:** The document was **revised to R4-2012190**.

**R4-2012190 Correction of eMTC DL channel quality report mapping table and RSS measurement requirements**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6954 rev 1 Cat: F (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2011208)

**Abstract:**

For BL UE or UE in CE, channel quality is reported as Quality Report in MAC CE Downlink Channel Quality Report. The Quality Report is represented as 4-bit Codepoint/index. Mapping table should be also given as codepoint/index.

**Discussion:**

The contribution was discussed during email thread [96e][228] LTE\_eMTC5\_RRM. The discussion was recorded in R4-2012228.

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

**R4-2009886 Corrections to RSS based RSRP measruement requriements in R16 eMTC**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6919 Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

RSS based RSRP measurement requirements were introduced in RAN4#95-e in order to complete the core phase of R16 eMTC. However, some inconsistencies in the text are present that are not aligned with RAN4 agreements. In parcticular, it was agreed that RSS-based measurement requirements are not applicable if RSS-based measurement period is longer than CRS-based measurement period. This agreement is currently not correctly captured in the specification. Some other minor technical and editorial corrections are also introduced.

**Discussion:**

The contribution was discussed during email thread [96e][228] LTE\_eMTC5\_RRM. The discussion was recorded in R4-2012228.

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

#### 6.1.2 RRM perf. requirements [LTE\_eMTC5-Perf]

**R4-2012192 WF on RRM performance requirements for MTC**

*Type: other For: discussion  
 Source: Ericsson*

**Discussion:**

The contribution was discussed during email thread [96e][228] LTE\_eMTC5\_RRM. The discussion was recorded in R4-2012228.

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

##### 6.1.2.1 General [LTE\_eMTC5-Perf]

**R4-2011181 Discussion on accuracy requirements for RSS based measurement**

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

**Discussion:**

The contribution was discussed during email thread [96e][228] LTE\_eMTC5\_RRM. The discussion was recorded in R4-2012228.

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

**R4-2011182 CR for accuracy requirements for RSS based measurement**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6952 Cat: B (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

There is no measurement accuracy requirements for RSS based RSRP measurement.

**Discussion:**

The contribution was discussed during email thread [96e][228] LTE\_eMTC5\_RRM. The discussion was recorded in R4-2012228.

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

**R4-2011206 Discussions on RSS measurement accuracy for Rel-16 MTC**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

The RSS based RSRP measurement accuracy is discussed in this contribution. We look at previous agreements, provide our view on the open issues and then make our proposals.

**Discussion:**

The contribution was discussed during email thread [96e][228] LTE\_eMTC5\_RRM. The discussion was recorded in R4-2012228.

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

**R4-2011207 Introduction of measurement accuracy requirements for RSS based RSRP measurements for cat-M1/M2**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6953 Cat: B (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Support for RSS based RSRP measurement is introduced in release 16.

**Discussion:**

The contribution was discussed during email thread [96e][228] LTE\_eMTC5\_RRM. The discussion was recorded in R4-2012228.

**Decision:** The document was **revised to R4-2012191**.

**R4-2012191 Introduction of measurement accuracy requirements for RSS based RSRP measurements for cat-M1/M2**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6953 rev 1 Cat: B (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2011207)

**Abstract:**

Support for RSS based RSRP measurement is introduced in release 16.

**Discussion:**

The contribution was discussed during email thread [96e][228] LTE\_eMTC5\_RRM. The discussion was recorded in R4-2012228.

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

**R4-2009872 On performance tests of RRM features in R16 MTC**

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

**Discussion:**

The contribution was discussed during email thread [96e][228] LTE\_eMTC5\_RRM. The discussion was recorded in R4-2012228.

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

##### 6.1.2.2 Test cases [LTE\_eMTC5-Perf]

**R4-2011183 Discussion on test cases for Rel-16 eMTC RRM**

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

**Discussion:**

The contribution was discussed during email thread [96e][228] LTE\_eMTC5\_RRM. The discussion was recorded in R4-2012228.

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

**R4-2011205 Discussions on test cases for Rel-16 MTC**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution we discuss the test cases for Rel-16 MTC.

**Discussion:**

The contribution was discussed during email thread [96e][228] LTE\_eMTC5\_RRM. The discussion was recorded in R4-2012228.

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

#### 6.1.3 Demodulation and CSI requirements (36.101) [LTE\_eMTC5-Perf]

##### 6.1.3.1 UE demodulation requirements [LTE\_eMTC5-Perf]

**R4-2012537 Email discussion summary for [96e][314] LTE\_eMTC5\_Demod**

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

**Discussion:**

The contribution summarized email discussion thread [96e][314] LTE\_eMTC5\_Demod. The topic areas for discussion were Rel-16 LTE eMTC demodulation and CSI. The email thread was moderated by Kazuyoshi Uesaka (Ericsson). All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2012722**.

**R4-2012722 Email discussion summary for [96e][314] LTE\_eMTC5\_Demod**

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

(Replaces R4-2012537)

**Discussion:**

The contribution summarized email discussion thread [96e][314] LTE\_eMTC5\_Demod. The topic areas for discussion were Rel-16 LTE eMTC demodulation and CSI. The email thread was moderated by Kazuyoshi Uesaka (Ericsson). All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

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

**R4-2010471 Simulation results of MPDCCH with DMRS+CRS**

*Type: other For: Information  
 Source: Ericsson*

**Abstract:**

This contribution shows the simulation results of MPDCCH with DMRS+CRS according to the simulation assumption.

**Discussion:**

The contribution was discussed during email thread [96e][314] LTE\_eMTC5\_Demod. The discussion was recorded in R4-2012722.

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

**R4-2010473 Introduction of enhanced MPDCCH demodulation requirements**

*Type: CR For: Agreement  
 36.101 v16.6.0 CR-5662 Cat: B (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Introduction of enhanced MPDCCH demodulation requirements.

**Discussion:**

The contribution was discussed during email thread [96e][314] LTE\_eMTC5\_Demod. The discussion was recorded in R4-2012722.

**Decision:** The document was **revised to R4-2012597**.

**R4-2012597 Introduction of enhanced MPDCCH demodulation requirements**

*Type: CR For: Agreement  
 36.101 v16.6.0 CR-5662 rev 1 Cat: B (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2010473)

**Abstract:**

Introduction of enhanced MPDCCH demodulation requirements.

**Discussion:**

The contribution was discussed during email thread [96e][314] LTE\_eMTC5\_Demod. The discussion was recorded in R4-2012722.

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

**R4-2010475 Summary of simulation results for Rel-16 eMTC demodulation requirements**

*Type: other For: Information  
 Source: Ericsson*

**Abstract:**

This spread sheet summarizes the simulation results for Rel-16 eMTC demodulation performance.

**Discussion:**

The contribution was discussed during email thread [96e][314] LTE\_eMTC5\_Demod. The discussion was recorded in R4-2012722.

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

**R4-2010964 Simulation reuslts for MPDCCH**

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

**Discussion:**

The contribution was discussed during email thread [96e][314] LTE\_eMTC5\_Demod. The discussion was recorded in R4-2012722.

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

##### 6.1.3.2 CSI requirements [LTE\_eMTC5-Perf]

**R4-2010472 Simulation results of CSI-RS based PMI reporting test**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution shows the simulation results of CSI-RS based PMI reporting according to the simulation assumption.

**Discussion:**

The contribution was discussed during email thread [96e][314] LTE\_eMTC5\_Demod. The discussion was recorded in R4-2012722.

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

**R4-2010474 Introduction of CSI-RS based PMI reporting test for non-BL UEs**

*Type: CR For: Agreement  
 36.101 v16.6.0 CR-5663 Cat: B (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Introduction of CSI-RS based PMI reporting test for non-BL UEs.

**Discussion:**

The contribution was discussed during email thread [96e][314] LTE\_eMTC5\_Demod. The discussion was recorded in R4-2012722.

**Decision:** The document was **revised to R4-2012598**.

**R4-2012598 Introduction of CSI-RS based PMI reporting test for non-BL UEs**

*Type: CR For: Agreement  
 36.101 v16.6.0 CR-5663 rev 1 Cat: B (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2010474)

**Abstract:**

Introduction of CSI-RS based PMI reporting test for non-BL UEs.

**Discussion:**

The contribution was discussed during email thread [96e][314] LTE\_eMTC5\_Demod. The discussion was recorded in R4-2012722.

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

**R4-2010965 Simulation results for PMI reporting test in eMTC**

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

**Discussion:**

The contribution was discussed during email thread [96e][314] LTE\_eMTC5\_Demod. The discussion was recorded in R4-2012722.

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

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

**R4-2012060 Email discussion summary for [96e][229] NB\_IOTenh3\_RRM**

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

**Discussion:**

The contribution summarized email discussion thread [96e][229] NB\_IOTenh3\_RRM. The topic areas for discussion were RRM requirements (Core maintenance and Perf). The email thread was moderated by Zhongyi Shen (Huawei). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

*1st round email discussion conclusions*

**Topic #1: Core requirements maintenance**

**Topic #2: Performance requirements**

Issue 2-1-1: DL channel quality reporting in non-anchor carrier

Agreement: RAN4 to specify performance tests for MSG3 DL channel quality reporting in non-anchor carrier

Issue 2-1-2: Channel quality reporting in connected mode

Agreement: RAN4 to specify test cases for channel quality reporting in connected mode.

Issue 2-1-3: Group WUS

Agreement: RAN4 to not specify performance tests for group WUS

Issue 2-1-5: New introduced short DRX cycles

Agreement: RAN4 to define test cases for the new introduced short DRX cycles length.

Issue 2-1-6: NRSRP Measurement on non-anchor carrier

Agreement: RAN4 to not specify performance tests for NRSRP measurements on the non-anchor carrier.

Issue 2-2-1: DL channel quality reporting in non-anchor carrier

Agreement: AWGN channel using 4-bit table

Issue 2-2-2: Channel quality reporting in connected mode

Agreement: The test must ensure that the channel condition (i.e., SNR) is different in the evaluation period compared to the time prior to it so that UE only relies on the specified evaluation period for estimation of DL quality.

Agreement: 4-bit version in AWGN channel should be tested.

Issue 2-2-4: RMCs and OCNGs

Agreement: Take the existing RMC/OCNG as baseline

**Decision:** The document was **revised to R4-2012229**.

**R4-2012229 Email discussion summary for [96e][229] NB\_IOTenh3\_RRM**

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

(Replaces R4-2012060)

**Discussion:**

The contribution summarized email discussion thread [96e][229] NB\_IOTenh3\_RRM. The topic areas for discussion were RRM requirements (Core maintenance and Perf). The email thread was moderated by Zhongyi Shen (Huawei). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

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

#### 6.2.1 Core requirements maintenance [NB\_IOTenh3-Core]

##### 6.2.1.1 RF [NB\_IOTenh3-Core]

##### 6.2.1.2 RRM [NB\_IOTenh3-Core]

**R4-2011088 CR on serving cell measurement on non-anchor carrier for NB-IoT**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6933 Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

According to TS 36.304, the NRSRP on non-anchor carrier is translated to the NRSRP on anchor carrier as:

Qrxlevmeas = QrxlevmeasNonAnchor - nrs-PowerOffsetNonAnchor.

Thus, the inequality for comparing the measurement form anchor carrier and non-anchor carrier shall be

| NRSRPanchor – (NRSRPnon-anchor - nrs-PowerOffsetNonAnchor) | ≤ 10 dB

Rephrase the conditon of the presence of NRS on non-anchor carrier

**Discussion:**

The contribution was discussed during email thread [96e][229] NB\_IOTenh3\_RRM. The discussion was recorded in R4-2012229.

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

**R4-2011089 CR on PUR requirements for NB-IoT**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6934 Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

There are some issues with requirements in 4.6.3 related to PUR:

timing alignment validation and NRSRP changed validation are two independent mechanisms, so when only NRSRP-ChangeThresh-NB-r16 is configured, the TA validation should not depend on timing alignment validation

TA validation with NRSRP1 and NRSRP2 are also defined in clause 5.3.3.19 of 36.331, instead of RAN4 36.133.

N value is not defined for the case when relaxed serving cell monitoring is not in use.

**Discussion:**

The contribution was discussed during email thread [96e][229] NB\_IOTenh3\_RRM. The discussion was recorded in R4-2012229.

**Decision:** The document was **revised to R4-2012193**.

**R4-2012193 CR on PUR requirements for NB-IoT**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6934 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

(Replaces R4-2011089)

**Abstract:**

There are some issues with requirements in 4.6.3 related to PUR:

timing alignment validation and NRSRP changed validation are two independent mechanisms, so when only NRSRP-ChangeThresh-NB-r16 is configured, the TA validation should not depend on timing alignment validation

TA validation with NRSRP1 and NRSRP2 are also defined in clause 5.3.3.19 of 36.331, instead of RAN4 36.133.

N value is not defined for the case when relaxed serving cell monitoring is not in use.

**Discussion:**

The contribution was discussed during email thread [96e][229] NB\_IOTenh3\_RRM. The discussion was recorded in R4-2012229.

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

#### 6.2.2 RRM perf. requirements [NB\_IOTenh3-Perf]

**R4-2012194 WF on Rel-16 NB-IoT RRM performance requirements**

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

**Discussion:**

The contribution was discussed during email thread [96e][229] NB\_IOTenh3\_RRM. The discussion was recorded in R4-2012229.

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

##### 6.2.2.1 General [LTE\_eMTC5-Perf]

**R4-2011090 Discussion on performance part of Rel-16 NB-IoT**

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

**Discussion:**

The contribution was discussed during email thread [96e][229] NB\_IOTenh3\_RRM. The discussion was recorded in R4-2012229.

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

**R4-2009873 On performance tests of RRM features in R16 NB-IoT**

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

**Discussion:**

The contribution was discussed during email thread [96e][229] NB\_IOTenh3\_RRM. The discussion was recorded in R4-2012229.

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

##### 6.2.2.2 Test cases [LTE\_eMTC5-Perf]

**R4-2011091 Test cases list for Rel-16 NB-IoT**

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

**Discussion:**

The contribution was discussed during email thread [96e][229] NB\_IOTenh3\_RRM. The discussion was recorded in R4-2012229.

**Decision:** The document was **revised to R4-2012195**.

**R4-2012195 Test cases list for Rel-16 NB-IoT**

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

(Replaces R4-2011091)

**Discussion:**

The contribution was discussed during email thread [96e][229] NB\_IOTenh3\_RRM. The discussion was recorded in R4-2012229.

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

**R4-2011209 Discussions on test cases for Rel-16 NB-IOT**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution we discuss the test cases for Rel-16 NB-IOT.

**Discussion:**

The contribution was discussed during email thread [96e][229] NB\_IOTenh3\_RRM. The discussion was recorded in R4-2012229.

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

#### 6.2.3 Demodulation and CSI requirements (36.101/36.104) [NB\_IOTenh3-Perf]

##### 6.2.3.1 UE demodulation requirements [NB\_IOTenh3-Perf]

**R4-2012538 Email discussion summary for [96e][315] NB\_IOTenh3\_Demod**

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

**Discussion:**

The contribution summarized email discussion thread [96e][315] NB\_IOTenh3\_Demod. The topic areas for discussion were Rel-16 LTE NB-IOT demodulation and CSI. The email thread was moderated by Tricia Li (Huawei). All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2012723**.

**R4-2012723 Email discussion summary for [96e][315] NB\_IOTenh3\_Demod**

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

(Replaces R4-2012538)

**Discussion:**

The contribution summarized email discussion thread [96e][315] NB\_IOTenh3\_Demod. The topic areas for discussion were Rel-16 LTE NB-IOT demodulation and CSI. The email thread was moderated by Tricia Li (Huawei). All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

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

**R4-2010476 NPDSCH demodulation requirements with multi-TB transmission**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution provides our initial simulation results of NPDSCH with multi-TB transmission.

**Discussion:**

The contribution was discussed during email thread [96e][315] NB\_IOTenh3\_Demod. The discussion was recorded in R4-2012723.

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

**R4-2010969 Simulation results for NPDSCH with multi-TB interleaved transmission.**

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

**Discussion:**

The contribution was discussed during email thread [96e][315] NB\_IOTenh3\_Demod. The discussion was recorded in R4-2012723.

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

**R4-2010970 Discussions on test parameters for NPDSCH with multi-TB interleaved transmission.**

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

**Discussion:**

The contribution was discussed during email thread [96e][315] NB\_IOTenh3\_Demod. The discussion was recorded in R4-2012723.

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

**R4-2010971 CR: Introduce NPDSCH performance requirements for multi-TB interleaved transmission.**

*Type: CR For: Agreement  
 36.101 v16.6.0 CR-5672 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

RAN 4 has agreed to introduce the performance requirements for NPDSCH with multi-TB interleaved transmission and WF R4-2008759 has been approved.

**Discussion:**

The contribution was discussed during email thread [96e][315] NB\_IOTenh3\_Demod. The discussion was recorded in R4-2012723.

**Decision:** The document was **revised to R4-2012599**.

**R4-2012599 CR: Introduce NPDSCH performance requirements for multi-TB interleaved transmission.**

*Type: CR For: Agreement  
 36.101 v16.6.0 CR-5672 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2010971)

**Abstract:**

RAN 4 has agreed to introduce the performance requirements for NPDSCH with multi-TB interleaved transmission and WF R4-2008759 has been approved.

**Discussion:**

The contribution was discussed during email thread [96e][315] NB\_IOTenh3\_Demod. The discussion was recorded in R4-2012723.

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

**R4-2010975 Summary of simulation results for LTE NPDSCH with multi-TB interleaved transmission.**

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

**Discussion:**

The contribution was discussed during email thread [96e][315] NB\_IOTenh3\_Demod. The discussion was recorded in R4-2012723.

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

##### 6.2.3.2 BS demodulation requirements [NB\_IOTenh3-Perf]

**R4-2010276 Initial simulation results for Rel-16 NB-IoT**

*Type: discussion For: Discussion  
 Source: Samsung*

**Discussion:**

The contribution was discussed during email thread [96e][315] NB\_IOTenh3\_Demod. The discussion was recorded in R4-2012723.

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

**R4-2010477 NPUSCH demodulation requirements with multi-TB transmission**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution provides our initial simulation results of NPUSCH format 1 with multi-TB transmission.

**Discussion:**

The contribution was discussed during email thread [96e][315] NB\_IOTenh3\_Demod. The discussion was recorded in R4-2012723.

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

**R4-2010968 Simulation results for NPUSCH format 1 with multi-TB interleaved transmission.**

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

**Discussion:**

The contribution was discussed during email thread [96e][315] NB\_IOTenh3\_Demod. The discussion was recorded in R4-2012723.

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

**R4-2010972 CR: Introduce NPUSCH format 1 performance requirements for multi-TB interleaved transmission.**

*Type: CR For: Agreement  
 36.104 v16.6.0 CR-4909 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

RAN 4 has agreed to introduce the performance requirements for NPUSCH format 1with multi-TB interleaved transmission and WF R4-2008759 has been approved.

**Discussion:**

The contribution was discussed during email thread [96e][315] NB\_IOTenh3\_Demod. The discussion was recorded in R4-2012723.

**Decision:** The document was **revised to R4-2012600**.

**R4-2012600 CR: Introduce NPUSCH format 1 performance requirements for multi-TB interleaved transmission.**

*Type: CR For: Agreement  
 36.104 v16.6.0 CR-4909 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2010972)

**Abstract:**

RAN 4 has agreed to introduce the performance requirements for NPUSCH format 1with multi-TB interleaved transmission and WF R4-2008759 has been approved.

**Discussion:**

The contribution was discussed during email thread [96e][315] NB\_IOTenh3\_Demod. The discussion was recorded in R4-2012723.

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

**R4-2010973 CR: Introduce NPUSCH format 1 test requirements for multi-TB interleaved transmission for TS 36.141**

*Type: CR For: Agreement  
 36.141 v16.6.0 CR-1271 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

RAN 4 has agreed to introduce the performance requirements for NPUSCH format 1 with multi-TB interleaved transmission and WF R4-2008759 has been approved.

**Discussion:**

The contribution was discussed during email thread [96e][315] NB\_IOTenh3\_Demod. The discussion was recorded in R4-2012723.

**Decision:** The document was **revised to R4-2012601**.

**R4-2012601 CR: Introduce NPUSCH format 1 test requirements for multi-TB interleaved transmission for TS 36.141**

*Type: CR For: Agreement  
 36.141 v16.6.0 CR-1271 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2010973)

**Abstract:**

RAN 4 has agreed to introduce the performance requirements for NPUSCH format 1 with multi-TB interleaved transmission and WF R4-2008759 has been approved.

**Discussion:**

The contribution was discussed during email thread [96e][315] NB\_IOTenh3\_Demod. The discussion was recorded in R4-2012723.

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

**R4-2010974 Summary of simulation results for LTE NPUSCH format 1 with multi-TB interleaved transmission.**

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

**Discussion:**

The contribution was discussed during email thread [96e][315] NB\_IOTenh3\_Demod. The discussion was recorded in R4-2012723.

**Decision:** The document was **revised to R4-2012751**.

**R4-2012751 Summary of simulation results for LTE NPUSCH format 1 with multi-TB interleaved transmission.**

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

(Replaces R4-2010974)

**Discussion:**

The contribution was discussed during email thread [96e][315] NB\_IOTenh3\_Demod. The discussion was recorded in R4-2012723.

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

**R4-2011504 NPUSCH format 1 performance for Multi-TB scheduling**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Contains simulation assumptions for NPUSCH Multi-TB scheduling.

**Discussion:**

The contribution was discussed during email thread [96e][315] NB\_IOTenh3\_Demod. The discussion was recorded in R4-2012723.

**Decision:** The document was **revised to R4-2012750**.

**R4-2012750 NPUSCH format 1 performance for Multi-TB scheduling**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2011504)

**Discussion:**

The contribution was discussed during email thread [96e][315] NB\_IOTenh3\_Demod. The discussion was recorded in R4-2012723.

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

**R4-2011505 NPUSCH format 1 performance for Multi-TB scheduling**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

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

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

**R4-2012061 Email discussion summary for [96e][230] LTE\_feMob\_RRM**

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

**Discussion:**

The contribution summarized email discussion thread [96e][230] LTE\_feMob\_RRM. The topic areas for discussion were RRM Core requirements. The email thread was moderated by Delia Chen (Nokia). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

*1st round email discussion conclusions*

**Topic #1: Core requirements**

**Topic #2: Performance requirements**

Issue 2-3: whether CHO and inter-freq DAPS HO test cases should be defined only for FDD cases

Agreement: CHO and inter-freq DAPS HO test cases should be defined for both TDD and FDD cases.

**Decision:** The document was **revised to R4-2012230**.

**R4-2012230 Email discussion summary for [96e][230] LTE\_feMob\_RRM**

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

(Replaces R4-2012061)

**Discussion:**

The contribution summarized email discussion thread [96e][230] LTE\_feMob\_RRM. The topic areas for discussion were RRM Core requirements. The email thread was moderated by Delia Chen (Nokia). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

*2nd round email discussion conclusions*

Issue 2-1: Test setup for DAPS HO

Agreement: The test setup for LTE DAPS HO test cases will follow the conclusion in NR side.

Issue 2-2: Applicability rules for synchronous/asynchronous DAPS HO

Agreement: The applicability rules for synchronous/asynchronous DAPS HO test cases in LTE will follow the same principle in NR side.

Issue 2-4: Test setup for CHO

Agreement: The test setup for LTE CHO test cases will follow the conclusion in NR side.

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

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

**R4-2011127 Draft CR on DAPS handover**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6938 Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

The Tinterrupt1 for async intra-frequency DAPS handover is lost.

**Discussion:**

The contribution was discussed during email thread [96e][230] LTE\_feMob\_RRM. The discussion was recorded in R4-2012230.

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

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

##### 6.3.2.1 General [LTE\_feMob-Perf]

**R4-2011128 Discussion on DAPS handover test cases**

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

**Discussion:**

The contribution was discussed during email thread [96e][230] LTE\_feMob\_RRM. The discussion was recorded in R4-2012230.

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

##### 6.3.2.2 Test cases [LTE\_feMob-Perf]

**R4-2011129 Test cases for inter-frequency DAPS**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6939 Cat: B (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

Define the test cases for inter-frequency DAPS

**Discussion:**

The contribution was discussed during email thread [96e][230] LTE\_feMob\_RRM. The discussion was recorded in R4-2012230.

**Decision:** The document was **postponed**.

**R4-2012197 Test cases for inter-frequency DAPS**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6939 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei, Hisilicon*

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

**R4-2011432 Test cases for LTE conditional HO**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6961 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Add test cases for LTE conditional handover.

**Discussion:**

The contribution was discussed during email thread [96e][230] LTE\_feMob\_RRM. The discussion was recorded in R4-2012230.

**Decision:** The document was **postponed**.

**R4-2012198 CR on 36133 LTE CHO TCs**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6961 rev 1 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

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

**R4-2009885 Introduction of intra-frequency sync and async LTE DAPS HO test cases**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6918 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

Per work split agreement in RAN4#95-e meeting, the test cases for intra-frequency LTE DAPS HO are introduced in this CR. To avoid having multiple test cases, FDD-FDD test case is specified in async mode and TDD-TDD test case is specified in sync mode.

**Discussion:**

The contribution was discussed during email thread [96e][230] LTE\_feMob\_RRM. The discussion was recorded in R4-2012230.

**Decision:** The document was **postponed**.

**R4-2012196 CR\_ Introduction of intrafrequency sync and async LTE DAPS HO test cases**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6918 rev 1 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated*

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

### 6.4 LTE-based 5G terrestrial broadcast [LTE\_terr\_bcast]

#### 6.4.1 Demodulation and CSI requirements (36.101) [LTE\_terr\_bcast -Perf]

**R4-2012539 Email discussion summary for [96e][316] LTE\_terr\_bcast\_Demod**

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

**Discussion:**

The contribution summarized email discussion thread [96e][316] LTE\_terr\_bcast\_Demod. The topic areas for discussion were Rel-16 LTE 5G terrestrial demodulation and CSI. The email thread was moderated by Chu-Hsiang Huang (Qualcomm). All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2012724**.

**R4-2012724 Email discussion summary for [96e][316] LTE\_terr\_bcast\_Demod**

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

(Replaces R4-2012539)

**Discussion:**

The contribution summarized email discussion thread [96e][316] LTE\_terr\_bcast\_Demod. The topic areas for discussion were Rel-16 LTE 5G terrestrial demodulation and CSI. The email thread was moderated by Chu-Hsiang Huang (Qualcomm). All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

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

**R4-2012603 Summary of alignment and impairment results for 5G broadcast**

*Type: other For: discussion  
 Source: Qualcomm*

**Discussion:**

The contribution was discussed during email thread [96e][316] LTE\_terr\_bcast\_Demod. The discussion was recorded in R4-2012724.

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

**R4-2010966 Discussion and simulation results on LTE-based 5G terrestrial broadcast**

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

**Discussion:**

The contribution was discussed during email thread [96e][316] LTE\_terr\_bcast\_Demod. The discussion was recorded in R4-2012724.

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

**R4-2010967 CR addition on LTE-based 5G terrestrial broadcast**

*Type: CR For: Agreement  
 36.101 v16.6.0 CR-5671 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

Resubmission of endorsed Draft CR R4-2008284 and R4-2008760.

1. Add additional performance requirements and test applicability rule for LTE-based 5G terrestrial broadcast

2. Introduce FRC and propagation conditions for performance requirements for LTE-based 5G terrestrial broadcast as per agreements in RAN4#94e-bis

**Discussion:**

The contribution was discussed during email thread [96e][316] LTE\_terr\_bcast\_Demod. The discussion was recorded in R4-2012724.

**Decision:** The document was **revised to R4-2012602**.

**R4-2012602 CR addition on LTE-based 5G terrestrial broadcast**

*Type: CR For: Agreement  
 36.101 v16.6.0 CR-5671 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2010967)

**Abstract:**

Resubmission of endorsed Draft CR R4-2008284 and R4-2008760.

1. Add additional performance requirements and test applicability rule for LTE-based 5G terrestrial broadcast

2. Introduce FRC and propagation conditions for performance requirements for LTE-based 5G terrestrial broadcast as per agreements in RAN4#94e-bis

**Discussion:**

The contribution was discussed during email thread [96e][316] LTE\_terr\_bcast\_Demod. The discussion was recorded in R4-2012724.

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

**R4-2011384 5G broadcast PMCH demod simulation result collection**

*Type: discussion For: Discussion  
 Source: Qualcomm, Inc.*

**Discussion:**

The contribution was discussed during email thread [96e][316] LTE\_terr\_bcast\_Demod. The discussion was recorded in R4-2012724.

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

#### 6.4.2 Others [LTE\_terr\_bcast -Core/Perf]

**R4-2012540 Email discussion summary for [96e][312] LTE\_terr\_bcast\_Other**

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

**Discussion:**

The contribution summarized email discussion thread [96e][312] LTE\_terr\_bcast\_Other. The topic areas for discussion were LTE\_terr\_bcast -Core/Perf . The email thread was moderated by Xue Fei (ZTE). All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2012725**.

**R4-2012725 Email discussion summary for [96e][312] LTE\_terr\_bcast\_Other**

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

(Replaces R4-2012540)

**Discussion:**

The contribution summarized email discussion thread [96e][312] LTE\_terr\_bcast\_Other. The topic areas for discussion were LTE\_terr\_bcast -Core/Perf . The email thread was moderated by Xue Fei (ZTE). All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

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

**R4-2012604 WF on the measurement interval and observation time for frequency/time correction for 2.5kHz and 0.37kHz**

*Type: other For: discussion  
 Source: ZTE*

**Discussion:**

The contribution was discussed during email thread [96e][312] LTE\_terr\_bcast\_Other. The discussion was recorded in R4-2012725.

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

**R4-2010730 Discussion on EVM measurement details for 2.5kHz and 0.37kHz SCSs**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

In this contribution we discuss further details and open issues on new subcarrier spacings 2.5 kHz and 0.37 kHz.

**Discussion:**

The contribution was discussed during email thread [96e][312] LTE\_terr\_bcast\_Other. The discussion was recorded in R4-2012725.

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

**R4-2010943 Impacts on BS RF requirement of new introduced numerology**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][312] LTE\_terr\_bcast\_Other. The discussion was recorded in R4-2012725.

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

**R4-2010944 CR to 36.104: Introduction of LTE based 5G terrestrial broadcast numerologies**

*Type: CR For: Agreement  
 36.104 v16.6.0 CR-4907 Cat: B (Rel-16)  
  
 Source: ZTE Corporation*

**Abstract:**

Introduction of 2.5 kHz and 0.37 kHz numerologies agreed in RAN1 to be supported by LTE based 5G terrestrial broadcast..

**Discussion:**

The contribution was discussed during email thread [96e][312] LTE\_terr\_bcast\_Other. The discussion was recorded in R4-2012725.

**Decision:** The document was **revised to R4-2012605**.

**R4-2012605 CR to 36.104: Introduction of LTE based 5G terrestrial broadcast numerologies**

*Type: CR For: Agreement  
 36.104 v16.6.0 CR-4907 rev 1 Cat: B (Rel-16)  
  
 Source: ZTE Corporation*

(Replaces R4-2010944)

**Abstract:**

Introduction of 2.5 kHz and 0.37 kHz numerologies agreed in RAN1 to be supported by LTE based 5G terrestrial broadcast..

**Discussion:**

The contribution was discussed during email thread [96e][312] LTE\_terr\_bcast\_Other. The discussion was recorded in R4-2012725.

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

**R4-2010945 CR to 36.101: Introduction of LTE based 5G terrestrial broadcast numerologies**

*Type: CR For: Agreement  
 36.101 v16.6.0 CR-5669 Cat: B (Rel-16)  
  
 Source: ZTE Corporation*

**Abstract:**

Introduction of 2.5 kHz and 0.37 kHz numerologies agreed in RAN1 to be supported by LTE based 5G terrestrial broadcast.

**Discussion:**

The contribution was discussed during email thread [96e][312] LTE\_terr\_bcast\_Other. The discussion was recorded in R4-2012725.

**Decision:** The document was **revised to R4-2012606**.

**R4-2012606 CR to 36.101: Introduction of LTE based 5G terrestrial broadcast numerologies**

*Type: CR For: Agreement  
 36.101 v16.6.0 CR-5669 rev 1 Cat: B (Rel-16)  
  
 Source: ZTE Corporation*

(Replaces R4-2010945)

**Abstract:**

Introduction of 2.5 kHz and 0.37 kHz numerologies agreed in RAN1 to be supported by LTE based 5G terrestrial broadcast.

**Discussion:**

The contribution was discussed during email thread [96e][312] LTE\_terr\_bcast\_Other. The discussion was recorded in R4-2012725.

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

### 6.5 R16 LTE maintenance [WI code]

#### 6.5.1 BS RF requirements [WI code]

#### 6.5.2 UE RF requirements [WI code]

**R4-2010227 A-MPR definition for CA\_48B**

*Type: CR For: Agreement  
 36.101 v16.6.0 CR-5656 Cat: B (Rel-16)  
  
 Source: Nokia*

**Abstract:**

E-UTRA UL CA configuration CA\_48B is already specified in clause 5 but A-MPR is missing. This CR is based on simulation results presented in R4-2006493.

**Discussion:**

The contribution was discussed during email thread [96e][105] LTE\_Maintenance. The discussion was recorded in R4-2011940.

**Decision:** The document was **revised to R4-2011699**.

**R4-2011699 A-MPR definition for CA\_48B**

*Type: CR For: Agreement  
 36.101 v16.6.0 CR-5656 rev 1 Cat: F (Rel-16)  
  
 Source: Nokia*

(Replaces R4-2010227)

**Abstract:**

E-UTRA UL CA configuration CA\_48B is already specified in clause 5 but A-MPR is missing. This CR is based on simulation results presented in R4-2006493.

**Discussion:**

The contribution was discussed during email thread [96e][105] LTE\_Maintenance. The discussion was recorded in R4-2011940.

**Decision:** The document was **revised to R4-2011921**.

**R4-2011921 A-MPR definition for CA\_48B**

*Type: CR For: Agreement  
 36.101 v16.6.0 CR-5656 rev 2 Cat: F (Rel-16)  
  
 Source: Nokia*

(Replaces R4-2011699)

**Abstract:**

E-UTRA UL CA configuration CA\_48B is already specified in clause 5 but A-MPR is missing. This CR is based on simulation results presented in R4-2006493.

**Discussion:**

The contribution was discussed during email thread [96e][105] LTE\_Maintenance. The discussion was recorded in R4-2011940.

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

**R4-2010702 Correction of band combinations table in Rel-16**

*Type: CR For: Agreement  
 36.101 v16.6.0 CR-5667 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

CR to correct band combinations in Rel-16

**Discussion:**

The contribution was discussed during email thread [96e][105] LTE\_Maintenance. The discussion was recorded in R4-2011940.

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

**R4-2011521 CR to 36.101 Removal band 10 protection**

*Type: CR For: Agreement  
 36.101 v16.6.0 CR-5673 Cat: F (Rel-16)  
  
 Source: Skyworks Solutions Inc.*

**Abstract:**

Band 10 protection is no longer needed

**Discussion:**

The contribution was discussed during email thread [96e][105] LTE\_Maintenance. The discussion was recorded in R4-2011940.

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

**R4-2011525 CR to 36.101 Removal of CA\_NS\_08**

*Type: CR For: Agreement  
 36.101 v16.6.0 CR-5674 Cat: F (Rel-16)  
  
 Source: Skyworks Solutions Inc.*

**Abstract:**

CA\_NS\_08 is no longer needed as B42 networks are synchronized

**Discussion:**

The contribution was discussed during email thread [96e][105] LTE\_Maintenance. The discussion was recorded in R4-2011940.

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

**R4-2011698 CR to 36.101 Removal of CA\_NS\_08**

*Type: CR For: Agreement  
 36.101 v16.6.0 CR-5674 rev 1 Cat: F (Rel-16)  
  
 Source: Skyworks Solutions Inc.*

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

**R4-2011526 CR to 36.101 Correction to CA\_NS\_10**

*Type: CR For: Agreement  
 36.101 v16.6.0 CR-5675 Cat: F (Rel-16)  
  
 Source: Skyworks Solutions Inc.*

**Abstract:**

CA\_NS\_10: A-MPR for some region border RB allocations is undefined

**Discussion:**

The contribution was discussed during email thread [96e][105] LTE\_Maintenance. The discussion was recorded in R4-2011940.

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

**R4-2011527 DeltaTRxSRS for LTE Pcmax**

*Type: discussion For: Approval  
 36.101 v..  
 Source: Skyworks Solutions Inc.*

**Discussion:**

The contribution was discussed during email thread [96e][105] LTE\_Maintenance. The discussion was recorded in R4-2011940.

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

**R4-2009938 Coexistence cleanup for 36101 Rel16**

*Type: CR For: Agreement  
 36.101 v16.6.0 CR-5654 Cat: F (Rel-16)  
  
 Source: Apple Inc.*

**Abstract:**

Rel-16 features several band protections which are not technical possible due to sometimes TDD bands with overlapping regions are protected or similar issues. The CR focuses on correcting false protections so that a UE will not face technical impossible emission requirements.

**Discussion:**

The contribution was discussed during email thread [96e][105] LTE\_Maintenance. The discussion was recorded in R4-2011940.

**Decision:** The document was **revised to R4-2011697**.

**R4-2011697 Coexistence cleanup for 36101 Rel16**

*Type: CR For: Agreement  
 36.101 v16.6.0 CR-5654 rev 1 Cat: F (Rel-16)  
  
 Source: Apple Inc.*

(Replaces R4-2009938)

**Abstract:**

Rel-16 features several band protections which are not technical possible due to sometimes TDD bands with overlapping regions are protected or similar issues. The CR focuses on correcting false protections so that a UE will not face technical impossible emission requirements.

**Discussion:**

The contribution was discussed during email thread [96e][105] LTE\_Maintenance. The discussion was recorded in R4-2011940.

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

#### 6.5.3 RRM [WI code]

#### 6.5.4 Demodulation and CSI requirements [WI code]

##### 6.5.4.1 UE demodulation and CSI requirements [WI code]

##### 6.5.4.2 BS demodulation requirements [WI code]

## 7 Rel-16 UE feature list

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

**R4-2012037 Email discussion summary for [96e][206] NR\_unlic\_RRM\_1**

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

**Discussion:**

The contribution summarized email discussion thread [96e][206] NR\_unlic\_RRM\_1. The topic areas for discussion were RRM Core: General (spec structure, applicability), HO, RRC connection mobility, Scell activation/deactivation, PSCell addition/release, Active TCI state switching. The email thread was moderated by Iana Siomina (Ericsson). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

*1st round email discussion conclusions*

**Topic #1: General**

Chair: discuss the remaining issues in the 2nd round taking into account GTW agreements

Chair: capture email thread conclusions in WF including agreements on SSB monitoring capabilities

**Topic #2: Handover requirements**

Agreement

* + The delay uncertainty (TIU) due to RACH transmission in HO (same approach is proposed also for RRC re-establishment and RRC release with redirection) is defined as follows:

TIU = (1+ L3)\*TSSB,RO + 10 ms

where:

* + - TSSB,RO is the SSB to PRACH occasion association period as defined on TS 38.213.
    - L3 is the number of consecutive SSB to PRACH occasion association periods during which no PRACH occasion is available for PRACH transmission due to UL CCA failure.

**3 Topic #3: RRC connection mobility control**

Issue 3-1-1: Delay uncertainty (TPRACH\_CCA) due to RACH transmission in RRC re-establishment

Agreement

* + The delay uncertainty (TPRACH\_CCA) due to RACH transmission in RRC re-establishment (same approach is proposed also in HO and RRC release with redirection) is defined as follows:

TPRACH\_CCA = (1+ K3)\*TSSB,RO + 10 ms

where:

* + - TSSB,RO is the SSB to PRACH occasion association period as defined on TS 38.213.
    - K3 is the number of consecutive SSB to PRACH occasion association periods during which no PRACH occasion is available for PRACH transmission due to UL CCA failure.

Issue 3-1-2: Carriers to identify

Agreement: The requirements for the RRC re-establishment delay shall consider the time for identification on carriers with and without CCA.

Issue 3-2-1: Delay uncertainty (TRACH\_CCA) due to RACH transmission in RRC connection release with redirection

Agreement

* + The delay uncertainty (TRACH\_CCA) due to RACH transmission in RRC connection release with redirection (same approach is proposed also in HO and RRC re-establishment) is defined as follows:

TRACH\_CCA = (1+ L2)\*TSSB,RO + 10 ms

where:

* + - TSSB,RO is the SSB to PRACH occasion association period as defined on TS 38.213.
    - L2 is the number of consecutive SSB to PRACH occasion association periods during which no PRACH occasion is available for PRACH transmission due to UL CCA failure.

Issue 3-2-2: Delay uncertainty (TRACH\_CCA) due to RACH transmission in RRC connection release with redirection, with Type 2C UL channel access procedure

Agreement

* + The following is also included in the RACH delay uncertainty in RRC release with redirection:

- L2 = 0 for Type 2C UL channel access procedure as defined in TS 37.213.

**Topic #4: SCell Activation and Deactivation**

Issue 4-1-1: Interruption window length

Agreement: For a single interruption, interruption window length at SCell activation does not depend on LBT failures.

Issue 4-1-2: Interruption window starting point

Agreement

* The starting point of an interruption window on PCell or any activated SCell in MCG for NR standalone mode, or on PSCell or any activated SCell in SCG for EN-DC mode, shall not occur before slot n+1+ and not occur after slot n+1+ , where TX is:



- TFirstSSB + (L1)\* Trs, for known SCell activation when SCell measurement cycle is equal to, or smaller than, 160ms;

- TFirstSSB\_MAX + L2,1\* TSMTC\_MAX for known SCell activation when SCell measurement cycle is greater than 160ms;

- TFirstSSB\_MAX + L3,1\* TSMTC\_MAX for unknown SCell activation

Issue 4-1-3: Multiple interruption windows

Agreement

* For intra-band CA, while the SCell being activated is unknown or known with measurement cycle >160ms, up to (1+L) interruption windows are allowed during SCell activation, where L is the number of occasions that at least one SSB from SCells already activated or SCell being activated in the same band is not available before the first successful SSB transmissions subject to TSMTC\_max
* For inter-band CA: FFS

Issue 4-4-1: Conditions for CSI reporting during SCell activation

Agreement: When P/SP-CSI-RS is used for CSI report during the SCell activation, it is assumed one of the RRC parameters CO-DurationPerCell-r16, SlotFormatIndicator, and CSI-RS-ValidationWith-DCI-r16 is configured for a UE and the UE supports the corresponding capability

**Decision:** The document was **revised to R4-2012206**

**R4-2012206 Email discussion summary for [96e][206] NR\_unlic\_RRM\_1**

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

(Replaces R4-2012037)

**Discussion:**

The contribution summarized email discussion thread [96e][206] NR\_unlic\_RRM\_1. The topic areas for discussion were RRM Core: General (spec structure, applicability), HO, RRC connection mobility, Scell activation/deactivation, PSCell addition/release, Active TCI state switching. The email thread was moderated by Iana Siomina (Ericsson). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

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

*GTW session (Aug 21st)*

**SSB monitoring capabilities**

Q1: RAN4 assumption on signalling of UE SSB monitoring capabilities

Agreement: In NR-U work, RAN4 assumes that no explicit or signalled UE capabilities will be defined for the number of candidate SS/PBCH block indexes corresponding to the same SS/PBCH block index the UE should monitor in a given discovery burst transmission window (for RRM) or within the set of configured resources (for RLM/CBD/BFD).

Q2: Differentiation between UE in FBE and LBE modes

Agreements

* No differentiation between UE in FBE and LBE modes in NR-U RRM Core requirements.
* Different test case will be defined for UE in FBE and LBE modes in NR-U RRM Performance requirements.

Q3: Whether to capture the number of candidate SSB positions in NR-U core requirements

Agreements

* RRM core requirements are defined under assumption what UE monitors the first 2 successive QCL’ed candidate SSB positions (i.e. N1 = N2 = 2)
  + FFS if same values apply for cell detection
    - Option 1: For cell detection the requirements are defined under assumption that UE monitors at least 1 candidate SSB position in one SSB block burst
    - Option 2: Same value applies as for other RRM measurements
  + The total number of candidate SSBs indexes and number of cell UE shall monitor remains unchanged

*GTW session (Aug 27th)*

Issue 5-2-1: UE behaviour in MAC-CE based active TCI state switching

Agreement: Do not specify UE behaviour for LMAC,known,max, L1MAC,unknown,max, and L2MAC,unknown,max , but the requirements shall apply up to LMAC,known,max, L1MAC,unknown,max, and L2MAC,unknown,max

**R4-2012038 Email discussion summary for [96e][207] NR\_unlic\_RRM\_2**

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

**Discussion:**

The contribution summarized email discussion thread [96e][207] NR\_unlic\_RRM\_2. The topic areas for discussion were RRM Core: Cell re-selection, Interruptions, Active BWP switching, RLM, Beam management, Timing. The email thread was moderated by Ato Yu (MediaTek Inc.). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2012207**.

**R4-2012207 Email discussion summary for [96e][207] NR\_unlic\_RRM\_2**

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

(Replaces R4-2012038)

**Discussion:**

The contribution summarized email discussion thread [96e][207] NR\_unlic\_RRM\_2. The topic areas for discussion were RRM Core: Cell re-selection, Interruptions, Active BWP switching, RLM, Beam management, Timing. The email thread was moderated by Ato Yu (MediaTek Inc.). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

*1st round email discussion conclusions*

**Topic #1: Cell re-selection**

**Topic 2: Active BWP switching (AI 7.1.5.7)**

**Topic 3: RLM (AI 7.1.5.8)**

UE assumption on transmit power

Agreement: Define the RLM requirements, taking into account that the UE can assume that NZP CSI-RS or SS/PBCH block (for L1-RSRP, RLM, BFD, CBD and RRM) is transmitted with the same transmit power across different occasions during the measurement period, as in Rel-15.

Whether to define CSI-RS based RLM requirements in Rel-16

Agreement: Do not define CSI-RS based RLM requirements in Rel-16

**Topic 4: Beam management (AI 7.1.5.9)**

Evaluation period for SSB based BFD

Agreement: The Evaluation period for SSB based BFD follows the same approach as that in the OOS evaluation period for SSB based RLM

**Topic 5: Timing (AI 7.1.5.12)**

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

*GTW session (Aug 24th)*

**Issue 1-1: Max number of unavailable SMTC occasions during measurement before UE detects the cell again**

* Background from last meeting (R4-2008567)
  + For a cell that is already identified, after N unsuccessful measurement attempts due to exceeding the max number of unavailable SMTC occasions, UE needs to detect the cell again
    - N = 2 or 3
* Proposals
  + Option 1: N=2 (Qualcomm, Huawei)
  + Option 2: N=3 (ZTE, Ericsson)
* Recommended WF:
  + Need more discussion
* 1st round status:
  + 4 companies support Option 1 (N=2): Huawei, Qualcomm, Apple, Nokia
  + 3 companies support Option 2 (N=3): ZTE, MTK, Ericsson

Discussion:

* MTK/E///: fine with Option 1

Agreement: N=2

**Issue 3-4: Definition of SNREST**

* Background from last meeting (R4-2008567): SINREST is the estimated SINR at the UE side. 3 Options:
  + Filtered SINR estimate over evaluation period
  + Current SSB SINR estimate
  + last available SSB SINR
* Proposals
  + Option 1: Last available SSB before the evaluation period starts (ZTE)
  + Option 2: Current SSB SINR estimate (Qualcomm, Huawei)
  + Option 3: Filtered SINR estimate over the evaluation period at UE side (Apple, MediaTek, Nokia)
  + Option 4: The smallest SSB SINR (Es/Iot) value over the evaluation period for the corresponding SSB. SINREST is denoted by the SSB Es/Iot in the RLM requirements in TS 38.133. (Ericsson)
* 1st round summary:
  + Question A: Purpose of this SNR
    - Option A1) Determine which requirement (fix or dynamic) should be followed by UE (MTK, Apple, E///, QC, ZTE)
    - Option A2) Determine whether the SSB is transmitted by gNB (Huawei, QC)
  + Question B: SNR side condition or estimated SNR
    - Option B1) The SNR side condition Es/Iot (MTK, Apple, Huawei, E///, QC)
    - Option B2) The estimated SNR at UE side (ZTE)
  + Question C: How to deal with multiple samples (with and without LBT failure)
    - Option C1) Last available SSB before the evaluation period starts (ZTE)
    - Option C2) Current SSB SINR estimate (Huawei, QC)
    - Option C3) Averaged SINR over the evaluation period at UE side (MTK, Apple)
    - Option C4) The smallest SINR value over the evaluation period (E///)
* Discussion:
  + MTK: A1, B1, C3
    - Apple: same view
  + Huawei: Prefer A2. For A1 we use SNR in the past to decide the set of requirements. C2
  + E///: Question C depends on other issues.
  + QC: Question A – answers are not mutually exclusive
  + ZTE: Question A – A1 and A2 are very similar

* Agreement
  + SNREST
    - SNREST is the side condition Es/Iot

**Issue 3-7: OOS evaluation period when Es/Iot > X dB (X is based on the conclusion of Issue 3-5)**

* Background from last meeting (R4-2008567): FFS
* Proposals
  + Option 1: depends on Lout (Lout ≤ Lout,max), where Lout is the number of SSBs not available at the UE during TEvaluate\_out\_SSB (ZTE, Nokia, Ericsson)
    - Lout,max = 14 for max(TSSB, TDRX) ≤ 40 where TDRX=0 for non-DRX,
    - Lout,max = 10 for 40 <Max(TSSB, TDRX)≤320
    - Lout,max = 6 for TDRX >320.
  + Option 2: Extend the evaluation period using a fixed factor L (Apple)
    - L = 7 for max(TSSB, TDRX) ≤ 40,
    - L = 5 for 40 <Max(TSSB, TDRX)≤320
    - L = 3 for TDRX >320.
  + Option 3: Proposal 2 in R4-2011084 (Huawei)

|  |  |
| --- | --- |
| Configuration | TEvaluate\_out\_SSB,CCA (ms) |
| no DRX | Max(200, Ceil((10-Lout,available) ×K× P) × TSSB) |
| DRX cycle≤320 | Max(200, Ceil((15-Lout,available) ×K × P) × Max(TDRX,TSSB)) |
| DRX cycle>320 | Ceil((10-Lout,available) × K × P) × TDRX |
| NOTE 4: Lout,avaiable is the number of available SSB RLM-RS at UE, where Es/Iot > [-7] dB. | |

* 1st round summary:
  + Option 1: ZTE, MTK (compromise), Ericsson, Nokia
  + Option 2: MTK, QC, Apple, Intel, Huawei
  + Option 3: HW
* Discussion:
  + E///: Prefer Option 1. For another Es/Iot < -7 we can compromise to Option 2.
  + Nokia: Option 1.
  + Huawei: For Option 1 what is the definition of the SNR?
  + Apple: Option 2.
  + E///: Object to Option 2.
  + Apple, Huawei: Object to Option 1.
  + Chair: if we cannot choose, then we may decide not to define the requirements
  + Nokia: prefer to define the requirements. can compromise to Option 2.
  + ZTE: prefer to define the requirements.
* Agreement
  + Option 1: depends on Lout (Lout ≤ Lout,max), where Lout is the number of SSBs not available at the UE during TEvaluate\_out\_SSB (ZTE, Nokia, Ericsson)
    - Lout,max = 14 for max(TSSB, TDRX) ≤ 40 where TDRX=0 for non-DRX,
    - Lout,max = 10 for 40 <Max(TSSB, TDRX)≤320
    - Lout,max = 6 for TDRX >320.
  + Option 2: Extend the evaluation period using a fixed factor L (MTK, QC, Apple, Intel, Huawei, [Nokia])
    - L = 7 for max(TSSB, TDRX) ≤ 40,
    - L = 5 for 40 <Max(TSSB, TDRX)≤320
    - L = 3 for TDRX >320.
  + Do not define requirements for the case of OOS evaluation period when Es/Iot > X dB in case no decision on Option 1 and 2 is made.
  + Note: Not concluded in the 2nd round

*GTW session (Aug 27th)*

**Issue 2-1: The ending point of UL BWP switching delay upon detection of consistent UL LBT failure**

Agreement

* The ending point of UL BWP switching delay upon detection of consistent UL LBT failure is the time when UE is ready to transmit RACH. Additional delay in acquiring the first available RO should be budgeted in performance tests.
  + Note: Additional delay in acquiring the first available RO will be derived in a similar way to HO tests

**Issue 3-7: OOS evaluation period when Es/Iot > X dB (X is based on the conclusion of Issue 3-5)**

Agreement

* Extend the evaluation period using a fixed factor L
  + L = 7 for max(TSSB, TDRX) ≤ 40,
  + L = 5 for 40 <Max(TSSB, TDRX)≤320
  + L = 3 for TDRX >320.

**Issue 3-4: Definition of SNREST**

Agreement

* SNREST is the averaged Es/Iot over the most recent previous evaluation period

**R4-2012039 Email discussion summary for [96e][208] NR\_unlic\_RRM\_3**

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

**Discussion:**

The contribution summarized email discussion thread [96e][208] NR\_unlic\_RRM\_3. The topic areas for discussion were RRM Core: Measurement requirements, Measurement capability and reporting criteria. The email thread was moderated by Erika Almeida (Nokia). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2012208**.

**R4-2012208 Email discussion summary for [96e][208] NR\_unlic\_RRM\_3**

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

(Replaces R4-2012039)

**Discussion:**

The contribution summarized email discussion thread [96e][208] NR\_unlic\_RRM\_3. The topic areas for discussion were RRM Core: Measurement requirements, Measurement capability and reporting criteria. The email thread was moderated by Erika Almeida (Nokia). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

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

*1st round email discussion conclusions*

**Topic #1: Remaining issues intra and inter-frequency measurements and measurement capability**

**Topic #2: RSSI and CO measurements**

Issue 2-1-1: Intra-frequency RSSI measurement definition

Agreement: No additional condition is needed for the intra-frequency measurement definition

Issue 2-1-2: Need for measurement gaps in RSSI measurements

Agreement: Measurement gaps are needed for RSSI/CO measurements when RSSI BW is not fully within the active DL BWP of the UE.

Issue 2-3-3: Scaling factor for DRX ≤ 320ms

Agreement: For RSSI Measurements, do not use the scaling factor of 1.5 when DRX ≤ 320ms.

Issue 2-4-1: RAN4 to define scheduling restrictions during RSSI/CO measurements

Agreement: RAN 4 to define scheduling restrictions during RSSI/CO measurements

*GTW session (Aug 24th)*

**1-2-1: UE behavior in RRC\_CONNECTED mode when serving cell is unavailable for consecutive SSB bursts**

* Candidate options:
  + Option 1 (Huawei, HiSilicon, Apple, Intel): UE shall initiate measurements on neighbour cells indicated by the serving cell if it is unable to measure the serving cell for consecutive SSB bursts.
  + Option 2 (MediaTek, Qualcomm, Ericsson, Nokia, Nokia Shanghai Bell): After no SSBs of a cell can be received during up to 8 seconds, the cell will not be considered as detectable and the Rel-15 UE behavior will apply. No other UE behavior or requirement on the consecutive SSBs in the serving cell is needed.
  + Option 2b (ZTE) No other UE behavior or requirement on the consecutive SSBs in the serving cell is needed for R16, further study Option 1 in R17 as possible enhancement to NR-U.
* Discussion
  + Apple: In Rel-15 we don’t have explicit agreements on UE behavior. What is the UE behavior there? 8 sec should be reduced.
  + QC: is Option 1 applicable only for the case when we don’t have thresholds? Typically there are ongoing neighbor cell measurements.
    - Apple: Option 1 applies for the case when UE is not making measurements.
  + QC: ok with option 1 (under correction that UE can continue doing measurements)
  + MTK: UE is not required to initiate measurements. In Rel-15 there is no clear UE behavior and it is up to UE.
  + Huawei: In Rel-15 UE needs to trigger RLF and no other behavior.
  + Nokia, E///: this would be taken care by RLF. No need to specify anything here.
  + Nokia, MTK: this is kind of optimization
  + Chair: companies can discuss whether any additional enhancements shall be introduced in the ongoing email discussion on Rel-17 RRM work scope
* Agreements
  + Do not specify additional UE behavior in RRC\_CONNECTED mode when serving cell is unavailable for consecutive SSB bursts

**1-4-1: Applicability of SMTC2 signaling to NR-U**

* Candidate options:
  + Option 1 (ZTE, Qualcomm, Ericsson, Apple, Intel and Nokia): Signaling of smtc2 is applicable to unlicensed band.

**2-3-1: RSSI measurement period when measurement gaps are not required**

* Candidate options:
  + Option 1 (MediaTek, Qualcomm, [Apple]): Not to specify requirements for the case in which the SMTC is overlapping with RMTC. When measurement gap is not required, RSSI/CO measurement period is scaled with Nintra-MO, and corresponds to:
    - Nintra-MO.max(reportInterval, rmtc-Period) when DRX is not used
    - Nintra-MO.max(reportInterval, rmtc-Period, DRXcycle length) when DRX is used
    - where Nintra-MO , reportInterval, and rmtc-Period is defined as the number of measurement objects that can be measured without gaps, configured reporting interval, and configured RMTC period, respectively.
  + Option 2 (Ericsson): To specify requirements also when the SMTC and RMTC are overlapping. The RSSI and CO measurement periods depend on:
    - max(reportInterval, rmtc-Period)\*CSSFoutside\_gap,i in non-DRX when measurement gaps are not required,
    - max(reportInterval, rmtc-Period, DRX)\*CSSFoutside\_gap,i in DRX when measurement gaps are not required,
  + Option 3 (Nokia) To have requirements for both cases. Option 1 for when the RMTC and SMTC are not overlapping, and Option 2 for when the RMTC and SMTC are overlapping.
* Discussion
  + E///: Agree with Nokia
  + Huawei: For Option 1 is there any limitation to do RSSI measurements on the same symbols with SSB?
  + QC: RSSI measurements shall be outside the SSB symbols in order to represent the actual interference.
  + E///: prefer to have RSSI measurements on SSB symbols
* Agreement:
  + SMTC and RMTC are overlapping
    - The RSSI and CO measurement periods depend on:
      * max(reportInterval, rmtc-Period)\*CSSFoutside\_gap,i in non-DRX when measurement gaps are not required,
      * max(reportInterval, rmtc-Period, DRX)\*CSSFoutside\_gap,i in DRX when measurement gaps are not required,
      * CSSFoutside\_gap,i takes into account the overlap between SMTC and RMTC
  + SMTC and RMTC are not overlapping
    - RSSI/CO measurement period is scaled with Nintra-MO, and corresponds to:
      * Nintra-MO.max(reportInterval, rmtc-Period) when DRX is not used
      * Nintra-MO.max(reportInterval, rmtc-Period, DRXcycle length) when DRX is used
      * where Nintra-MO , reportInterval, and rmtc-Period is defined as the number of measurement objects that can be measured without gaps, configured reporting interval, and configured RMTC period, respectively.

*GTW session (Aug 27th)*

**Issue 1-1-1: Monitoring of QCL beams during cell detection in NR-U**

*1st round agreements:*

Agreements

* RRM core requirements are defined under assumption what UE monitors the first 2 successive QCL’ed candidate SSB positions (i.e. N1 = N2 = 2)
  + FFS if same values apply for cell detection
    - Option 1: For cell detection the requirements are defined under assumption that UE monitors at least 1 candidate SSB position in one SSB block burst
    - Option 2: Same value applies as for other RRM measurements

The total number of candidate SSBs indexes and number of cell UE shall monitor remains unchanged

Conclusion: continue discussion. Not concluded on Fri.

**R4-2012090 WF on NR-U RRM requirements**

*Type: other For: discussion  
 Source: Ericsson*

**Decision:** The document was **revised to R4-2012249**.

**R4-2012249 WF on NR-U RRM requirements**

*Type: other For: discussion  
 Source: Ericsson*

(Replaces R4-2012090)

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

**R4-2012091 WF on NR-U RRM requirements**

*Type: other For: discussion  
 Source: MediaTek*

**Decision:** The document was **revised to R4-2012274**.

**R4-2012274 WF on NR-U RRM requirements**

*Type: other For: discussion  
 Source: MediaTek*

(Replaces R4-2012091)

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

**R4-2012092 WF on NR-U RRM requirements**

*Type: other For: discussion  
 Source: Nokia*

**Decision:** The document was **revised to R4-2012293**.

**R4-2012293 WF on NR-U RRM requirements**

*Type: other For: discussion  
 Source: Nokia*

(Replaces R4-2012092)

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

#### 7.1.1 System Parameters [NR\_unlic-Core]

**R4-2011539 Email discussion summary for [96e][106] NR\_unlic\_SysParameters**

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

**Discussion:**

The contribution summarized email discussion thread [96e][106] NR\_unlic\_SysParameters. The subject for discussion was System Parameter

Band combination related (Analysis, TPs, etc). The email thread was moderated by Reihaneh Malekafzaliardakani (Ericsson) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **revised to R4-2011846**.

**R4-2011846 Email discussion summary for [96e][106] NR\_unlic\_SysParameters**

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

(Replaces R4-2011539)

**Discussion:**

The contribution summarized email discussion thread [96e][106] NR\_unlic\_SysParameters. The subject for discussion was System Parameter

Band combination related (Analysis, TPs, etc). The email thread was moderated by Reihaneh Malekafzaliardakani (Ericsson) and treated during Main session chaired by Steven Chen (Futurewei).

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

**R4-2011700 LS reply to RAN1on UE capability on wideband carrier operation for NR-U**

*Type: LS out For: Approval  
 to RAN1, RAN2  
 Source: MediaTek*

**Discussion:**

The contribution was discussed during email thread [96e][106] NR\_unlic\_SysParameters. The discussion was recorded in R4-2011846.

GTW session 27-08-2020

Nokia, Huawei and Apple had different opinions on the impacts concerning uplink and downlink. The chairman proposed to remove uplink aspects and capture only downlink in the reply LS. Apple did not agree with the Chairman because they considered that uplink cannot be ignored from UE capability point of view. The Chairman proposed to capture only such answers where concensus can be reached by the working group. MediaTek suggested to consider different downlink options to distinguish between cases where separate UE capabilities are needed. Ericsson supported MediaTek's proposal because they perceived that it would make the UE capability definitions consistent with RAN1's corresponding feature groups. Huawei's view was that RAN4 has already agreed UE features related to downlink and no further capabilities need to be agreed for this. Apple agreed with Ericsson's view and clarified that the proposal does not require any new capabilities. Nokia commented that their perceived the reply LS with the proposal was now clear enough. Apple asked what needs to be done with the uplink. The Chairman replied that it will not be discussed on the GTW session. MediaTek was asked to reformulate wordings in the LS to capture the outcome from the discussion.

**Decision:** The document was **revised to R4-2011931**.

**R4-2011931 LS reply to RAN1on UE capability on wideband carrier operation for NR-U**

*Type: LS out For: Approval  
 to RAN1, RAN2  
 Source: RAN4*

(Replaces R4-2011700)

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

##### 7.1.1.1 Bands and band plans [NR\_unlic-Core]

**R4-2010459 NR-U 6 GHz band in Korea**

*Type: discussion For: Information  
 Source: LG Electronics Finland*

**Abstract:**

Korea’s Ministry of Science and ICT has issued an amendment of technical standards, including proposed rules for 5925 – 7125MHz frequency band. Public consultation period is ongoing. This document presents the key technical points included in proposed rul

**Discussion:**

The contribution was discussed during email thread [96e][106] NR\_unlic\_SysParameters. The discussion was recorded in R4-2011846.

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

**R4-2010495 Consideration on 6GHz band definition**

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

**Discussion:**

The contribution was discussed during email thread [96e][106] NR\_unlic\_SysParameters. The discussion was recorded in R4-2011846.

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

**R4-2010744 Details on introduction of 6 GHz band for NR-U operation**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

In this contribution we discuss further details including band numbers for NR-U in 6 GHz range and provide TP. Discussion focuses on BS requirements.

**Discussion:**

The contribution was discussed during email thread [96e][106] NR\_unlic\_SysParameters. The discussion was recorded in R4-2011846.

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

**R4-2010958 Discussion on 6GHz for NR-U**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][106] NR\_unlic\_SysParameters. The discussion was recorded in R4-2011846.

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

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

**R4-2010310 Discussion on LS on UE capability on wideband carrier operation for NR-U**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

The contribution was discussed during email thread [96e][106] NR\_unlic\_SysParameters. The discussion was recorded in R4-2011846.

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

**R4-2010438 NR-U - On intra-band CA and wideband operation modes**

*Type: discussion For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

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

**R4-2010498 Spectrum utilization for NR-U**

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

**Discussion:**

The contribution was discussed during email thread [96e][106] NR\_unlic\_SysParameters. The discussion was recorded in R4-2011846.

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

**R4-2011447 NR-U - On intra-band CA and wideband operation modes**

*Type: discussion For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

The contribution was discussed during email thread [96e][106] NR\_unlic\_SysParameters. The discussion was recorded in R4-2011846.

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

**R4-2009901 Co-existence challenges with NR-U 100MHz channel bandwidth and other technologies**

*Type: discussion For: Approval  
 Source: Charter Communications Inc.*

**Discussion:**

The contribution was discussed during email thread [96e][106] NR\_unlic\_SysParameters. The discussion was recorded in R4-2011846.

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

**R4-2009933 Remaining issues on NR-U wideband operation**

*Type: discussion For: Decision  
 Source: Apple Inc.*

**Discussion:**

The contribution was discussed during email thread [96e][106] NR\_unlic\_SysParameters. The discussion was recorded in R4-2011846.

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

##### 7.1.1.3 Others [NR\_unlic-Core]

**R4-2010499 Proposals on 100MHz CBW in NR-U**

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

**Discussion:**

The contribution was discussed during email thread [96e][106] NR\_unlic\_SysParameters. The discussion was recorded in R4-2011846.

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

**R4-2010671 Discussion and TP for further clarification of NR-U BW Class requirements and intra-band contiguous CA with LBT failure**

*Type: discussion For: Approval  
 38.101-1 v..  
 Source: MediaTek Inc.*

**Discussion:**

The contribution was discussed during email thread [96e][106] NR\_unlic\_SysParameters. The discussion was recorded in R4-2011846.

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

**R4-2011330 [NRU] LO Leakage Exception Issue and NRU Mask Measurement Procedure**

*Type: discussion For: Approval  
 38.101-1 v..  
 Source: Skyworks Solutions Inc.*

**Abstract:**

In this contribution we provide a description of the LO leakage issue for the NRU mask together with detailing the 11ax mask measurement procedure and its applicability to NRU.

**Discussion:**

The contribution was discussed during email thread [96e][106] NR\_unlic\_SysParameters. The discussion was recorded in R4-2011846.

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

**R4-2009934 NR-U CA BW Classes**

*Type: discussion For: Decision  
 Source: Apple Inc.*

**Discussion:**

The contribution was discussed during email thread [96e][106] NR\_unlic\_SysParameters. The discussion was recorded in R4-2011846.

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

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

**R4-2011540 Email discussion summary for [96e][107] NR\_unlic\_UE\_RF**

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

**Discussion:**

The contribution summarized email discussion thread [96e][107] NR\_unlic\_UE\_RF. The subject for discussion was UE RF requirements. The email thread was moderated by Gene Fong (Qualcomm) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **revised to R4-2011847**.

**R4-2011847 Email discussion summary for [96e][107] NR\_unlic\_UE\_RF**

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

(Replaces R4-2011540)

**Discussion:**

The contribution summarized email discussion thread [96e][107] NR\_unlic\_UE\_RF. The subject for discussion was UE RF requirements. The email thread was moderated by Gene Fong (Qualcomm) and treated during Main session chaired by Steven Chen (Futurewei).

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

**R4-2011702 Draft CR to 38.101-3 on out-of-band blocking for NSA operation**

*Type: other For: Endorsement  
 Source: Ericsson*

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

**R4-2010585 Architecture discussion for NRU 6GHz**

*Type: discussion For: Approval  
 38.101-1 v..  
 Source: MediaTek Inc.*

**Discussion:**

The contribution was discussed during email thread [96e][107] NR\_unlic\_UE\_RF. The discussion was recorded in R4-2011847.

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

**R4-2010740 CR to TS 37.106 with introduction of NR-U feature**

*Type: CR For: Agreement  
 37.106 v16.0.0 CR-0001 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This CR introduces NR-U feature to specification TS 37.106.

**Discussion:**

The contribution was discussed during email thread [96e][107] NR\_unlic\_UE\_RF. The discussion was recorded in R4-2011847. The Chairman commented that the CR was agreeable based on first round discussion. Decision was deferred to agree all CRs in a package.

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

##### 7.1.2.1 Transmitter characteristics [NR\_unlic-Core]

**R4-2010273 [NRU] UE TX measurements and requirements for MPR and A-MPR**

*Type: discussion For: Approval  
 38.101-1 v..  
 Source: Skyworks Solutions Inc.*

**Abstract:**

In this contribution we provide our measurements results and proposals partially covering MPR/A-MPR, 6GHz band, 100MHz channe and PC3 requirements with the aim to finalize PC5 MPR and A-MPR for 5 and 6GHz bands and progress the other subjects.

**Discussion:**

The contribution was discussed during email thread [96e][107] NR\_unlic\_UE\_RF. The discussion was recorded in R4-2011847.

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

**R4-2010344 Additional TX requirements for NR-U operation**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

Background to additional TX requirements for NR-U, e.g. A-MPR for wideband operation, time mask

**Discussion:**

The contribution was discussed during email thread [96e][107] NR\_unlic\_UE\_RF. The discussion was recorded in R4-2011847.

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

**R4-2010345 Introduction of additional TX requirements for NR-U operation**

*Type: draftCR For: Endorsement  
 38.101-1 v16.4.0  
 Source: Ericsson*

**Abstract:**

Introduce the following changes to the ‘running’ draft CR in R4-2009175: clarification of intra-cell GB for wideband carriers, no intra-cell GBs for 20 MHz carrier bandwidths, removal of tentative upper CA bandwidth limits of the new CA bandwidth classes, introducation of additional intra-band CA configurations (n\*20 MHz), introduction of the general time mask for shared spectrum channel access.

**Discussion:**

The contribution was discussed during email thread [96e][107] NR\_unlic\_UE\_RF. The discussion was recorded in R4-2011847.

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

**R4-2010497 Discussion on NR-U UE ACLR and MPR evaluation**

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

**Discussion:**

The contribution was discussed during email thread [96e][107] NR\_unlic\_UE\_RF. The discussion was recorded in R4-2011847.

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

**R4-2010586 Transmitter requirements consideration for NRU 6GHz**

*Type: discussion For: Approval  
 38.101-1 v..  
 Source: MediaTek Inc.*

**Discussion:**

The contribution was discussed during email thread [96e][107] NR\_unlic\_UE\_RF. The discussion was recorded in R4-2011847.

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

**R4-2011344 Simulation results for NR-U bands n46 and n96**

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

**Discussion:**

The contribution was discussed during email thread [96e][107] NR\_unlic\_UE\_RF. The discussion was recorded in R4-2011847.

**Decision:** The document was **revised to R4-2011895**.

**R4-2011895 Simulation results for NR-U bands n46 and n96**

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

(Replaces R4-2011344)

**Discussion:**

The contribution was discussed during email thread [96e][107] NR\_unlic\_UE\_RF. The discussion was recorded in R4-2011847.

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

**R4-2011345 Remaining UE RF requirements for stand-alone single carrier NR-U**

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

**Discussion:**

The contribution was discussed during email thread [96e][107] NR\_unlic\_UE\_RF. The discussion was recorded in R4-2011847.

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

**R4-2011347 Introduction of NR-based access to unlicensed spectrum**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0466 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated, Nokia*

**Abstract:**

Introduce UE NR-U requirements to 38.101-1 including Band n46 (5 GHz) and Band n96 (6 GHz)

**Discussion:**

The contribution was discussed during email thread [96e][107] NR\_unlic\_UE\_RF. The discussion was recorded in R4-2011847.

**Decision:** The document was **revised to R4-2011701**.

**R4-2011701 Introduction of NR-based access to unlicensed spectrum**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0466 rev 1 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated, Nokia*

(Replaces R4-2011347)

**Abstract:**

Introduce UE NR-U requirements to 38.101-1 including Band n46 (5 GHz) and Band n96 (6 GHz)

**Discussion:**

The contribution was discussed during email thread [96e][107] NR\_unlic\_UE\_RF. The discussion was recorded in R4-2011847.

**Decision:** The document was **revised to R4-2011943**.

**R4-2011943 Introduction of NR-based access to unlicensed spectrum**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0466 rev 2 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated, Nokia*

(Replaces R4-2011701)

**Abstract:**

Introduce UE NR-U requirements to 38.101-1 including Band n46 (5 GHz) and Band n96 (6 GHz)

**Discussion:**

The contribution was discussed during email thread [96e][107] NR\_unlic\_UE\_RF. The discussion was recorded in R4-2011847.

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

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

**R4-2009942 NR-U MPR for PC5**

*Type: discussion For: Decision  
 Source: Apple Inc.*

**Discussion:**

The contribution was discussed during email thread [96e][107] NR\_unlic\_UE\_RF. The discussion was recorded in R4-2011847.

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

##### 7.1.2.2 Receiver characteristics [NR\_unlic-Core]

**R4-2010346 Additional RX requirements for NR-U operation**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

Background to additional RX requirements for NR-U, e.g. ACS and blocking requirements

**Discussion:**

The contribution was discussed during email thread [96e][107] NR\_unlic\_UE\_RF. The discussion was recorded in R4-2011847.

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

**R4-2010347 Introduction of additional RX requirements for NR-U operation**

*Type: draftCR For: Endorsement  
 38.101-1 v16.4.0  
 Source: Ericsson*

**Abstract:**

Introduce the following changes to the ‘running’ draft CR in R4-2009175:

excempt from requirements carriers assigned in the gap 5350-5470 MHz

tentative ACS requirement (24 dB for 20 MHz carrier bandwidth) for non-CA and intra-band contribuous CA

correction of OOBB requirements

**Discussion:**

The contribution was discussed during email thread [96e][107] NR\_unlic\_UE\_RF. The discussion was recorded in R4-2011847.

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

**R4-2010496 Discussion on NR-U UE ACS**

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

**Discussion:**

The contribution was discussed during email thread [96e][107] NR\_unlic\_UE\_RF. The discussion was recorded in R4-2011847.

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

**R4-2011346 Introduction of NR-based access to unlicensed spectrum**

*Type: draftCR For: Endorsement  
 38.101-1 v16.4.0  
 Source: Qualcomm Incorporated*

**Abstract:**

Add NR-U UE requirements

**Discussion:**

The contribution was discussed during email thread [96e][107] NR\_unlic\_UE\_RF. The discussion was recorded in R4-2011847.

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

**R4-2009966 ACS requirement for NR-U**

*Type: discussion For: Approval  
 Source: Apple Inc.*

**Discussion:**

The contribution was discussed during email thread [96e][107] NR\_unlic\_UE\_RF. The discussion was recorded in R4-2011847.

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

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

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

**R4-2012541 Email discussion summary for [96e][305] NR\_unlic\_RF\_BS**

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

**Discussion:**

The contribution summarized email discussion thread [96e][305] NR\_unlic\_RF\_BS. The topic areas for discussion were Rel-16 NR-U BS RF requirements. The email thread was moderated by Bartlomiej Golebiowski (Nokia). All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2012726**.

**R4-2012726 Email discussion summary for [96e][305] NR\_unlic\_RF\_BS**

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

(Replaces R4-2012541)

**Discussion:**

The contribution summarized email discussion thread [96e][305] NR\_unlic\_RF\_BS. The topic areas for discussion were Rel-16 NR-U BS RF requirements. The email thread was moderated by Bartlomiej Golebiowski (Nokia). All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

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

**R4-2012607 WF on BS Tx and Rx remaining requirements for NR-U**

*Type: other For: discussion  
 Source: ZTE*

**Discussion:**

The contribution was discussed during email thread [96e][305] NR\_unlic\_RF\_BS. The discussion was recorded in R4-2012726.

Session Chair Note: Agreements captured in slides 4, 6, and 9. NO agreements reached for slide 5, 7,8.

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

**R4-2010738 CR to TS 38.104: Introduction of NR-U into BS core specification**

*Type: CR For: Agreement  
 38.104 v16.4.0 CR-0225 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This is running Big CR with introduction of NR-U requirements to BS core specification TS 38.104.

**Discussion:**

The contribution was discussed during email thread [96e][305] NR\_unlic\_RF\_BS. The discussion was recorded in R4-2012726.

**Decision:** The document was **revised to R4-2012608**.

**R4-2012608 CR to TS 38.104: Introduction of NR-U into BS core specification**

*Type: CR For: Agreement  
 38.104 v16.4.0 CR-0225 rev 1 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2010738)

**Abstract:**

This is running Big CR with introduction of NR-U requirements to BS core specification TS 38.104.

**Discussion:**

The contribution was discussed during email thread [96e][305] NR\_unlic\_RF\_BS. The discussion was recorded in R4-2012726.

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

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

**R4-2010739 CR to TS 37.107 with introduction of NR-U feature – core part**

*Type: CR For: Agreement  
 37.107 v16.0.0 CR-0006 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This CR introduces NR-U feature to specification TS 37.107. Changes are intorduces to core part.

**Discussion:**

The contribution was discussed during email thread [96e][305] NR\_unlic\_RF\_BS. The discussion was recorded in R4-2012726.

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

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

**R4-2010962 Introduction of Band n46 in 36.104**

*Type: CR For: Agreement  
 36.104 v16.6.0 CR-4908 Cat: B (Rel-16)  
  
 Source: ZTE Corporation*

**Abstract:**

Introduction of Band n46 in 36.104

**Discussion:**

The contribution was discussed during email thread [96e][305] NR\_unlic\_RF\_BS. The discussion was recorded in R4-2012726.

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

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

**R4-2011409 CR to 36.104: Introduction of NR-U co-existence requirements**

*Type: CR For: Agreement  
 36.104 v16.6.0 CR-4910 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Introduction on NR-U co-existence requirements.

**Discussion:**

The contribution was discussed during email thread [96e][305] NR\_unlic\_RF\_BS. The discussion was recorded in R4-2012726.

**Decision:** The document was **revised to R4-2012768**.

**R4-2012768 CR to 36.104: Introduction of NR-U co-existence requirements**

*Type: CR For: Agreement  
 36.104 v16.6.0 CR-4910 rev 1 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2011409)

**Abstract:**

Introduction on NR-U co-existence requirements.

**Discussion:**

The contribution was discussed during email thread [96e][305] NR\_unlic\_RF\_BS. The discussion was recorded in R4-2012726.

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

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

**R4-2011410 CR to 37.104: Introduction of NR-U co-existence requirements**

*Type: CR For: Agreement  
 37.104 v16.6.0 CR-0906 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Introduction on NR-U co-existence requirements.

**Discussion:**

The contribution was discussed during email thread [96e][305] NR\_unlic\_RF\_BS. The discussion was recorded in R4-2012726.

**Decision:** The document was **revised to R4-2012766**.

**R4-2012766 CR to 37.104: Introduction of NR-U co-existence requirements**

*Type: CR For: Agreement  
 37.104 v16.6.0 CR-0906 rev 1 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2011410)

**Abstract:**

Introduction on NR-U co-existence requirements.

**Discussion:**

The contribution was discussed during email thread [96e][305] NR\_unlic\_RF\_BS. The discussion was recorded in R4-2012726.

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

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

**R4-2011411 CR to 37.105: Introduction of NR-U co-existence requirements**

*Type: CR For: Agreement  
 37.105 v16.4.0 CR-0198 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Introduction on NR-U co-existence requirements.

**Discussion:**

The contribution was discussed during email thread [96e][305] NR\_unlic\_RF\_BS. The discussion was recorded in R4-2012726.

**Decision:** The document was **revised to R4-2012767**.

**R4-2012767 CR to 37.105: Introduction of NR-U co-existence requirements**

*Type: CR For: Agreement  
 37.105 v16.4.0 CR-0198 rev 1 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2011411)

**Abstract:**

Introduction on NR-U co-existence requirements.

**Discussion:**

The contribution was discussed during email thread [96e][305] NR\_unlic\_RF\_BS. The discussion was recorded in R4-2012726.

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

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

##### 7.1.4.1 Transmitter characteristics [NR\_unlic-Core]

**R4-2010959 Discussion on NR-U BS Tx requirements**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][305] NR\_unlic\_RF\_BS. The discussion was recorded in R4-2012726.

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

##### 7.1.4.2 Receiver characteristics [NR\_unlic-Core]

**R4-2010743 Discussion on BS core specification drafting**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

In this contribution, we discuss this drafting issue for NR-U BS Rx requirements.

**Discussion:**

The contribution was discussed during email thread [96e][305] NR\_unlic\_RF\_BS. The discussion was recorded in R4-2012726.

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

**R4-2010960 NR-U BS RX ACS, IBB, OOBB, IMD requirements**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][305] NR\_unlic\_RF\_BS. The discussion was recorded in R4-2012726.

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

**R4-2010961 Introduction of NR-U BS RX requirement into TS38.104**

*Type: CR For: Agreement  
 38.104 v16.4.0 CR-0230 Cat: B (Rel-16)  
  
 Source: ZTE Corporation*

**Abstract:**

NR-U BS RX requirements are not defined in TS38.104 and propose to add this feature.

**Discussion:**

The contribution was discussed during email thread [96e][305] NR\_unlic\_RF\_BS. The discussion was recorded in R4-2012726.

**Decision:** The document was **merged (with R4-2010738)**.

#### 7.1.5 RRM core requirements (38.133) [NR\_unlic-Core]

##### 7.1.5.1 General (specification structure, etc) [NR\_unlic-Core]

**R4-2010380 Updates to general section for NR-U in 38.133**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1000 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

NR-U bands not included for band grouping table

**Discussion:**

The contribution was discussed during email thread [96e][206] NR\_unlic\_RRM\_1. The discussion was recorded in R4-2012206.

**Decision:** The document was **postponed**.

**R4-2011354 On NR-U terminology reflecting LBT and the related number of SSBs to monitor**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

On NR-U terminology reflecting LBT and the related number of SSBs to monitor

**Discussion:**

The contribution was discussed during email thread [96e][206] NR\_unlic\_RRM\_1. The discussion was recorded in R4-2012206.

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

##### 7.1.5.2 Cell re-selection [NR\_unlic-Core]

**R4-2010590 Scell activation and deactivation requirements in NR-U**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This document discusses the SCell activation and deactivation requirements in NR-U.

**Discussion:**

The contribution was discussed during email thread [96e][207] NR\_unlic\_RRM\_2. The discussion was recorded in R4-2012207.

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

**R4-2011076 CR on introduction of RRC\_IDLE state moblity requirements for NR-U**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1045 Cat: B (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

Resubmission of technically endorsed CR R4-2008568

Introdction of RRC\_IDLE state moblity requirements for NR-U

**Discussion:**

The contribution was discussed during email thread [96e][207] NR\_unlic\_RRM\_2. The discussion was recorded in R4-2012207.

**Decision:** The document was **revised to R4-2012093**.

**R4-2012093 CR on introduction of RRC\_IDLE state moblity requirements for NR-U**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1045 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei, Hisilicon*

(Replaces R4-2011076)

**Abstract:**

Resubmission of technically endorsed CR R4-2008568

Introdction of RRC\_IDLE state moblity requirements for NR-U

**Discussion:**

The contribution was discussed during email thread [96e][207] NR\_unlic\_RRM\_2. The discussion was recorded in R4-2012207.

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

**R4-2011081 Discussion on cell re-selection requirements for NR-U**

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

**Discussion:**

The contribution was discussed during email thread [96e][207] NR\_unlic\_RRM\_2. The discussion was recorded in R4-2012207.

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

**R4-2011212 Remaining discussions on IDLE mode cell re-selection requirements for NR-U**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution we discuss and provide our view on these open issues in IDLE mode.

**Discussion:**

The contribution was discussed during email thread [96e][207] NR\_unlic\_RRM\_2. The discussion was recorded in R4-2012207.

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

**R4-2011213 RRC\_IDLE state inter-RAT moblity requirements for NR-U**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6955 Cat: B (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Also the maximum number of unavailable SMTC occasions during measurement is TBD.

**Discussion:**

The contribution was discussed during email thread [96e][207] NR\_unlic\_RRM\_2. The discussion was recorded in R4-2012207.

**Decision:** The document was **revised to R4-2012094**.

**R4-2012094 RRC\_IDLE state inter-RAT moblity requirements for NR-U**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6955 rev 1 Cat: B (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2011213)

**Abstract:**

Also the maximum number of unavailable SMTC occasions during measurement is TBD.

**Discussion:**

The contribution was discussed during email thread [96e][207] NR\_unlic\_RRM\_2. The discussion was recorded in R4-2012207.

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

**R4-2011214 CR on introduction of RRC\_IDLE state moblity requirements for NR-U**

*Type: draftCR For: Endorsement  
 38.133 v16.4.0  
 Source: Ericsson*

**Abstract:**

The wording in cell reselection requirements when subject to CCA in the CR endorsed for TS 38.133 and TS 36.133 are not fully aligned. Also the maximum number of unavailable SMTC occasions during measurement is TBD.

**Discussion:**

The contribution was discussed during email thread [96e][207] NR\_unlic\_RRM\_2. The discussion was recorded in R4-2012207.

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

**R4-2009678 Pending issues on cell re-selection under NR-U**

*Type: discussion For: Discussion  
 Source: ZTE Corporation*

**Abstract:**

This paper discusses some pending issues left from last meeting.

**Discussion:**

The contribution was discussed during email thread [96e][207] NR\_unlic\_RRM\_2. The discussion was recorded in R4-2012207.

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

**R4-2009866 Remaining issues on cell reselection in NR-U**

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

**Discussion:**

The contribution was discussed during email thread [96e][207] NR\_unlic\_RRM\_2. The discussion was recorded in R4-2012207.

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

##### 7.1.5.3 Handover [NR\_unlic-Core]

**R4-2010593 CR to TS 38.133 - Handover requirements in NR-U**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1011 Cat: D (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

CR 0718, which introduced clause 6.1A, was implemented between clauses within clause 6.1. The current place is wrong, changes the scope of clauses 6.1.2, 6.1.3 and 6.1.4 and causes confusion in the specification.

**Discussion:**

The contribution was discussed during email thread [96e][206] NR\_unlic\_RRM\_1. The discussion was recorded in R4-2012206.

**Decision:** The document was **revised to R4-2012086**.

**R4-2012086 CR to TS 38.133 - Handover requirements in NR-U**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1011 rev 1 Cat: D (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2010593)

**Abstract:**

CR 0718, which introduced clause 6.1A, was implemented between clauses within clause 6.1. The current place is wrong, changes the scope of clauses 6.1.2, 6.1.3 and 6.1.4 and causes confusion in the specification.

**Discussion:**

The contribution was discussed during email thread [96e][206] NR\_unlic\_RRM\_1. The discussion was recorded in R4-2012206.

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

**R4-2011241 Analysis of RACH in HO and RRC connection control requirements in NR-U**

*Type: other For: Discussion  
 Source: Ericsson, Qualcomm*

**Abstract:**

This paper analyze the RA delay in RRC re-establishment and RRC release requirements in NR-U

**Discussion:**

The contribution was discussed during email thread [96e][206] NR\_unlic\_RRM\_1. The discussion was recorded in R4-2012206.

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

**R4-2011242 Correction to RACH delay in HO delay requirements in NR-U**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1089 Cat: F (Rel-16)  
  
 Source: Ericsson, Qualcomm*

**Abstract:**

To correct RACH transmission delay as function of CCA failures in uplink within the HO interruption time.

**Discussion:**

The contribution was discussed during email thread [96e][206] NR\_unlic\_RRM\_1. The discussion was recorded in R4-2012206.

**Decision:** The document was **merged**.

**R4-2011243 Correction to RACH delay in HO delay requirements in NR-U**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6956 Cat: F (Rel-16)  
  
 Source: Ericsson, Qualcomm*

**Abstract:**

To correct RACH transmission delay as function of CCA failures in uplink within the HO interruption time.

**Discussion:**

The contribution was discussed during email thread [96e][206] NR\_unlic\_RRM\_1. The discussion was recorded in R4-2012206.

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

##### 7.1.5.4 RRC connection mobility control [NR\_unlic-Core]

**R4-2011077 Discussion on RRC re-establishment for NR-U**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1046 Cat: B (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

The changes are based on the endorsed CR R4-2008561

The carriers for RRC re-establishment shall include both carrier with CCA and carrier without CCA.

**Discussion:**

The contribution was discussed during email thread [96e][206] NR\_unlic\_RRM\_1. The discussion was recorded in R4-2012206.

**Decision:** The document was **revised to R4-2012087**.

**R4-2012087 Discussion on RRC re-establishment for NR-U**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1046 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei, Hisilicon*

(Replaces R4-2011077)

**Abstract:**

The changes are based on the endorsed CR R4-2008561

The carriers for RRC re-establishment shall include both carrier with CCA and carrier without CCA.

Correct the PRACH uncertainty.

**Discussion:**

The contribution was discussed during email thread [96e][206] NR\_unlic\_RRM\_1. The discussion was recorded in R4-2012206.

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

**R4-2011085 Discussion on RRC re-establishment for NR-U**

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

**Discussion:**

The contribution was discussed during email thread [96e][206] NR\_unlic\_RRM\_1. The discussion was recorded in R4-2012206.

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

**R4-2011244 Correction to RACH delay in RRC release requirements in NR-U in 38.133**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1090 Cat: F (Rel-16)  
  
 Source: Ericsson, Qualcomm*

**Abstract:**

To correct RACH transmission delay as function of CCA failures in uplink within the RRC release with redirection.

**Discussion:**

The contribution was discussed during email thread [96e][206] NR\_unlic\_RRM\_1. The discussion was recorded in R4-2012206.

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

**R4-2011245 Correction to RACH delay in RRC release requirements in NR-U in 36.133**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6957 Cat: F (Rel-16)  
  
 Source: Ericsson, Qualcomm*

**Abstract:**

To correct RACH transmission delay as function of CCA failures in uplink within the RRC release with redirection.

**Discussion:**

The contribution was discussed during email thread [96e][206] NR\_unlic\_RRM\_1. The discussion was recorded in R4-2012206.

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

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

**R4-2010211 Discussion on Scell activation for NR-U**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

The contribution was discussed during email thread [96e][206] NR\_unlic\_RRM\_1. The discussion was recorded in R4-2012206.

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

**R4-2011087 Discussion on SCell activation and deactivation requirements for NR-U**

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

**Discussion:**

The contribution was discussed during email thread [96e][206] NR\_unlic\_RRM\_1. The discussion was recorded in R4-2012206.

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

**R4-2011349 On SCell activation delay in NR-U**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

On SCell activation delay in NR-U

**Discussion:**

The contribution was discussed during email thread [96e][206] NR\_unlic\_RRM\_1. The discussion was recorded in R4-2012206.

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

**R4-2009867 On Scell activation and deactivation requirements in NR-U**

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

**Discussion:**

The contribution was discussed during email thread [96e][206] NR\_unlic\_RRM\_1. The discussion was recorded in R4-2012206.

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

**R4-2009880 Introduction of SCell activation/deactivation delay requirements for SCells operating with CCA**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0940 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

Per agreements in R4-1910551 and R4-1912851, requirements for activation and deactivation delay of Scells operating with CCA are added to TS 38.133 following the guidelines in R4-1912662. This draft is an updated version of R4-1915161 with agreements from RAN4#93 and comments collected in R4-1915778. It is further updated based on agreements in RAN4#95-e- (R4-2008552) and R15 corrections agreed in R4-2009273.

**Discussion:**

The contribution was discussed during email thread [96e][206] NR\_unlic\_RRM\_1. The discussion was recorded in R4-2012206.

**Decision:** The document was **revised to R4-2012088**.

**R4-2012088 Introduction of SCell activation/deactivation delay requirements for SCells operating with CCA**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0940 rev 1 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated*

(Replaces R4-2009880)

**Abstract:**

Per agreements in R4-1910551 and R4-1912851, requirements for activation and deactivation delay of Scells operating with CCA are added to TS 38.133 following the guidelines in R4-1912662. This draft is an updated version of R4-1915161 with agreements from RAN4#93 and comments collected in R4-1915778. It is further updated based on agreements in RAN4#95-e- (R4-2008552) and R15 corrections agreed in R4-2009273.

**Discussion:**

The contribution was discussed during email thread [96e][206] NR\_unlic\_RRM\_1. The discussion was recorded in R4-2012206.

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

##### 7.1.5.6 Active TCI state switching [NR\_unlic-Core]

**R4-2010212 Discussion on TCI swtich for NR-U**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

The contribution was discussed during email thread [96e][206] NR\_unlic\_RRM\_1. The discussion was recorded in R4-2012206.

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

**R4-2010213 CR on active TCI state switch delay in NR-U**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0990 Cat: F (Rel-16)  
  
 Source: MediaTek inc.*

**Abstract:**

L1-RSRP measurement is not required for NR-U in FR1, because it is used for Rx beam refinement in FR2.

For MAC-CE based TCI state switch, mismatch between 8.10.3 and 8.10A.3, regarding the time the UE shall be able to receive PDCCH with the old TCI state.

For active TCI state list update, TOk is redundant and equals to 1, because the new target TCI state should not be in the old active TCI state list. Otherwise, this update is not necessary.

**Discussion:**

The contribution was discussed during email thread [96e][206] NR\_unlic\_RRM\_1. The discussion was recorded in R4-2012206.

**Decision:** The document was **merged**.

**R4-2011073 CR on active TCI state switching for NR-U**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1042 Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

The requirements for RRC-based TCI state switch is incomplete.

Based on the LS reply R2-200585, BFD and BFR mechanism are enough to handle RRC based TCI state switching failure caused by DL LBT failures. No additional enhancement is needed for Rel-16. Thus Lmax shall be removed.

**Discussion:**

The contribution was discussed during email thread [96e][206] NR\_unlic\_RRM\_1. The discussion was recorded in R4-2012206.

**Decision:** The document was **revised to R4-2012089**.

**R4-2012089 CR on active TCI state switching for NR-U**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1042 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

(Replaces R4-2011073)

**Abstract:**

The requirements for RRC-based TCI state switch is incomplete.

Based on the LS reply R2-200585, BFD and BFR mechanism are enough to handle RRC based TCI state switching failure caused by DL LBT failures. No additional enhancement is needed for Rel-16. Thus Lmax shall be removed.

**Discussion:**

The contribution was discussed during email thread [96e][206] NR\_unlic\_RRM\_1. The discussion was recorded in R4-2012206.

**Decision:** The document was **revised to R4-2012253**.

**R4-2012253 CR on active TCI state switching for NR-U**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1042 rev 2 Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

(Replaces R4-2012089)

**Abstract:**

The UE behavour for LRRC,known,max, L1RRC,unknown,max, L2RRC,unknown,max

LMAC,known,max, L1MAC,unknown,max, and L2MAC,unknown,max are not clear.

**Discussion:**

The contribution was discussed during email thread [96e][206] NR\_unlic\_RRM\_1. The discussion was recorded in R4-2012206.

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

**R4-2011078 Discussion on Active TCI state switching for NR-U**

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

**Discussion:**

The contribution was discussed during email thread [96e][206] NR\_unlic\_RRM\_1. The discussion was recorded in R4-2012206.

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

**R4-2011350 On active TCI state switching requirements in NR-U**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

On active TCI state switching requirements in NR-U

**Discussion:**

The contribution was discussed during email thread [96e][206] NR\_unlic\_RRM\_1. The discussion was recorded in R4-2012206.

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

**R4-2009675 TCI state switching under NR-U**

*Type: discussion For: Discussion  
 Source: ZTE Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][206] NR\_unlic\_RRM\_1. The discussion was recorded in R4-2012206.

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

**R4-2009868 On active TCI state switching in NR-U**

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

**Discussion:**

The contribution was discussed during email thread [96e][206] NR\_unlic\_RRM\_1. The discussion was recorded in R4-2012206.

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

##### 7.1.5.7 Active BWP switching [NR\_unlic-Core]

**R4-2011075 CR on introduction of Active BWP switching delay requirements for NR-U**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1044 Cat: B (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

Resubmission of technical endorsed CR R4-2008571

Introdction of Active BWP switching delay requirements for NR-U

**Discussion:**

The contribution was discussed during email thread [96e][207] NR\_unlic\_RRM\_2. The discussion was recorded in R4-2012207.

**Decision:** The document was **revised to R4-2012255**.

**R4-2012255 CR on introduction of Active BWP switching delay requirements for NR-U**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1044 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei, Hisilicon*

(Replaces R4-2011075)

**Abstract:**

Resubmission of technical endorsed CR R4-2008571

Introdction of Active BWP switching delay requirements for NR-U

**Discussion:**

The contribution was discussed during email thread [96e][207] NR\_unlic\_RRM\_2. The discussion was recorded in R4-2012207.

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

**R4-2011080 Discussion on BWP switch requirements for NR-U**

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

**Discussion:**

The contribution was discussed during email thread [96e][207] NR\_unlic\_RRM\_2. The discussion was recorded in R4-2012207.

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

**R4-2011239 Analysis of open issues in BWP switching requirement due to consistent UL failure**

*Type: other For: Discussion  
 Source: Ericsson, Qualcomm*

**Abstract:**

This paper analyzes remaining issues related to delay requirements for BWP switching in NR-U under consistent LBT failures

**Discussion:**

The contribution was discussed during email thread [96e][207] NR\_unlic\_RRM\_2. The discussion was recorded in R4-2012207.

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

**R4-2011240 BWP switching delay requirement due to consistent UL failure in 38.133**

*Type: draftCR For: Endorsement  
 38.133 v16.4.0  
 Source: Ericsson, Qualcomm*

**Abstract:**

To transmit timing requirements in NR-U

**Discussion:**

The contribution was discussed during email thread [96e][207] NR\_unlic\_RRM\_2. The discussion was recorded in R4-2012207.

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

**R4-2009677 On BWP switch in NR-U**

*Type: discussion For: Discussion  
 Source: ZTE Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][207] NR\_unlic\_RRM\_2. The discussion was recorded in R4-2012207.

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

**R4-2009869 Remaining issues in UL BWP switching in NR-U**

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

**Discussion:**

The contribution was discussed during email thread [96e][207] NR\_unlic\_RRM\_2. The discussion was recorded in R4-2012207.

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

##### 7.1.5.8 RLM [NR\_unlic-Core]

**R4-2010214 Discussion on RLM requirement for NR-U**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

The contribution was discussed during email thread [96e][207] NR\_unlic\_RRM\_2. The discussion was recorded in R4-2012207.

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

**R4-2010591 RLM requirements in NR-U**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This document discusses the reamining aspects of RLM in NR-U

**Discussion:**

The contribution was discussed during email thread [96e][207] NR\_unlic\_RRM\_2. The discussion was recorded in R4-2012207.

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

**R4-2011084 Discussion on RLM requirements for NR-U**

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

**Discussion:**

The contribution was discussed during email thread [96e][207] NR\_unlic\_RRM\_2. The discussion was recorded in R4-2012207.

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

**R4-2011351 On RLM in NR-U**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

On RLM in NR-U

**Discussion:**

The contribution was discussed during email thread [96e][207] NR\_unlic\_RRM\_2. The discussion was recorded in R4-2012207.

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

**R4-2011352 Introduction of RLM requirements for NR-U**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1102 Cat: B (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

The CR is based on the CR in R4-2008573 endorsed in RAN4#95-e.

There are no RLM requirements for NR-U

**Discussion:**

The contribution was discussed during email thread [96e][207] NR\_unlic\_RRM\_2. The discussion was recorded in R4-2012207.

**Decision:** The document was **revised to R4-2012095**.

**R4-2012095 Introduction of RLM requirements for NR-U**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1102 rev 1 Cat: B (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2011352)

**Abstract:**

The CR is based on the CR in R4-2008573 endorsed in RAN4#95-e,

and also capturing agreements from RAN4#96-e

There are no RLM requirements for NR-U

**Discussion:**

The contribution was discussed during email thread [96e][207] NR\_unlic\_RRM\_2. The discussion was recorded in R4-2012207.

**Decision:** The document was **revised to R4-2012254**.

**R4-2012254 Introduction of RLM requirements for NR-U**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1102 rev 2 Cat: B (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2012095)

**Abstract:**

The CR is based on the CR in R4-2008573 endorsed in RAN4#95-e,

and also capturing agreements from RAN4#96-e

There are no RLM requirements for NR-U

**Discussion:**

The contribution was discussed during email thread [96e][207] NR\_unlic\_RRM\_2. The discussion was recorded in R4-2012207.

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

**R4-2009676 Discussion on RLM in NR-U**

*Type: discussion For: Discussion  
 Source: ZTE Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][207] NR\_unlic\_RRM\_2. The discussion was recorded in R4-2012207.

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

**R4-2009870 On RLM requirements in NR-U**

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

**Discussion:**

The contribution was discussed during email thread [96e][207] NR\_unlic\_RRM\_2. The discussion was recorded in R4-2012207.

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

**R4-2009912 On remaining issues for RLM/BFD OOS evaluation in NR-U**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: Apple*

**Discussion:**

The contribution was discussed during email thread [96e][207] NR\_unlic\_RRM\_2. The discussion was recorded in R4-2012207.

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

##### 7.1.5.9 Beam management [NR\_unlic-Core]

**R4-2010469 Beam management for NR-U**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the remaining open issues for NR-U beam management.

**Discussion:**

The contribution was discussed during email thread [96e][207] NR\_unlic\_RRM\_2. The discussion was recorded in R4-2012207.

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

**R4-2010470 CR: Beam management requirements with CCA**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1007 Cat: B (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Intoduction of link recovery requiremenst for NR-U.

**Discussion:**

The contribution was discussed during email thread [96e][207] NR\_unlic\_RRM\_2. The discussion was recorded in R4-2012207.

**Decision:** The document was **revised to R4-2012096**.

**R4-2012096 CR: Beam management requirements with CCA**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1007 rev 1 Cat: B (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2010470)

**Abstract:**

Intoduction of link recovery requiremenst for NR-U.

**Discussion:**

The contribution was discussed during email thread [96e][207] NR\_unlic\_RRM\_2. The discussion was recorded in R4-2012207.

**Decision:** The document was **revised to R4-2012256**.

**R4-2012256 CR: Beam management requirements with CCA**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1007 rev 2 Cat: B (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2012096)

**Abstract:**

Intoduction of link recovery requiremenst for NR-U.

**Discussion:**

The contribution was discussed during email thread [96e][207] NR\_unlic\_RRM\_2. The discussion was recorded in R4-2012207.

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

**R4-2011079 Discussion on beam management requirements for NR-U**

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

**Discussion:**

The contribution was discussed during email thread [96e][207] NR\_unlic\_RRM\_2. The discussion was recorded in R4-2012207.

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

##### 7.1.5.10 Measurement requirements [NR\_unlic-Core]

**R4-2010082 Remaining issues on intra or inter frequency measurements**

*Type: discussion For: Discussion  
 Source: ZTE Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][208] NR\_unlic\_RRM\_3. The discussion was recorded in R4-2012208.

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

**R4-2010215 Discussion on measurements requirement for NR-U**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

The contribution was discussed during email thread [96e][208] NR\_unlic\_RRM\_3. The discussion was recorded in R4-2012208.

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

**R4-2010592 Remaining aspects in measurement requirements in NR-U**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This document discusses remaining aspects of measurement requirements in NR-U:

**Discussion:**

The contribution was discussed during email thread [96e][208] NR\_unlic\_RRM\_3. The discussion was recorded in R4-2012208.

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

**R4-2010594 CR to TS 38.133 to address NR-U inter-frequency measurements**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1012 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

The CR updates the NR-U inter-frequency measurements section based on agreements made at previous meetings.

**Discussion:**

The contribution was discussed during email thread [96e][208] NR\_unlic\_RRM\_3. The discussion was recorded in R4-2012208.

**Decision:** The document was **revised to R4-2012099**.

**R4-2012099 CR to TS 38.133 to address NR-U inter-frequency measurements**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1012 rev 1 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2010594)

**Abstract:**

The CR updates the NR-U inter-frequency measurements section based on agreements made at previous meetings.

**Discussion:**

The contribution was discussed during email thread [96e][208] NR\_unlic\_RRM\_3. The discussion was recorded in R4-2012208.

**Decision:** The document was **revised to R4-2012252**.

**R4-2012252 CR to TS 38.133 to address NR-U inter-frequency measurements**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1012 rev 2 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2012099)

**Abstract:**

The CR updates the NR-U inter-frequency measurements section based on agreements made at previous meetings.

**Discussion:**

The contribution was discussed during email thread [96e][208] NR\_unlic\_RRM\_3. The discussion was recorded in R4-2012208.

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

**R4-2010595 CR to TS 36.133 to address NR-U inter-RAT measurements**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6931 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Currently there are no requirements for E-UTRA Inter-RAT NR measurements when configured and not configured with E-UTRA-NR Dual Connectivity Operation when CCA is used in NR.

**Discussion:**

The contribution was discussed during email thread [96e][208] NR\_unlic\_RRM\_3. The discussion was recorded in R4-2012208.

**Decision:** The document was **revised to R4-2012100**.

**R4-2012100 CR to TS 36.133 to address NR-U inter-RAT measurements**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6931 rev 1 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2010595)

**Abstract:**

Currently there are no requirements for E-UTRA Inter-RAT NR measurements when configured and not configured with E-UTRA-NR Dual Connectivity Operation when CCA is used in NR.

**Discussion:**

The contribution was discussed during email thread [96e][208] NR\_unlic\_RRM\_3. The discussion was recorded in R4-2012208.

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

**R4-2011074 CR on introduction of intra-frequency measurements requirements for NR-U**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1043 Cat: B (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

Resubmission of endorsed CR R4-2008581.

Introdction of intra-frequency measurements requirements for NR-U

**Discussion:**

The contribution was discussed during email thread [96e][208] NR\_unlic\_RRM\_3. The discussion was recorded in R4-2012208.

**Decision:** The document was **revised to R4-2012101**.

**R4-2012101 CR on introduction of intra-frequency measurements requirements for NR-U**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1043 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei, Hisilicon*

(Replaces R4-2011074)

**Abstract:**

Resubmission of endorsed CR R4-2008581.

Introdction of intra-frequency measurements requirements for NR-U

**Discussion:**

The contribution was discussed during email thread [96e][208] NR\_unlic\_RRM\_3. The discussion was recorded in R4-2012208.

**Decision:** The document was **revised to R4-2012257**.

**R4-2012257 CR on introduction of intra-frequency measurements requirements for NR-U**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1043 rev 2 Cat: B (Rel-16)  
  
 Source: Huawei, Hisilicon*

(Replaces R4-2012101)

**Abstract:**

Resubmission of endorsed CR R4-2008581.

Introdction of intra-frequency measurements requirements for NR-U

**Discussion:**

The contribution was discussed during email thread [96e][208] NR\_unlic\_RRM\_3. The discussion was recorded in R4-2012208.

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

**R4-2011083 Discussion on measurement requirement for NR-U**

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

**Discussion:**

The contribution was discussed during email thread [96e][208] NR\_unlic\_RRM\_3. The discussion was recorded in R4-2012208.

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

**R4-2011353 On intra-frequency and inter-frequency measurements in NR-U including RSSI and CO**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

On intra-frequency and inter-frequency measurements in NR-U including RSSI and CO

**Discussion:**

The contribution was discussed during email thread [96e][208] NR\_unlic\_RRM\_3. The discussion was recorded in R4-2012208.

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

**R4-2009871 Remaining issues on measurement requirements in NR-U**

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

**Discussion:**

The contribution was discussed during email thread [96e][208] NR\_unlic\_RRM\_3. The discussion was recorded in R4-2012208.

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

**R4-2009910 Further discussion on serving cell evaluation in RRC connected mode for NR-U**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: Apple*

**Discussion:**

The contribution was discussed during email thread [96e][208] NR\_unlic\_RRM\_3. The discussion was recorded in R4-2012208.

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

**R4-2009911 Draft CR on serving cell evaluation in RRC connected mode for NR-U**

*Type: draftCR For: Endorsement  
 38.133 v16.4.0  
 Source: Apple*

**Abstract:**

UE shall initiate measurements on neighbour cells indicated by the serving cell if it is unable to measure the serving cell for consecutive SSB bursts. The corresponding UE behavior shall be specified.

**Discussion:**

The contribution was discussed during email thread [96e][208] NR\_unlic\_RRM\_3. The discussion was recorded in R4-2012208.

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

**R4-2012098 CR on serving cell evaluation in RRC connected mode for NR-U**

*Type: other For: Agreement  
 Source: Apple*

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

##### 7.1.5.11 Measurement capability and reporting criteria [NR\_unlic-Core]

**R4-2011082 Discussion on measurement capability of NR-U**

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

**Discussion:**

The contribution was discussed during email thread [96e][208] NR\_unlic\_RRM\_3. The discussion was recorded in R4-2012208.

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

**R4-2009908 On MO merging for NR-U**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: Apple*

**Discussion:**

The contribution was discussed during email thread [96e][208] NR\_unlic\_RRM\_3. The discussion was recorded in R4-2012208.

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

**R4-2009909 CR on UE measurement capability of NR-U for R16**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0957 Cat: B (Rel-16)  
  
 Source: Apple*

**Abstract:**

The measurement capabilty requirement has been technically endorsed in last meeting (R4-2006183).

The MO merging requirement is missing in last endorsed CR.

**Discussion:**

The contribution was discussed during email thread [96e][208] NR\_unlic\_RRM\_3. The discussion was recorded in R4-2012208.

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

##### 7.1.5.12 Timing [NR\_unlic-Core]

**R4-2010216 CR for timing requirement for NR-U**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0991 Cat: B (Rel-16)  
  
 Source: MediaTek inc.*

**Abstract:**

This CR is proposed for R4-2008574, which has been technically endorsed in RAN4#95

Upon the current timing reference cell is unavailable, the corresponding UE behavior and the change of timing reference cell are agreed in R4-1915777, R41912664.

**Discussion:**

The contribution was discussed during email thread [96e][207] NR\_unlic\_RRM\_2. The discussion was recorded in R4-2012207.

**Decision:** The document was **revised to R4-2012097**.

**R4-2012097 CR for timing requirement for NR-U**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0991 rev 1 Cat: B (Rel-16)  
  
 Source: MediaTek inc.*

(Replaces R4-2010216)

**Abstract:**

This CR is proposed for R4-2008574, which has been technically endorsed in RAN4#95

Upon the current timing reference cell is unavailable, the corresponding UE behavior and the change of timing reference cell are agreed in R4-1915777, R41912664.

**Discussion:**

The contribution was discussed during email thread [96e][207] NR\_unlic\_RRM\_2. The discussion was recorded in R4-2012207.

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

**R4-2010596 Timing requirements in NR-U**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This documents discusses the remaining aspects in timing requirements in NR-U

**Discussion:**

The contribution was discussed during email thread [96e][207] NR\_unlic\_RRM\_2. The discussion was recorded in R4-2012207.

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

**R4-2010597 CR on timing requirements in NR-U**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1013 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Introduce timing requirements in NR-U

**Discussion:**

The contribution was discussed during email thread [96e][207] NR\_unlic\_RRM\_2. The discussion was recorded in R4-2012207.

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

**R4-2011246 Open issues related to UE timing requirements in NR-U**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

This paper analyze the open issues on UE transmit timing requrements in NR-U

**Discussion:**

The contribution was discussed during email thread [96e][207] NR\_unlic\_RRM\_2. The discussion was recorded in R4-2012207.

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

**R4-2011247 UE transmit timing requirements in NR-U**

*Type: draftCR For: Endorsement  
 38.133 v16.4.0  
 Source: Ericsson*

**Abstract:**

To complete transmit timing requirements under CCA failure in reference cell

**Discussion:**

The contribution was discussed during email thread [96e][207] NR\_unlic\_RRM\_2. The discussion was recorded in R4-2012207.

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

##### 7.1.5.13 Other requirements maintenance [NR\_unlic-Core]

**R4-2010667 CR 36.133 (8.17.2.2.a) Clarification of UE behaviour**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6932 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Requirements on maximum allowed difference between fixing of time in PCell and fixing of time in neighbour cell when determining SFTD has been agreed and introduced in the specification. However, there is no description of what shall be the UE behaviour should the UE fail to meet the requirements.

**Discussion:**

The contribution was discussed during email threads [96e][206] NR\_unlic\_RRM\_1 and [96e][207] NR\_unlic\_RRM\_2. The discussion was recorded in R4-2012206 and R4-2012207.

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

**R4-2012102 CR 36.133 (8.17.2.2.a) Clarification of UE behaviour**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6932 rev 1 Cat: F (Rel-16)  
  
 Source: Ericsson*

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

**R4-2011086 Discussion on RSSI and CO measurement for NR-U**

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

**Discussion:**

The contribution was discussed during email threads [96e][206] NR\_unlic\_RRM\_1 and [96e][207] NR\_unlic\_RRM\_2. The discussion was recorded in R4-2012206 and R4-2012207.

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

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

##### 7.1.6.1 General [NR\_unlic-Perf]

**R4-2012542 Email discussion summary for [96e][328] NR\_unlic\_Demod**

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

**Discussion:**

The contribution summarized email discussion thread [96e][328] NR\_unlic\_Demod. The topic areas for discussion were Rel-16 NR-U demodulation and CSI requirements. The email thread was moderated by Gaurav Nigam (Qualcomm). All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2012746**.

**R4-2012746 Email discussion summary for [96e][328] NR\_unlic\_Demod**

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

(Replaces R4-2012542)

**Discussion:**

The contribution summarized email discussion thread [96e][328] NR\_unlic\_Demod. The topic areas for discussion were Rel-16 NR-U demodulation and CSI requirements. The email thread was moderated by Gaurav Nigam (Qualcomm). All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

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

**R4-2012609 Work Plan for NR-U Demodulation Performance Requirements**

*Type: Work Plan For: discussion  
 Source: Qualcomm*

**Discussion:**

The contribution was discussed during email thread [96e][328] NR\_unlic\_Demod. The discussion was recorded in R4-2012746.

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

**R4-2012610 Way Forward on NR-U UE demodulation requirements**

*Type: other For: discussion  
 Source: Qualcomm*

**Discussion:**

The contribution was discussed during email thread [96e][328] NR\_unlic\_Demod. The discussion was recorded in R4-2012746.

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

**R4-2012611 Way Forward on NR-U BS demodulation requirements**

*Type: other For: discussion  
 Source: Ericsson*

**Discussion:**

The contribution was discussed during email thread [96e][328] NR\_unlic\_Demod. The discussion was recorded in R4-2012746.

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

**R4-2010904 General aspects of demodulation requirements for unlicensed bands**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

General discussion on NR-U demodulation aspects

**Discussion:**

The contribution was discussed during email thread [96e][328] NR\_unlic\_Demod. The discussion was recorded in R4-2012746.

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

**R4-2009920 Definition of NR-U Demod Performance Tests**

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

**Abstract:**

In this paper, we propose a set of parameters to be used in the definition of NR-U Performance Demodulation Tests

**Discussion:**

The contribution was discussed during email thread [96e][328] NR\_unlic\_Demod. The discussion was recorded in R4-2012746.

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

##### 7.1.6.2 UE demodulation requirements [NR\_unlic-Perf]

**R4-2011020 Discusson on UE performance requirements for Rel-16 NR-U**

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

**Discussion:**

The contribution was discussed during email thread [96e][328] NR\_unlic\_Demod. The discussion was recorded in R4-2012746.

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

**R4-2011373 Overview on NR-U features for UE performance requirements**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this paper we provide an overview on UE performance requirements targeting NR-U operation

**Discussion:**

The contribution was discussed during email thread [96e][328] NR\_unlic\_Demod. The discussion was recorded in R4-2012746.

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

##### 7.1.6.3 CSI requirements [NR\_unlic-Perf]

##### 7.1.6.4 BS demodulation requirements [NR\_unlic-Perf]

**R4-2010277 View on BS demodulation requirement for NR-U**

*Type: discussion For: Discussion  
 Source: Samsung*

**Discussion:**

The contribution was discussed during email thread [96e][328] NR\_unlic\_Demod. The discussion was recorded in R4-2012746.

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

**R4-2010613 overview of BS demodulation for NR-U**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

overview discussion on NR-U BS demodulation requirements.

**Discussion:**

The contribution was discussed during email thread [96e][328] NR\_unlic\_Demod. The discussion was recorded in R4-2012746.

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

**R4-2010905 Discussion on NR-U BS demodulation requirements**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Discussion on the BS demodulation topics for unlicensed operation, including PUSCH, PUCCH, and PRACH

**Discussion:**

The contribution was discussed during email thread [96e][328] NR\_unlic\_Demod. The discussion was recorded in R4-2012746.

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

**R4-2011021 Discusson on BS performance requirements for Rel-16 NR-U**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][328] NR\_unlic\_Demod. The discussion was recorded in R4-2012746.

**Decision:** The document was **noted**.

### 7.2 NR mobility enhancement [NR\_Mob\_enh]

**R4-2012040 Email discussion summary for [96e][209] NR\_Mob\_enh\_RRM**

*Type: other For: discussion  
 Source: Moderator (Intel Corporation)*

**Discussion:**

The contribution summarized email discussion thread [96e][209] NR\_Mob\_enh\_RRM. The topic areas for discussion were RRM requirements (Core maintenance and Perf). The email thread was moderated by Qiming Li (Intel). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2012209**.

**R4-2012209 Email discussion summary for [96e][209] NR\_Mob\_enh\_RRM**

*Type: other For: discussion  
 Source: Moderator (Intel Corporation)*

(Replaces R4-2012040)

**Discussion:**

The contribution summarized email discussion thread [96e][209] NR\_Mob\_enh\_RRM. The topic areas for discussion were RRM requirements (Core maintenance and Perf). The email thread was moderated by Qiming Li (Intel). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **noted**.

**R4-2012103 WF on NR Mobility Enhancement RRM**

*Type: other For: discussion  
 Source: Intel Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][209] NR\_Mob\_enh\_RRM. The discussion was recorded in R4-2012209.

**Decision:** The document was **revised to R4-2012270**.

**R4-2012270 WF on NR Mobility Enhancement RRM**

*Type: other For: discussion  
 Source: Intel Corporation*

(Replaces R4-2012103)

**Discussion:**

The contribution was discussed during email thread [96e][209] NR\_Mob\_enh\_RRM. The discussion was recorded in R4-2012209.

**Decision:** The document was **approved**.

#### 7.2.1 RRM core requirements maintenance (38.133) [NR\_Mob\_enh-Core]

**R4-2011049 Discussion on interruption issues for DAPS handover**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][209] NR\_Mob\_enh\_RRM. The discussion was recorded in R4-2012209.

**Decision:** The document was **noted**.

**R4-2011050 CR on maintaining DAPS handover requirements**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1034 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

For inter-frequency DAPS hadover, UE Tx switching period is required for some UE implementation and the corresponding interruptions need to be clairfied.

**Discussion:**

The contribution was discussed during email thread [96e][209] NR\_Mob\_enh\_RRM. The discussion was recorded in R4-2012209.

**Decision:** The document was **merged**.

**R4-2009895 Discussion on dual active protocol stack handover**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

The contribution was discussed during email thread [96e][209] NR\_Mob\_enh\_RRM. The discussion was recorded in R4-2012209.

**Decision:** The document was **noted**.

**R4-2009896 CR on TS38.133 for dual active protocol stack handover (Section 6.1.3)**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0950 Cat: F (Rel-16)  
  
 Source: MediaTek inc.*

**Decision:** The document was **withdrawn**.

**R4-2012236 CR on TS38.133 for dual active protocol stack handover (Section 6.1.3)**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0950 rev 1 Cat: F (Rel-16)  
  
 Source: MediaTek inc.*

**Abstract:**

Clarify that UE is not required to retune its RF to conduct the SSB measurement during the DAPS handover procedure

For asynchronous intra-frequency DAPS handover and asynchronous intra-band inter-frequency DAPS handover, demodulation performance degradation might happen on at least one symbol of a slot.

**Discussion:**

The contribution was discussed during email thread [96e][209] NR\_Mob\_enh\_RRM. The discussion was recorded in R4-2012209.

**Decision:** The document was **revised to R4-2012265**.

**R4-2012265 CR on TS38.133 for dual active protocol stack handover (Section 6.1.3)**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0950 rev 2 Cat: F (Rel-16)  
  
 Source: MediaTek inc.*

(Replaces R4-2012236)

**Abstract:**

Clarify that UE is not required to retune its RF to conduct the SSB measurement during the DAPS handover procedure

For asynchronous intra-frequency DAPS handover and asynchronous intra-band inter-frequency DAPS handover, demodulation performance degradation might happen on more than one symbol of a slot.

**Discussion:**

The contribution was discussed during email thread [96e][209] NR\_Mob\_enh\_RRM. The discussion was recorded in R4-2012209.

**Decision:** The document was **agreed**.

#### 7.2.2 RRM perf. requirements (38.133) [NR\_Mob\_enh-Perf]

**R4-2011028 New WID proposal: Performance requirements for UE advanced receiver in Rel-17**

*Type: WID new For: Information  
 Source: Huawei, HiSilicon*

**Decision:** The document was **not treated**.

##### 7.2.2.1 General [NR\_Mob\_enh-Perf]

##### 7.2.2.2 Test cases [NR\_Mob\_enh-Perf]

**R4-2010381 Conditional handover test cases for NR**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1001 Cat: B (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

In RAN4#95e it was agreed to introduce the testcases for CHO:

7 Conditional intrafrequency handover test in SA for FR1

8 Conditional interfrequency handover test in SA for FR1

11 Conditional intrafrequency handover test in SA for FR2

12 Conditional interfrequency handover test in SA for FR2

**Discussion:**

The contribution was discussed during email thread [96e][209] NR\_Mob\_enh\_RRM. The discussion was recorded in R4-2012209.

**Decision:** The document was **postponed**.

**R4-2011051 Discussion on DAPS handover test cases**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][209] NR\_Mob\_enh\_RRM. The discussion was recorded in R4-2012209.

**Decision:** The document was **noted**.

**R4-2011052 CR on inter-band DAPS handover tests**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1035 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

According to the agreements in WF [R4-2008585], four types of inter-band DAPS handover tests need to be introduced.

**Discussion:**

The contribution was discussed during email thread [96e][209] NR\_Mob\_enh\_RRM. The discussion was recorded in R4-2012209.

**Decision:** The document was **postponed**.

**R4-2009748 Intra-band Inter-frequency sync DAPS handover test in SA for FR1**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0926 Cat: B (Rel-16)  
  
 Source: Intel Corporation*

**Abstract:**

Intra-band inter-frequency sync DAPS handover test in SA for FR1 is missing.

**Discussion:**

The contribution was discussed during email thread [96e][209] NR\_Mob\_enh\_RRM. The discussion was recorded in R4-2012209.

**Decision:** The document was **postponed**.

**R4-2009749 Intra-band Inter-frequency async DAPS handover test in SA for FR1**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0927 Cat: B (Rel-16)  
  
 Source: Intel Corporation*

**Abstract:**

Intra-band inter-frequency async DAPS handover test in SA for FR1 is missing.

**Discussion:**

The contribution was discussed during email thread [96e][209] NR\_Mob\_enh\_RRM. The discussion was recorded in R4-2012209.

**Decision:** The document was **postponed**.

**R4-2009884 Introduction of intra-frequency sync and async DAPS HO test cases in FR1**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0944 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

Per work split agreement in RAN4#95-e, intra-frequency sync and async DAPS HO test cases in FR1 are introduced in this CR.

**Discussion:**

The contribution was discussed during email thread [96e][209] NR\_Mob\_enh\_RRM. The discussion was recorded in R4-2012209.

**Decision:** The document was **postponed**.

### 7.3 5G V2X with NR sidelink [5G\_V2X\_NRSL]

**R4-2012041 Email discussion summary for [96e][210] 5G\_V2X\_NRSL\_RRM**

*Type: other For: discussion  
 Source: Moderator (LGE)*

**Discussion:**

The contribution summarized email discussion thread [96e][210] 5G\_V2X\_NRSL\_RRM. The topic areas for discussion were RRM requirements (Core maintenance and Perf). The email thread was moderated by Yoonoh Yang (LG Electronics Inc.). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

**Topic #1: Interruption requirements**

**Topic #2: Measurement accuracy and side condition**

Agreement: Remove square brackets or update NR V2X operating band group and minimum received power in side condition based on agreed REFSENS in RF session.

**Topic #3: Test Cases**

Chair: capture all agreements in WF (R4-2012104).

**Decision:** The document was **revised to R4-2012210**.

**R4-2012210 Email discussion summary for [96e][210] 5G\_V2X\_NRSL\_RRM**

*Type: other For: discussion  
 Source: Moderator (LGE)*

(Replaces R4-2012041)

**Discussion:**

The contribution summarized email discussion thread [96e][210] 5G\_V2X\_NRSL\_RRM. The topic areas for discussion were RRM requirements (Core maintenance and Perf). The email thread was moderated by Yoonoh Yang (LG Electronics Inc.). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **noted**.

**R4-2012104 WF on NR V2X RRM requirements**

*Type: other For: discussion  
 Source: LG Electronics*

**Decision:** The document was **approved**.

#### 7.3.1 General [5G\_V2X\_NRSL]

**R4-2011541 Email discussion summary for [96e][108] 5G\_V2X\_NRSL\_UE\_RF**

*Type: other For: discussion  
 Source: Moderator (LG Electronics)*

**Discussion:**

The contribution summarized email discussion thread [96e][108] 5G\_V2X\_NRSL\_UE\_RF. The subject for discussion was General, UE TX and RX. The email thread was moderated by Suhwan Lim (LG Electronics Inc.) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **revised to R4-2011848**.

**R4-2011848 Email discussion summary for [96e][108] 5G\_V2X\_NRSL\_UE\_RF**

*Type: other For: discussion  
 Source: Moderator (LG Electronics)*

(Replaces R4-2011541)

**Discussion:**

The contribution summarized email discussion thread [96e][108] 5G\_V2X\_NRSL\_UE\_RF. The subject for discussion was General, UE TX and RX. The email thread was moderated by Suhwan Lim (LG Electronics Inc.) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **noted**.

**R4-2011681 Reply LS on RAN1 UE feature lists for 5G V2X service**

*Type: LS out For: Approval  
 to RAN1, RAN2  
 Source: RAN4*

**Discussion:**

The contribution was discussed during email thread [96e][108] 5G\_V2X\_NRSL\_UE\_RF. The discussion was recorded in R4-2011848.

**Decision:** The document was **approved**.

**R4-2011703 WF on A-MPR for NS\_33**

*Type: other For: discussion  
 Source: Huawei*

**Discussion:**

The contribution was discussed during email thread [96e][108] 5G\_V2X\_NRSL\_UE\_RF. The discussion was recorded in R4-2011848.

**Decision:** The document was **approved**.

**R4-2011704 WF on A-MPR for NS\_52**

*Type: other For: discussion  
 Source: Qualcomm*

**Discussion:**

The contribution was discussed during email thread [96e][108] 5G\_V2X\_NRSL\_UE\_RF. The discussion was recorded in R4-2011848.

**Decision:** The document was **approved**.

**R4-2011708 WF on REFSENS requirements for NR V2X UE at licensed band/unlicensed bands**

*Type: other For: discussion  
 Source: LG Electronics*

**Discussion:**

The contribution was discussed during email thread [96e][108] 5G\_V2X\_NRSL\_UE\_RF. The discussion was recorded in R4-2011848.

**Decision:** The document was **approved**.

**R4-2011709 WF on NR V2X FRC parameters**

*Type: other For: discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][108] 5G\_V2X\_NRSL\_UE\_RF. The discussion was recorded in R4-2011848.

**Decision:** The document was **noted**.

**R4-2011710 LS to RAN5 on measurement point for 5G V2X UE**

*Type: LS out For: Approval  
 to RAN5  
 Source: RAN4*

**Discussion:**

The contribution was discussed during email thread [96e][108] 5G\_V2X\_NRSL\_UE\_RF. The discussion was recorded in R4-2011848.

**Decision:** The document was **approved**.

**R4-2010287 Further discussion on the applicability of minimum requirements for NR V2X**

*Type: discussion For: Approval  
 Source: vivo*

**Discussion:**

The contribution was discussed during email thread [96e][108] 5G\_V2X\_NRSL\_UE\_RF. The discussion was recorded in R4-2011848.

**Decision:** The document was **noted**.

**R4-2010772 Discussion on V2X power class reporting**

*Type: discussion For: Approval  
 Source: OPPO*

**Discussion:**

The contribution was discussed during email thread [96e][108] 5G\_V2X\_NRSL\_UE\_RF. The discussion was recorded in R4-2011848.

**Decision:** The document was **noted**.

**R4-2010822 On NR V2X reference measurement channels**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][108] 5G\_V2X\_NRSL\_UE\_RF. The discussion was recorded in R4-2011848.

**Decision:** The document was **noted**.

**R4-2010823 draft CR for 38.101-1 NR V2X FRC**

*Type: draftCR For: Endorsement  
 38.101-1 v16.4.0  
 Source: Huawei, HiSilicon*

**Abstract:**

Introduce NR-V2X FRC.

**Discussion:**

The contribution was discussed during email thread [96e][108] 5G\_V2X\_NRSL\_UE\_RF. The discussion was recorded in R4-2011848.

**Decision:** The document was **revised to R4-2011711**.

**R4-2011711 CR for 38.101-1 NR V2X FRC**

*Type: draftCR For: Endorsement  
 38.101-1 v16.4.0  
 Source: Huawei, HiSilicon*

(Replaces R4-2010823)

**Abstract:**

Introduce NR-V2X FRC.

**Discussion:**

The contribution was discussed during email thread [96e][108] 5G\_V2X\_NRSL\_UE\_RF. The discussion was recorded in R4-2011848.

**Decision:** The document was **endorsed**.

**R4-2010824 draft CR for TR 38.886: NR V2X FRC**

*Type: draftCR For: Endorsement  
 38.886 v16.0.0  
 Source: Huawei, HiSilicon*

**Abstract:**

Introduce NR-V2X.

**Discussion:**

The contribution was discussed during email thread [96e][108] 5G\_V2X\_NRSL\_UE\_RF. The discussion was recorded in R4-2011848.

**Decision:** The document was **not pursued**.

**R4-2009828 On general requirement and additional requirement for NR V2X**

*Type: discussion For: Discussion  
 Source: CATT*

**Discussion:**

The contribution was discussed during email thread [96e][108] 5G\_V2X\_NRSL\_UE\_RF. The discussion was recorded in R4-2011848.

**Decision:** The document was **noted**.

#### 7.3.2 System parameters maintenance [5G\_V2X\_NRSL-Core]

**R4-2011542 Email discussion summary for [96e][109] 5G\_V2X\_NRSL\_SysParameters**

*Type: other For: discussion  
 Source: Moderator (vivo)*

**Discussion:**

The contribution summarized email discussion thread [96e][109] 5G\_V2X\_NRSL\_SysParameters. The subject for discussion was system parameters. The email thread was moderated by Shuai Zhou (vivo Mobile Com.) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **revised to R4-2011849**.

**R4-2011849 Email discussion summary for [96e][109] 5G\_V2X\_NRSL\_SysParameters**

*Type: other For: discussion  
 Source: Moderator (vivo)*

(Replaces R4-2011542)

**Discussion:**

The contribution summarized email discussion thread [96e][109] 5G\_V2X\_NRSL\_SysParameters. The subject for discussion was system parameters. The email thread was moderated by Shuai Zhou (vivo Mobile Com.) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **noted**.

**R4-2011712 WF on BS impact of NR V2X**

*Type: other For: discussion  
 Source: CATT*

**Discussion:**

The contribution was discussed during email thread [96e][109] 5G\_V2X\_NRSL\_SysParameters. The discussion was recorded in R4-2011849.

**Decision:** The document was **revised to R4-2011915**.

**R4-2011915 WF on BS impact of NR V2X**

*Type: other For: discussion  
 Source: CATT*

(Replaces R4-2011712)

**Discussion:**

The contribution was discussed during email thread [96e][109] 5G\_V2X\_NRSL\_SysParameters. The discussion was recorded in R4-2011849.

**Decision:** The document was **noted**.

**R4-2010606 on remaining issue for UE operations for licensed bands partially used for SL transmission**

*Type: discussion For: (not specified)  
 Source: Xiaomi*

**Discussion:**

The contribution was discussed during email thread [96e][109] 5G\_V2X\_NRSL\_SysParameters. The discussion was recorded in R4-2011849.

**Decision:** The document was **noted**.

**R4-2009825 CR for TS 38.104, Introduce BS impact of NR V2X**

*Type: CR For: Agreement  
 38.104 v16.4.0 CR-0217 Cat: B (Rel-16)  
  
 Source: CATT*

**Abstract:**

The frequency band for NR V2X shuld be introduced in TS 38.104.

BS should specify co-existence spurious emission requirement to protect UE RX in NR band n47.

**Discussion:**

The contribution was discussed during email thread [96e][109] 5G\_V2X\_NRSL\_SysParameters. The discussion was recorded in R4-2011849.

**Decision:** The document was **revised to R4-2011916**.

**R4-2011916 CR for TS 38.104, Introduce BS impact of NR V2X**

*Type: CR For: Agreement  
 38.104 v16.4.0 CR-0217 rev 1 Cat: B (Rel-16)  
  
 Source: CATT*

(Replaces R4-2009825)

**Abstract:**

The frequency band for NR V2X should be introduced in TS 38.104.

**Discussion:**

The contribution was discussed during email thread [96e][109] 5G\_V2X\_NRSL\_SysParameters. The discussion was recorded in R4-2011849.

**Decision:** The document was **not pursued**.

**R4-2009827 On BS impact of NR V2X**

*Type: discussion For: Discussion  
 Source: CATT*

**Discussion:**

The contribution was discussed during email thread [96e][109] 5G\_V2X\_NRSL\_SysParameters. The discussion was recorded in R4-2011849.

**Decision:** The document was **noted**.

#### 7.3.3 UE RF requirements maintenance [5G\_V2X\_NRSL-Core]

**R4-2010137 Correction on 5G V2X UE RF requirements in rel-16**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0437 Cat: F (Rel-16)  
  
 Source: LG Electronics France*

**Abstract:**

This CR is to update A-MPR requirements for each PSSCH /PSCCH /simultaneous PSFCH and S-SSB transmission and other remaining RF requirements for 5G V2X UE RF requirements in TS38.101-1.

**Discussion:**

The contribution was discussed during email thread [96e][108] 5G\_V2X\_NRSL\_UE\_RF. The discussion was recorded in R4-2011848.

**Decision:** The document was **revised to R4-2011705**.

**R4-2011705 Correction on 5G V2X UE RF requirements in rel-16**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0437 rev 1 Cat: F (Rel-16)  
  
 Source: LG Electronics France*

(Replaces R4-2010137)

**Abstract:**

This CR is to update A-MPR requirements for each PSSCH /PSCCH /simultaneous PSFCH and S-SSB transmission and other remaining RF requirements for 5G V2X UE RF requirements in TS38.101-1.

**Discussion:**

The contribution was discussed during email thread [96e][108] 5G\_V2X\_NRSL\_UE\_RF. The discussion was recorded in R4-2011848.

**Decision:** The document was **agreed**.

**R4-2011917 Correction on NR V2X UE RF requirements for single carrier in TS38.101-1**

*Type: other For: Agreement  
 Source: LG Electronics France*

**Decision:** The document was **withdrawn**.

**R4-2010139 CR for TR38.886: Correction on TR38.886 for V2X UE Tx and Rx requirements**

*Type: CR For: Agreement  
 38.886 v16.0.0 CR-0003 Cat: F (Rel-16)  
  
 Source: LG Electronics France*

**Abstract:**

This CR is to update A-MPR requirements for each PSSCH /PSCCH /simultaneous PSFCH and S-SSB transmission and other remaining RF requirements for 5G V2X UE RF requirements in TR38.886.

**Discussion:**

The contribution was discussed during email thread [96e][108] 5G\_V2X\_NRSL\_UE\_RF. The discussion was recorded in R4-2011848.

**Decision:** The document was **revised to R4-2011939**.

**R4-2011939 CR for TR38.886: Correction on TR38.886 for V2X UE Tx and Rx requirements**

*Type: CR For: Agreement  
 38.886 v16.0.0 CR-0003 rev 1 Cat: F (Rel-16)  
  
 Source: LG Electronics France*

(Replaces R4-2010139)

**Abstract:**

This CR is to update A-MPR requirements for each PSSCH /PSCCH /simultaneous PSFCH and S-SSB transmission and other remaining RF requirements for 5G V2X UE RF requirements in TR38.886.

**Discussion:**

The contribution was discussed during email thread [96e][108] 5G\_V2X\_NRSL\_UE\_RF. The discussion was recorded in R4-2011848.

**Decision:** The document was **agreed**.

**R4-2010288 CR on TS38.101-1 for NR V2X**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0440 Cat: F (Rel-16)  
  
 Source: vivo*

**Abstract:**

After RAN#88-e meeting, NR V2X specification is captured into 38.101-1 as a new feature. However, there are some obvious mistakes which are not aligned with the conclusion in RAN4 and some minor typos. This CR addresses these issues.

**Discussion:**

The contribution was discussed during email thread [96e][108] 5G\_V2X\_NRSL\_UE\_RF. The discussion was recorded in R4-2011848.

**Decision:** The document was **revised to R4-2011706**.

**R4-2011706 CR on TS38.101-1 for NR V2X**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0440 rev 1 Cat: F (Rel-16)  
  
 Source: vivo*

(Replaces R4-2010288)

**Abstract:**

After RAN#88-e meeting, NR V2X specification is captured into 38.101-1 as a new feature. However, there are some obvious mistakes which are not aligned with the conclusion in RAN4 and some minor typos. This CR addresses these issues.

**Discussion:**

The contribution was discussed during email thread [96e][108] 5G\_V2X\_NRSL\_UE\_RF. The discussion was recorded in R4-2011848.

**Decision:** The document was **agreed**.

##### 7.3.3.1 Transmitter characteristics [5G\_V2X\_NRSL-Core]

**R4-2010014 V2X TX Issues**

*Type: other For: Approval  
 38.101-1 v..  
 Source: Qualcomm Incorporated*

**Abstract:**

Proposals on how to define V2X TX Diversity, clarification of location for TX specs when components external to the UE are present and switching time between NR SL and LTE SL are presented

**Discussion:**

The contribution was discussed during email thread [96e][108] 5G\_V2X\_NRSL\_UE\_RF. The discussion was recorded in R4-2011848.

**Decision:** The document was **noted**.

**R4-2010025 CR for TS 38.101-1: Clarification of UE external components**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0427 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

In RAN4 the common understanding is that the UE antenna connector is located at the output of the UE as indicated in figure G.1-1.

In V2X applications due to the large form factor there may be an external vehicle antenna connector placed away from the UE. In this scenario there is potential for uncertainty as to whether the transceiver specifications are referenced to the UE antenna connector or the vehicle antenna connector.

To resolve this ambiguity wording has to be inserted into TS38.101-1 to clarify the reference point for the transceiver specifications as being at the UE antenna connector and to also state that any components external to the UE used to move the UE antenna connector to any other location will not be considered in these specifications.

**Discussion:**

The contribution was discussed during email thread [96e][108] 5G\_V2X\_NRSL\_UE\_RF. The discussion was recorded in R4-2011848.

**Decision:** The document was **not pursued**.

**R4-2010026 CR for TS 38.101-1: Removal of table 6.5E.3.4.3-1**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0428 Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

Remove table 6.5E.3.4.3-1

**Discussion:**

The contribution was discussed during email thread [96e][108] 5G\_V2X\_NRSL\_UE\_RF. The discussion was recorded in R4-2011848.

**Decision:** The document was **revised to R4-2011707**.

**R4-2011707 CR for TS 38.101-1: Removal of table 6.5E.3.4.3-1 and table 6.5E.3.4.3-2**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0428 rev 1 Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

(Replaces R4-2010026)

**Abstract:**

Remove table 6.5E.3.4.3-1 and table 6.5E.3.4.3-2

**Discussion:**

The contribution was discussed during email thread [96e][108] 5G\_V2X\_NRSL\_UE\_RF. The discussion was recorded in R4-2011848.

**Decision:** The document was **agreed**.

**R4-2010028 CR for TS 38.101-1: A-MPR tables for SSSB, PSFCH**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0430 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

Add A-MPR tables for SSSB, PSFCH

**Discussion:**

The contribution was discussed during email thread [96e][108] 5G\_V2X\_NRSL\_UE\_RF. The discussion was recorded in R4-2011848.

**Decision:** The document was **not pursued**.

**R4-2010113 TP on V2X A-MPR for SSSB, PFSCH, PSSCH, PSCCH**

*Type: other For: Approval  
 38.886 v..  
 Source: Qualcomm Incorporated*

**Abstract:**

TP to TR 38.886 on A-MPR specifications for SSSB, PSFCH, PSCCH, PSSCH

**Discussion:**

The contribution was discussed during email thread [96e][108] 5G\_V2X\_NRSL\_UE\_RF. The discussion was recorded in R4-2011848.

**Decision:** The document was **noted**.

**R4-2010135 Remaining MPR/A-MPR requirements for NR V2X UE**

*Type: other For: Approval  
 Source: LG Electronics France*

**Discussion:**

The contribution was discussed during email thread [96e][108] 5G\_V2X\_NRSL\_UE\_RF. The discussion was recorded in R4-2011848.

**Decision:** The document was **noted**.

**R4-2010929 Discussion on remaining AMPR requirements for PC3 V2X UE**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][108] 5G\_V2X\_NRSL\_UE\_RF. The discussion was recorded in R4-2011848.

**Decision:** The document was **noted**.

**R4-2010930 CR for 38.101-1 to specify AMPR requirements for PC3 NR V2X in band n47**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0463 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

Based on the WF R4-2009168, AMPR for PSFCH and S-SSB with NS\_33 need to be specified and AMPR for PSCCH/PSSCH with NS\_52 need to be revised.

In clause 6.4E.1.1, the observed period is not correct for SL MIMO.

For spurious emissions, band n47 can’t protect the same frequency band n47.

There is no such additional spurious emissions for NS\_52.

**Discussion:**

The contribution was discussed during email thread [96e][108] 5G\_V2X\_NRSL\_UE\_RF. The discussion was recorded in R4-2011848.

**Decision:** The document was **not pursued**.

##### 7.3.3.2 Receiver characteristics [5G\_V2X\_NRSL-Core]

**R4-2010013 REFSENS requirements and LLS results of REFSENS for NR V2X UE**

*Type: other For: Approval  
 Source: LG Electronics Inc.*

**Discussion:**

The contribution was discussed during email thread [96e][108] 5G\_V2X\_NRSL\_UE\_RF. The discussion was recorded in R4-2011848.

**Decision:** The document was **noted**.

**R4-2010015 V2X RX Issues**

*Type: other For: Approval  
 38.101-1 v..  
 Source: Qualcomm Incorporated*

**Abstract:**

Proposals for RX diversity gain, reference channels simulations for V2X, new REFSENS values for n47/n38 and how to clarify the location of RX specifications when components external to the UE are present is described.

**Discussion:**

The contribution was discussed during email thread [96e][108] 5G\_V2X\_NRSL\_UE\_RF. The discussion was recorded in R4-2011848.

**Decision:** The document was **noted**.

**R4-2010027 CR for TS 38.101-1: V2X REFSENS**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0429 Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

Update V2X REFSENS values for n47 and n38

**Discussion:**

The contribution was discussed during email thread [96e][108] 5G\_V2X\_NRSL\_UE\_RF. The discussion was recorded in R4-2011848.

**Decision:** The document was **not pursued**.

**R4-2010817 SNR evaluation for NR V2X**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][108] 5G\_V2X\_NRSL\_UE\_RF. The discussion was recorded in R4-2011848.

**Decision:** The document was **noted**.

**R4-2009823 CR for TS 38.101-1, REFSENS requirements for NR V2X band n38**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0420 Cat: F (Rel-16)  
  
 Source: CATT*

**Abstract:**

The noise figure of 13dB instead of 9dB should be used for n38 REFSENS requirements.

**Discussion:**

The contribution was discussed during email thread [96e][108] 5G\_V2X\_NRSL\_UE\_RF. The discussion was recorded in R4-2011848.

**Decision:** The document was **not pursued**.

**R4-2009826 REFSENS requirements for NR V2X band n38**

*Type: CR For: Agreement  
 38.886 v16.0.0 CR-0001 Cat: F (Rel-16)  
  
 Source: CATT*

**Abstract:**

The noise figure of 13dB instead of 9dB should be used for n38 REFSENS requirements.

**Discussion:**

The contribution was discussed during email thread [96e][108] 5G\_V2X\_NRSL\_UE\_RF. The discussion was recorded in R4-2011848.

**Decision:** The document was **not pursued**.

**R4-2010818 On NR V2X SL allocated RB size numbers for different CBWs**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][108] 5G\_V2X\_NRSL\_UE\_RF. The discussion was recorded in R4-2011848.

**Decision:** The document was **noted**.

#### 7.3.4 Concurrent operation maintenance (scenarios, requirements, etc) [5G\_V2X\_NRSL-Core]

**R4-2011543 Email discussion summary for [96e][110] 5G\_V2X\_NRSL\_UE\_Concurrent**

*Type: other For: discussion  
 Source: Moderator (Huawei)*

**Discussion:**

The contribution summarized email discussion thread [96e][110] 5G\_V2X\_NRSL\_UE\_Concurrent. The subject for discussion was UE concurrent operation. The email thread was moderated by Leo Liu (Huawei Technologies France) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **revised to R4-2011850**.

**R4-2011850 Email discussion summary for [96e][110] 5G\_V2X\_NRSL\_UE\_Concurrent**

*Type: other For: discussion  
 Source: Moderator (Huawei)*

(Replaces R4-2011543)

**Discussion:**

The contribution summarized email discussion thread [96e][110] 5G\_V2X\_NRSL\_UE\_Concurrent. The subject for discussion was UE concurrent operation. The email thread was moderated by Leo Liu (Huawei Technologies France) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **noted**.

**R4-2011713 LS on definition of NR V2X con-current operation**

*Type: LS out For: Approval  
 to RAN1. RAN2  
 Source: RAN4*

**Discussion:**

The contribution was discussed during email thread [96e][110] 5G\_V2X\_NRSL\_UE\_Concurrent. The discussion was recorded in R4-2011850.

**Decision:** The document was **approved**.

**R4-2011714 WF on NR-V2X switching period**

*Type: other For: discussion  
 Source: CATT*

**Discussion:**

The contribution was discussed during email thread [96e][110] 5G\_V2X\_NRSL\_UE\_Concurrent. The discussion was recorded in R4-2011850.

**Decision:** The document was **noted**.

**R4-2010138 Correction on 5G V2X con-current UE RF requirements in rel-16**

*Type: CR For: Agreement  
 38.101-3 v16.4.0 CR-0329 Cat: F (Rel-16)  
  
 Source: LG Electronics France*

**Abstract:**

This CR is to update delta Tib/Rib and MSD requirements for V2X\_20\_n38 UE. Also, update sensitivity requirements based on update RAN1 agreements for NRB size.

**Discussion:**

The contribution was discussed during email thread [96e][110] 5G\_V2X\_NRSL\_UE\_Concurrent. The discussion was recorded in R4-2011850.

**Decision:** The document was **revised to R4-2011717**.

**R4-2011717 Correction on 5G V2X con-current UE RF requirements in rel-16**

*Type: CR For: Agreement  
 38.101-3 v16.4.0 CR-0329 rev 1 Cat: F (Rel-16)  
  
 Source: LG Electronics France*

(Replaces R4-2010138)

**Abstract:**

This CR is to update delta Tib/Rib and MSD requirements for V2X\_20\_n38 UE. Also, update sensitivity requirements based on update RAN1 agreements for NRB size.

**Discussion:**

The contribution was discussed during email thread [96e][110] 5G\_V2X\_NRSL\_UE\_Concurrent. The discussion was recorded in R4-2011850.

**Decision:** The document was **agreed**.

**R4-2010289 CR on TS38.101-3 for NR V2X**

*Type: CR For: Agreement  
 38.101-3 v16.4.0 CR-0330 Cat: F (Rel-16)  
  
 Source: vivo*

**Abstract:**

After RAN#88e meeting, requirements for NR V2X con-current operation are added into TS 38.101-3 as a new feature. However, there are some obvious mistakes and minor typos. This CR addresses these issues.

**Discussion:**

The contribution was discussed during email thread [96e][110] 5G\_V2X\_NRSL\_UE\_Concurrent. The discussion was recorded in R4-2011850.

**Decision:** The document was **revised to R4-2011718**.

**R4-2011718 CR on TS38.101-3 for NR V2X**

*Type: CR For: Agreement  
 38.101-3 v16.4.0 CR-0330 rev 1 Cat: F (Rel-16)  
  
 Source: vivo*

(Replaces R4-2010289)

**Abstract:**

After RAN#88e meeting, requirements for NR V2X con-current operation are added into TS 38.101-3 as a new feature. However, there are some obvious mistakes and minor typos. This CR addresses these issues.

**Discussion:**

The contribution was discussed during email thread [96e][110] 5G\_V2X\_NRSL\_UE\_Concurrent. The discussion was recorded in R4-2011850.

**Decision:** The document was **agreed**.

**R4-2010605 on remaining issue for con-current operation**

*Type: discussion For: (not specified)  
 Source: Xiaomi*

**Abstract:**

In this contribution, we give discussion on remaining issue on concurrent operation

**Discussion:**

The contribution was discussed during email thread [96e][110] 5G\_V2X\_NRSL\_UE\_Concurrent. The discussion was recorded in R4-2011850.

**Decision:** The document was **noted**.

**R4-2010821 draft correction CR for TS 38.101-3: NR V2X con-current operation**

*Type: draftCR For: Endorsement  
 38.101-3 v16.4.0  
 Source: Huawei, HiSilicon*

**Abstract:**

There are some remaining issues are left to be finished for NR V2X con-current operation.

Tx: switching period requirement

Rx: delta Rib and MSD requirements

**Discussion:**

The contribution was discussed during email thread [96e][110] 5G\_V2X\_NRSL\_UE\_Concurrent. The discussion was recorded in R4-2011850.

**Decision:** The document was **revised to R4-2011715**.

**R4-2011715 draft correction CR for TS 38.101-3: NR V2X con-current operation**

*Type: draftCR For: Endorsement  
 38.101-3 v16.4.0  
 Source: Huawei, HiSilicon*

(Replaces R4-2010821)

**Abstract:**

There are some remaining issues are left to be finished for NR V2X con-current operation.

Tx: switching period requirement

Rx: delta Rib and MSD requirements

**Discussion:**

The contribution was discussed during email thread [96e][110] 5G\_V2X\_NRSL\_UE\_Concurrent. The discussion was recorded in R4-2011850.

**Decision:** The document was **not pursued**.

##### 7.3.4.1 Transmitter characteristics [5G\_V2X\_NRSL-Core]

**R4-2010290 Further discussion on con-current operation for NR V2X**

*Type: discussion For: Approval  
 Source: vivo*

**Discussion:**

The contribution was discussed during email thread [96e][110] 5G\_V2X\_NRSL\_UE\_Concurrent. The discussion was recorded in R4-2011850.

**Decision:** The document was **noted**.

**R4-2010457 On switching period for NR V2X in ITS band**

*Type: discussion For: Discussion  
 Source: CATT*

**Discussion:**

The contribution was discussed during email thread [96e][110] 5G\_V2X\_NRSL\_UE\_Concurrent. The discussion was recorded in R4-2011850.

**Decision:** The document was **noted**.

**R4-2010819 On switching period for LTE SL and NR SL**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][110] 5G\_V2X\_NRSL\_UE\_Concurrent. The discussion was recorded in R4-2011850.

**Decision:** The document was **noted**.

**R4-2009824 CR for TS 38.101-3, Time mask for TDM operation between NR V2X and LTE V2X**

*Type: CR For: Agreement  
 38.101-3 v16.4.0 CR-0312 Cat: B (Rel-16)  
  
 Source: CATT*

**Abstract:**

The output power dynamics requirements for NR V2X should be introduced in TS 38.101-3.

**Discussion:**

The contribution was discussed during email thread [96e][110] 5G\_V2X\_NRSL\_UE\_Concurrent. The discussion was recorded in R4-2011850.

**Decision:** The document was **not pursued**.

**R4-2009829 Switching period for NR V2X in ITS band**

*Type: CR For: Agreement  
 38.886 v16.0.0 CR-0002 Cat: F (Rel-16)  
  
 Source: CATT*

**Abstract:**

The time mask for TDM operation between NR SL and LTE SL at n47 should be introduced in 38.886.

**Discussion:**

The contribution was discussed during email thread [96e][110] 5G\_V2X\_NRSL\_UE\_Concurrent. The discussion was recorded in R4-2011850.

**Decision:** The document was **revised to R4-2011716**.

**R4-2011716 CR for 38.886, Switching period for NR V2X in ITS band**

*Type: CR For: Agreement  
 38.886 v16.0.0 CR-0002 rev 1 Cat: F (Rel-16)  
  
 Source: CATT*

(Replaces R4-2009829)

**Abstract:**

The time mask for TDM operation between NR SL and LTE SL at n47 should be introduced in 38.886.

**Discussion:**

The contribution was discussed during email thread [96e][110] 5G\_V2X\_NRSL\_UE\_Concurrent. The discussion was recorded in R4-2011850.

**Decision:** The document was **not pursued**.

##### 7.3.4.2 Receiver characteristics [5G\_V2X\_NRSL-Core]

**R4-2010136 MSD Analysis results and harmonic reduction filter for V2X\_20A\_n38A**

*Type: other For: Approval  
 Source: LG Electronics France*

**Discussion:**

The contribution was discussed during email thread [96e][110] 5G\_V2X\_NRSL\_UE\_Concurrent. The discussion was recorded in R4-2011850.

**Decision:** The document was **noted**.

**R4-2010820 On Rx remaing requirements for NR V2X con-current operation**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][110] 5G\_V2X\_NRSL\_UE\_Concurrent. The discussion was recorded in R4-2011850.

**Decision:** The document was **noted**.

**R4-2009577 MSD analysis on NR V2X UE for V2X\_20\_n38**

*Type: discussion For: (not specified)  
 Source: Xiaomi Communications*

**Discussion:**

The contribution was discussed during email thread [96e][110] 5G\_V2X\_NRSL\_UE\_Concurrent. The discussion was recorded in R4-2011850.

**Decision:** The document was **noted**.

#### 7.3.5 RRM core requirements maintenance (38.133) [5G\_V2X\_NRSL-Core]

**R4-2010037 Remaining issues on NR V2X RRM requirement**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

The contribution was discussed during email thread [96e][210] 5G\_V2X\_NRSL\_RRM. The discussion was recorded in R4-2012210.

**Decision:** The document was **noted**.

**R4-2010083 Discussion of maintenace issues for NR V2X**

*Type: discussion For: Discussion  
 Source: LG Electronics Inc.*

**Abstract:**

It discusses maintenance issues for NR V2X RRM requirements based on the agreed WF in last meeting.

**Discussion:**

The contribution was discussed during email thread [96e][210] 5G\_V2X\_NRSL\_RRM. The discussion was recorded in R4-2012210.

**Decision:** The document was **noted**.

**R4-2010084 CR of missed requirements based on the agreed CRs in RAN4#95-e**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0973 Cat: F (Rel-16)  
  
 Source: LG Electronics Inc.*

**Abstract:**

The CRs of R4-2009275 and R4-2008588 were agreed in RAN4#95-e meeting and related CR package was approved in RAN#88-e. However, some corrections in 12.5 and 12.7 were not implemented in TS38.133 V16.4.0.

Therefore, the missed corrections should be added.

**Discussion:**

The contribution was discussed during email thread [96e][210] 5G\_V2X\_NRSL\_RRM. The discussion was recorded in R4-2012210.

**Decision:** The document was **revised to R4-2012105**.

**R4-2012105 CR of missed requirements based on the agreed CRs in RAN4#95-e**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0973 rev 1 Cat: F (Rel-16)  
  
 Source: LG Electronics Inc.*

(Replaces R4-2010084)

**Abstract:**

The CRs of R4-2009275 and R4-2008588 were agreed in RAN4#95-e meeting and related CR package was approved in RAN#88-e. However, some corrections in 12.5 and 12.7 were not implemented in TS38.133 V16.4.0.

Therefore, the missed corrections should be added.

**Discussion:**

The contribution was discussed during email thread [96e][210] 5G\_V2X\_NRSL\_RRM. The discussion was recorded in R4-2012210.

**Decision:** The document was **agreed**.

**R4-2010085 CR of interruption requirements**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0974 Cat: F (Rel-16)  
  
 Source: LG Electronics Inc.*

**Abstract:**

Need to notice sync./async. assumption between NR Uu and SL in interruption requirements.

And, interruption requirement on NR WAN due to switching between LTE SL and NR SL is needed to be defined regarding NR V2X con-current operation band, n71+47+n47 specified in TS 38.101-3.

**Discussion:**

The contribution was discussed during email thread [96e][210] 5G\_V2X\_NRSL\_RRM. The discussion was recorded in R4-2012210.

**Decision:** The document was **revised to R4-2012106**.

**R4-2012106 CR of interruption requirements**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0974 rev 1 Cat: F (Rel-16)  
  
 Source: LG Electronics Inc.*

(Replaces R4-2010085)

**Abstract:**

So far, there is no synchronization mechanism between Uu and SL. Regarding it, the interruption requirement needs to be corrected.

**Discussion:**

The contribution was discussed during email thread [96e][210] 5G\_V2X\_NRSL\_RRM. The discussion was recorded in R4-2012210.

**Decision:** The document was **agreed**.

**R4-2011053 CR on PSBCH-RSRP accuracy requirements for NR V2X**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1036 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

Based on the endorsed draftCR [R4-2008594], the PSBCH-RSRP accuracy requirements are introduced for NR V2X.

**Discussion:**

The contribution was discussed during email thread [96e][210] 5G\_V2X\_NRSL\_RRM. The discussion was recorded in R4-2012210.

**Decision:** The document was **postponed**.

**R4-2011054 Discussion on remaining issues for NR V2X**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][210] 5G\_V2X\_NRSL\_RRM. The discussion was recorded in R4-2012210.

**Decision:** The document was **noted**.

**R4-2011379 NR V2X RRM core and performance requirement remaining issues**

*Type: discussion For: Discussion  
 Source: Qualcomm, Inc.*

**Discussion:**

The contribution was discussed during email thread [96e][210] 5G\_V2X\_NRSL\_RRM. The discussion was recorded in R4-2012210.

**Decision:** The document was **noted**.

**R4-2011380 CR: Addition and correction of NR V2X RRM core requirement**

*Type: draftCR For: Endorsement  
 38.133 v16.4.0  
 Source: Qualcomm, Inc.*

**Abstract:**

Some of RRM core requirements are missing or need to be corrected

**Discussion:**

The contribution was discussed during email thread [96e][210] 5G\_V2X\_NRSL\_RRM. The discussion was recorded in R4-2012210.

**Decision:** The document was **postponed**.

#### 7.3.6 RRM perf. requirements (38.133) [5G\_V2X\_NRSL-Perf]

##### 7.3.6.1 General [5G\_V2X\_NRSL-Perf]

**R4-2010038 Discussion on NR V2X RRM test case**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

The contribution was discussed during email thread [96e][210] 5G\_V2X\_NRSL\_RRM. The discussion was recorded in R4-2012210.

**Decision:** The document was **noted**.

**R4-2010086 Work Plan and List of Test Cases for NR V2X RRM**

*Type: Work Plan For: Approval  
 Source: LG Electronics Inc.*

**Abstract:**

It proposes work plan, list of test cases and work split for NR RRM.

**Discussion:**

The contribution was discussed during email thread [96e][210] 5G\_V2X\_NRSL\_RRM. The discussion was recorded in R4-2012210.

**Decision:** The document was **noted**.

**R4-2011055 List of RRM test cases for NR V2X**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][210] 5G\_V2X\_NRSL\_RRM. The discussion was recorded in R4-2012210.

**Decision:** The document was **noted**.

**R4-2009768 Discussion on test cases for NR V2X RRM**

*Type: discussion For: Approval  
 Source: Xiaomi*

**Discussion:**

The contribution was discussed during email thread [96e][210] 5G\_V2X\_NRSL\_RRM. The discussion was recorded in R4-2012210.

**Decision:** The document was **noted**.

##### 7.3.6.2 Test cases [5G\_V2X\_NRSL-Perf]

**R4-2010087 Discussion of Test Cases for NR V2X RRM**

*Type: discussion For: Discussion  
 Source: LG Electronics Inc.*

**Abstract:**

It discusses test configuration and parameters related test cases for NR RRM.

**Discussion:**

The contribution was discussed during email thread [96e][210] 5G\_V2X\_NRSL\_RRM. The discussion was recorded in R4-2012210.

**Decision:** The document was **noted**.

**R4-2011056 Discussion on RRM test setup for NR V2X**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][210] 5G\_V2X\_NRSL\_RRM. The discussion was recorded in R4-2012210.

**Decision:** The document was **noted**.

**R4-2011382 CR: RRM test cases for NR V2X**

*Type: draftCR For: Endorsement  
 38.133 v16.4.0  
 Source: Qualcomm, Inc.*

**Abstract:**

Add the RRM test cases for Rel-16 NR V2X

**Discussion:**

The contribution was discussed during email thread [96e][210] 5G\_V2X\_NRSL\_RRM. The discussion was recorded in R4-2012210.

**Decision:** The document was **postponed**.

**R4-2011383 NR V2X RRM test case discussion**

*Type: discussion For: Discussion  
 Source: Qualcomm, Inc.*

**Discussion:**

The contribution was discussed during email thread [96e][210] 5G\_V2X\_NRSL\_RRM. The discussion was recorded in R4-2012210.

**Decision:** The document was **noted**.

#### 7.3.7 Demodulation and CSI requirements (38.101-4) [5G\_V2X\_NRSL-Perf]

##### 7.3.7.1 Work Scope [5G\_V2X\_NRSL-Perf]

**R4-2012543 Email discussion summary for [96e][326] V2X\_Demod**

*Type: other For: discussion  
 Source: Moderator (LGE)*

**Discussion:**

The contribution summarized email discussion thread [96e][326] V2X\_Demod. The topic areas for discussion were Rel-16 V2X demodulation and CSI requirements. The email thread was moderated by Jin-yup Hwang (LG Electronics Inc.). All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2012727**.

**R4-2012727 Email discussion summary for [96e][326] V2X\_Demod**

*Type: other For: discussion  
 Source: Moderator (LGE)*

(Replaces R4-2012543)

**Discussion:**

The contribution summarized email discussion thread [96e][326] V2X\_Demod. The topic areas for discussion were Rel-16 V2X demodulation and CSI requirements. The email thread was moderated by Jin-yup Hwang (LG Electronics Inc.). All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **noted**.

**R4-2012612 WF on work scope and general assumptions for NR V2X demodulation performance**

*Type: other For: discussion  
 Source: LGE*

**Discussion:**

The contribution was discussed during email thread [96e][326] V2X\_Demod. The discussion was recorded in R4-2012727.

**Decision:** The document was **revised to R4-2012758**.

**R4-2012758 WF on work scope and general assumptions for NR V2X demodulation performance**

*Type: other For: discussion  
 Source: LGE*

(Replaces R4-2012612)

**Discussion:**

The contribution was discussed during email thread [96e][326] V2X\_Demod. The discussion was recorded in R4-2012727.

**Decision:** The document was **approved**.

**R4-2012613 Simulation assumptions for NR V2X demodulation**

*Type: other For: discussion  
 Source: MediaTek*

**Discussion:**

The contribution was discussed during email thread [96e][326] V2X\_Demod. The discussion was recorded in R4-2012727.

**Decision:** The document was **revised to R4-2012757**.

**R4-2012757 Simulation assumptions for NR V2X demodulation**

*Type: other For: discussion  
 Source: MediaTek*

(Replaces R4-2012613)

**Discussion:**

The contribution was discussed during email thread [96e][326] V2X\_Demod. The discussion was recorded in R4-2012727.

**Decision:** The document was **approved**.

**R4-2010010 Work plan for V2X demodulation performance**

*Type: Work Plan For: Approval  
 Source: LG Electronics Inc.*

**Discussion:**

The contribution was discussed during email thread [96e][326] V2X\_Demod. The discussion was recorded in R4-2012727.

**Decision:** The document was **approved**.

**R4-2010039 Discussion on NR V2X Demod test case**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

The contribution was discussed during email thread [96e][326] V2X\_Demod. The discussion was recorded in R4-2012727.

**Decision:** The document was **noted**.

**R4-2011022 Discusson on work scope of performance requirements for Rel-16 sidelink**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][326] V2X\_Demod. The discussion was recorded in R4-2012727.

**Decision:** The document was **noted**.

**R4-2011323 Discussion on NR V2X work scope**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][326] V2X\_Demod. The discussion was recorded in R4-2012727.

**Decision:** The document was **noted**.

**R4-2011381 NR V2X Demod requirement**

*Type: discussion For: Discussion  
 Source: Qualcomm, Inc.*

**Discussion:**

The contribution was discussed during email thread [96e][326] V2X\_Demod. The discussion was recorded in R4-2012727.

**Decision:** The document was **noted**.

**R4-2009831 On NR V2X demodulation performance requirements**

*Type: discussion For: Discussion  
 Source: CATT*

**Discussion:**

The contribution was discussed during email thread [96e][326] V2X\_Demod. The discussion was recorded in R4-2012727.

**Decision:** The document was **noted**.

##### 7.3.7.2 Spec structure [5G\_V2X\_NRSL-Perf]

**R4-2010011 Discussion on Spec. structure for V2X demodulation**

*Type: discussion For: Discussion  
 Source: LG Electronics Inc.*

**Discussion:**

The contribution was discussed during email thread [96e][326] V2X\_Demod. The discussion was recorded in R4-2012727.

**Decision:** The document was **noted**.

**R4-2011023 Discusson on spec structure of performance requirements for Rel-16 sidelink**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][326] V2X\_Demod. The discussion was recorded in R4-2012727.

**Decision:** The document was **noted**.

##### 7.3.7.3 Test scenarios [5G\_V2X\_NRSL-Perf]

**R4-2010012 Discussion on test cases for NR V2X performance**

*Type: discussion For: Discussion  
 Source: LG Electronics Inc.*

**Discussion:**

The contribution was discussed during email thread [96e][326] V2X\_Demod. The discussion was recorded in R4-2012727.

**Decision:** The document was **noted**.

**R4-2011024 Discusson on test scenarios of performance requirements for Rel-16 sidelink**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][326] V2X\_Demod. The discussion was recorded in R4-2012727.

**Decision:** The document was **noted**.

**R4-2011324 Discussion on NR V2X test scenarios**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][326] V2X\_Demod. The discussion was recorded in R4-2012727.

**Decision:** The document was **noted**.

**R4-2009830 On PSBCH demodulation performance requirement for NR V2X**

*Type: discussion For: Discussion  
 Source: CATT*

**Discussion:**

The contribution was discussed during email thread [96e][326] V2X\_Demod. The discussion was recorded in R4-2012727.

**Decision:** The document was **noted**.

### 7.4 Integrated Access and Backhaul for NR [NR\_IAB]

#### 7.4.1 General [NR\_IAB-Core]

**R4-2012544 Email discussion summary for [96e][306] NR\_IAB\_General**

*Type: other For: discussion  
 Source: Moderator (Huawei)*

**Discussion:**

The contribution summarized email discussion thread [96e][306] NR\_IAB\_General. The topic areas for discussion were General,system parameters, IAB class. The email thread was moderated by Richard Kybett (Huawei). All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2012728**.

**R4-2012728 Email discussion summary for [96e][306] NR\_IAB\_General**

*Type: other For: discussion  
 Source: Moderator (Huawei)*

(Replaces R4-2012544)

**Discussion:**

The contribution summarized email discussion thread [96e][306] NR\_IAB\_General. The topic areas for discussion were General,system parameters, IAB class. The email thread was moderated by Richard Kybett (Huawei). All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **noted**.

**R4-2012545 Email discussion summary for [96e][307] NR\_IAB\_Featurelist**

*Type: other For: discussion  
 Source: Moderator (Qualcomm)*

**Discussion:**

The contribution summarized email discussion thread [96e][307] NR\_IAB\_Featurelist. The topic areas for discussion were IAB-MT feature list. The email thread was moderated by Valentin Gheorghiu (Qualcomm). All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **noted**.

**R4-2012563 LS to RAN2 on IAB-MT feature list**

*Type: LS out For: Approval  
 to RAN2  
 Source: RAN4*

**Discussion:**

The contribution was discussed during email thread [96e][306] NR\_IAB\_General. The discussion was recorded in R4-2012728.

**Decision:** The document was **approved**.

**R4-2012566 IAB TS spec update after RAN4 96e**

*Type: draft TS For: Agreement  
 Source: QUALCOMM*

**Discussion:**

The contribution was discussed during email thread [96e][306] NR\_IAB\_General. The discussion was recorded in R4-2012728.

**Decision:** The document was **not concluded**.

##### 7.4.1.1 System parameters [NR\_IAB-Core]

**R4-2009988 General requirements in IAB networks**

*Type: discussion For: Approval  
 Source: Qualcomm*

**Discussion:**

The contribution was discussed during email thread [96e][306] NR\_IAB\_General. The discussion was recorded in R4-2012728.

**Decision:** The document was **revised to R4-2012614**.

**R4-2012614 General requirements in IAB networks**

*Type: discussion For: Agreement  
 Source: Qualcomm*

(Replaces R4-2009988)

**Discussion:**

The contribution was discussed during email thread [96e][306] NR\_IAB\_General. The discussion was recorded in R4-2012728.

**Decision:** The document was **approved**.

**R4-2010223 TR 38.809 V0.3.0**

*Type: draft TR For: Agreement  
 38.809 v0.2.0  
 Source: Samsung*

**Discussion:**

The contribution was discussed during email thread [96e][306] NR\_IAB\_General. The discussion was recorded in R4-2012728.

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not treated**.

##### 7.4.1.2 IAB-MT class [NR\_IAB-Core]

**R4-2011299 TP to TS 38.174: IAB-MT class definitions**

*Type: pCR For: Approval  
 38.174 v0.1.0  
 Source: Huawei*

**Abstract:**

Capture the IAB-MT class definition in the TS

**Discussion:**

The contribution was discussed during email thread [96e][306] NR\_IAB\_General. The discussion was recorded in R4-2012728.

**Decision:** The document was **noted**.

**R4-2011300 TP to TR 38.809 -IAB-MT Class definitions**

*Type: pCR For: Approval  
 38.809 v0.2.0  
 Source: Huawei*

**Abstract:**

capture the IAB-MT class definition background

**Discussion:**

The contribution was discussed during email thread [96e][306] NR\_IAB\_General. The discussion was recorded in R4-2012728.

**Decision:** The document was **revised to R4-2012615**.

**R4-2012615 TP to TR 38.809 -IAB-MT Class definitions**

*Type: pCR For: Approval  
 38.809 v0.2.0  
 Source: Huawei*

(Replaces R4-2011300)

**Discussion:**

The contribution was discussed during email thread [96e][306] NR\_IAB\_General. The discussion was recorded in R4-2012728.

**Decision:** The document was **noted**.

**R4-2009989 TP for IAB-MT classes**

*Type: discussion For: Approval  
 Source: Qualcomm*

**Discussion:**

The contribution was discussed during email thread [96e][306] NR\_IAB\_General. The discussion was recorded in R4-2012728.

**Decision:** The document was **noted**.

##### 7.4.1.3 IAB-MT feature list [NR\_IAB-Core]

**R4-2010494 Further discussion on R16 IAB MT features**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][307] NR\_IAB\_Featurelist. The discussion was recorded in R4-2012545.

**Decision:** The document was **noted**.

**R4-2010722 IAB-MT features**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

In this document conclusions for IAB-features are proposed.

**Discussion:**

The contribution was discussed during email thread [96e][307] NR\_IAB\_Featurelist. The discussion was recorded in R4-2012545.

**Decision:** The document was **noted**.

**R4-2010913 IAB-MT Tx Features**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Discussion:**

The contribution was discussed during email thread [96e][307] NR\_IAB\_Featurelist. The discussion was recorded in R4-2012545.

**Decision:** The document was **noted**.

**R4-2010949 Discussion on IAB MT feature list**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][307] NR\_IAB\_Featurelist. The discussion was recorded in R4-2012545.

**Decision:** The document was **noted**.

**R4-2011030 IAB-MT feature list remaining issue**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

In this paper, we present our view on the IAB feature remaining issue

**Discussion:**

The contribution was discussed during email thread [96e][307] NR\_IAB\_Featurelist. The discussion was recorded in R4-2012545.

**Decision:** The document was **noted**.

**R4-2009791 Discussion on IAB-MT feature list remaining issues**

*Type: other For: Approval  
 Source: CATT*

**Discussion:**

The contribution was discussed during email thread [96e][307] NR\_IAB\_Featurelist. The discussion was recorded in R4-2012545.

**Decision:** The document was **noted**.

##### 7.4.1.4 Others [NR\_IAB-Core]

**R4-2010146 TP for TR38.809: IAB co-existence simulation**

*Type: pCR For: Approval  
 38.809 v0.2.0  
 Source: Samsung*

**Discussion:**

The contribution was discussed during email thread [96e][306] NR\_IAB\_General. The discussion was recorded in R4-2012728.

**Decision:** The document was **approved**.

**R4-2010177 TP to TS 38.174: Addition of MT bandwidth definition in clause 3 and requirement applicability table in subclause 4.6**

*Type: pCR For: Approval  
 38.174 v0.1.0  
 Source: Ericsson*

**Abstract:**

This contribution presents a text proposal for approval introducing IAB-MT RF bandwidth and the concept of requirement applicability for multiple requirement sets for NR IAB Node in TS 38.174.

**Discussion:**

The contribution was discussed during email thread [96e][306] NR\_IAB\_General. The discussion was recorded in R4-2012728.

**Decision:** The document was **noted**.

**R4-2012578 TP for TR 38.809 on IAB-MT transmission in DL**

*Type: other For: Approval  
 Source: Ericsson*

**Decision:** The document was **withdrawn**.

**R4-2012579 TP for TS 38.174 on IAB-MT transmission in DL**

*Type: other For: Approval  
 Source: Ericsson*

**Decision:** The document was **withdrawn**.

#### 7.4.2 RF requirements [NR\_IAB-Core]

**R4-2012546 Email discussion summary for [96e][308] NR\_IAB\_RF\_Part\_1**

*Type: other For: discussion  
 Source: Moderator (CATT)*

**Discussion:**

The contribution summarized email discussion thread [96e][308] NR\_IAB\_RF\_Part\_1. The topic areas for discussion were Rel-16 NR IAB RF requirements Part 1: Tx Power related requirements. The email thread was moderated by Huiping Shan (CATT). All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2012729**.

**R4-2012729 Email discussion summary for [96e][308] NR\_IAB\_RF\_Part\_1**

*Type: other For: discussion  
 Source: Moderator (CATT)*

(Replaces R4-2012546)

**Discussion:**

The contribution summarized email discussion thread [96e][308] NR\_IAB\_RF\_Part\_1. The topic areas for discussion were Rel-16 NR IAB RF requirements Part 1: Tx Power related requirements. The email thread was moderated by Huiping Shan (CATT). All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **noted**.

**R4-2012616 WF on IAB-MT Pcmax, power control and dynamic range**

*Type: other For: discussion  
 Source: CATT*

**Decision:** The document was **approved**.

**R4-2012617 TP for TR 38.809: IAB-MT Pcmax and power control**

*Type: pCR For: Approval  
 38.809 v0.2.0  
 Source: Nokia, Nokia Shanghai Bell*

**Decision:** The document was **approved**.

**R4-2012618 TP for TS 38.174: IAB-MT Pcmax and power control**

*Type: pCR For: Approval  
 38.174 v0.1.0  
 Source: Nokia, Nokia Shanghai Bell*

**Decision:** The document was **approved**.

**R4-2012547 Email discussion summary for [96e][309] NR\_IAB\_RF\_Part\_2**

*Type: other For: discussion  
 Source: Moderator (Nokia)*

**Discussion:**

The contribution summarized email discussion thread [96e][309] NR\_IAB\_RF\_Part\_2. The topic areas for discussion were Rel-16 NR IAB RF requirements Part 2: Tx Emission requirements, transmit signal quality and others Tx requirements. The email thread was moderated by Toni Lahteensuo (Nokia). All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2012730**.

**R4-2012730 Email discussion summary for [96e][309] NR\_IAB\_RF\_Part\_2**

*Type: other For: discussion  
 Source: Moderator (Nokia)*

(Replaces R4-2012547)

**Discussion:**

The contribution summarized email discussion thread [96e][309] NR\_IAB\_RF\_Part\_2. The topic areas for discussion were Rel-16 NR IAB RF requirements Part 2: Tx Emission requirements, transmit signal quality and others Tx requirements. The email thread was moderated by Toni Lahteensuo (Nokia). All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **noted**.

**R4-2012745 WF on IAB-MT Tx requirements**

*Type: other For: discussion  
 Source: Nokia*

**Decision:** The document was **approved**.

**R4-2012548 Email discussion summary for [96e][310] NR\_IAB\_RF\_Part\_3**

*Type: other For: discussion  
 Source: Moderator (Samsung)*

**Discussion:**

The contribution summarized email discussion thread [96e][310] NR\_IAB\_RF\_Part\_3. The topic areas for discussion were Rel-16 NR IAB RF requirements Part 3: Rx requirements. The email thread was moderated by Yankun Li (Samsung). All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2012731**.

**R4-2012731 Email discussion summary for [96e][310] NR\_IAB\_RF\_Part\_3**

*Type: other For: discussion  
 Source: Moderator (Samsung)*

(Replaces R4-2012548)

**Discussion:**

The contribution summarized email discussion thread [96e][310] NR\_IAB\_RF\_Part\_3. The topic areas for discussion were Rel-16 NR IAB RF requirements Part 3: Rx requirements. The email thread was moderated by Yankun Li (Samsung). All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **noted**.

**R4-2012627 WF on remaining issue on Reference sensitivity and FRC for IAB-MT**

*Type: other For: discussion  
 Source: Huawei*

**Decision:** The document was **approved**.

**R4-2012630 WF on FR1 narrowband blocking and OBB for IAB-MT**

*Type: other For: discussion  
 Source: Ericsson*

**Decision:** The document was **approved**.

##### 7.4.2.1 Transmitter characteristics [NR\_IAB-Core]

**R4-2010912 IAB-MT Tx Requirements**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Discussion:**

The contribution was discussed during email thread [96e][309] NR\_IAB\_RF\_Part\_2. The discussion was recorded in R4-2012730.

**Decision:** The document was **noted**.

###### 7.4.2.1.1 Tx Power related requirements [NR\_IAB-Core]

**R4-2010111 Discussion on IAB-MT Pcmax**

*Type: discussion For: Discussion  
 Source: CMCC*

**Discussion:**

The contribution was discussed during email thread [96e][308] NR\_IAB\_RF\_Part\_1. The discussion was recorded in R4-2012729.

**Decision:** The document was **noted**.

**R4-2010147 Discussion on remaining issues for IAB-MT Tx power related requirements**

*Type: other For: Discussion  
 Source: Samsung*

**Discussion:**

The contribution was discussed during email thread [96e][308] NR\_IAB\_RF\_Part\_1. The discussion was recorded in R4-2012729.

**Decision:** The document was **noted**.

**R4-2010293 TP to TR 38.809 Completing IAB-MT power related requirements**

*Type: pCR For: Approval  
 38.809 v0.2.0  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

The contribution was discussed during email thread [96e][308] NR\_IAB\_RF\_Part\_1. The discussion was recorded in R4-2012729.

**Decision:** The document was **revised to R4-2012619**.

**R4-2012619 TP to TR 38.809 Completing IAB-MT power related requirements**

*Type: pCR For: Approval  
 38.809 v0.2.0  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2010293)

**Discussion:**

The contribution was discussed during email thread [96e][308] NR\_IAB\_RF\_Part\_1. The discussion was recorded in R4-2012729.

**Decision:** The document was **approved**.

**R4-2010724 TP to TS 38.174: Output power requirements**

*Type: pCR For: Approval  
 38.174 v0.1.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Text proposal to complete output power requirements

**Discussion:**

The contribution was discussed during email thread [96e][308] NR\_IAB\_RF\_Part\_1. The discussion was recorded in R4-2012729.

**Decision:** The document was **revised to R4-2012620**.

**R4-2012620 TP to TS 38.174: Output power requirements**

*Type: pCR For: Approval  
 38.174 v0.1.0  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2010724)

**Discussion:**

The contribution was discussed during email thread [96e][308] NR\_IAB\_RF\_Part\_1. The discussion was recorded in R4-2012729.

**Decision:** The document was **approved**.

**R4-2010950 Further discussion on IAB-MT power requirement**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][308] NR\_IAB\_RF\_Part\_1. The discussion was recorded in R4-2012729.

**Decision:** The document was **noted**.

**R4-2011032 IAB-MT maximum output power for FR1**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

in this paper, the IAB-MT maximum output power is discussed.

**Discussion:**

The contribution was discussed during email thread [96e][308] NR\_IAB\_RF\_Part\_1. The discussion was recorded in R4-2012729.

**Decision:** The document was **noted**.

**R4-2011293 TP to TS 38.174 -IAB TX dynamic range**

*Type: pCR For: Approval  
 38.174 v0.0.1  
 Source: Huawei*

**Abstract:**

capture the IAB-MT Tx dynamic range agreements in the requirements specification

**Discussion:**

The contribution was discussed during email thread [96e][308] NR\_IAB\_RF\_Part\_1. The discussion was recorded in R4-2012729.

**Decision:** The document was **revised to R4-2012621**.

**R4-2012621 TP to TS 38.174 -IAB TX dynamic range**

*Type: pCR For: Approval  
 38.174 v0.0.1  
 Source: Huawei*

(Replaces R4-2011293)

**Discussion:**

The contribution was discussed during email thread [96e][308] NR\_IAB\_RF\_Part\_1. The discussion was recorded in R4-2012729.

**Decision:** The document was **approved**.

**R4-2009792 Discussion on IAB-MT power related issues**

*Type: other For: Approval  
 Source: CATT*

**Discussion:**

The contribution was discussed during email thread [96e][308] NR\_IAB\_RF\_Part\_1. The discussion was recorded in R4-2012729.

**Decision:** The document was **noted**.

###### 7.4.2.1.2 Transmitted signal quality [NR\_IAB-Core]

**R4-2010296 Discussion on IAB-MT transmit modulation quality**

*Type: discussion For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

The contribution was discussed during email thread [96e][309] NR\_IAB\_RF\_Part\_2. The discussion was recorded in R4-2012730.

**Decision:** The document was **noted**.

**R4-2010951 Further discussion on IAB-MT transmitted signal quality**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][309] NR\_IAB\_RF\_Part\_2. The discussion was recorded in R4-2012730.

**Decision:** The document was **noted**.

**R4-2011031 IAB-MT Transmit signal quality**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

In this paper, we present our view on remaining issue on IAB-MT transmit signal quality

**Discussion:**

The contribution was discussed during email thread [96e][309] NR\_IAB\_RF\_Part\_2. The discussion was recorded in R4-2012730.

**Decision:** The document was **noted**.

**R4-2009789 TP for TR 38.809: IAB-MT Transmit signal quality**

*Type: pCR For: Approval  
 38.809 v0.2.0  
 Source: CATT*

**Discussion:**

The contribution was discussed during email thread [96e][309] NR\_IAB\_RF\_Part\_2. The discussion was recorded in R4-2012730.

**Decision:** The document was **revised to R4-2012623**.

**R4-2012623 TP for TR 38.809: IAB-MT Transmit signal quality**

*Type: pCR For: Approval  
 38.809 v0.2.0  
 Source: CATT*

(Replaces R4-2009789)

**Discussion:**

The contribution was discussed during email thread [96e][309] NR\_IAB\_RF\_Part\_2. The discussion was recorded in R4-2012730.

**Decision:** The document was **approved**.

**R4-2009790 TP for TS 38.174: IAB-MT Transmit signal quality**

*Type: pCR For: Approval  
 38.174 v0.1.0  
 Source: CATT*

**Discussion:**

The contribution was discussed during email thread [96e][309] NR\_IAB\_RF\_Part\_2. The discussion was recorded in R4-2012730.

**Decision:** The document was **revised to R4-2012622**.

**R4-2012622 TP for TS 38.174: IAB-MT Transmit signal quality**

*Type: pCR For: Approval  
 38.174 v0.1.0  
 Source: CATT*

(Replaces R4-2009790)

**Discussion:**

The contribution was discussed during email thread [96e][309] NR\_IAB\_RF\_Part\_2. The discussion was recorded in R4-2012730.

**Decision:** The document was **approved**.

###### 7.4.2.1.3 Unwanted emissions [NR\_IAB-Core]

**R4-2010298 TP to TR 38.809 IAB-MT unwanted emission requirements**

*Type: pCR For: Approval  
 38.809 v0.2.0  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

The contribution was discussed during email thread [96e][309] NR\_IAB\_RF\_Part\_2. The discussion was recorded in R4-2012730.

**Decision:** The document was **revised to R4-2012625**.

**R4-2012625 TP to TR 38.809 IAB-MT unwanted emission requirements**

*Type: pCR For: Approval  
 38.809 v0.2.0  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2010298)

**Discussion:**

The contribution was discussed during email thread [96e][309] NR\_IAB\_RF\_Part\_2. The discussion was recorded in R4-2012730.

**Decision:** The document was **approved**.

**R4-2010725 TP to TS 38.174: Unwanted emissions requirements**

*Type: pCR For: Approval  
 38.174 v0.1.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Text proposal to complete Unwanted emissions requirements

**Discussion:**

The contribution was discussed during email thread [96e][309] NR\_IAB\_RF\_Part\_2. The discussion was recorded in R4-2012730.

**Decision:** The document was **revised to R4-2012624**.

**R4-2012624 TP to TS 38.174: Unwanted emissions requirements**

*Type: pCR For: Approval  
 38.174 v0.1.0  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2010725)

**Discussion:**

The contribution was discussed during email thread [96e][309] NR\_IAB\_RF\_Part\_2. The discussion was recorded in R4-2012730.

**Decision:** The document was **approved**.

**R4-2010952 Further discussion on IAB-MT unwanted emission**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][309] NR\_IAB\_RF\_Part\_2. The discussion was recorded in R4-2012730.

**Decision:** The document was **noted**.

**R4-2011033 IAB-MT unwanted emission for FR2 and FR1**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

In this paper, we provide our view on the open issue of ACLR, OBUE and spurious requirement on IAB-MT.

**Discussion:**

The contribution was discussed during email thread [96e][309] NR\_IAB\_RF\_Part\_2. The discussion was recorded in R4-2012730.

**Decision:** The document was **noted**.

**R4-2011297 IAB-MT Emissions**

*Type: discussion For: Discussion  
 Source: Huawei*

**Abstract:**

Discuss the remaining open issues in the WF

**Discussion:**

The contribution was discussed during email thread [96e][309] NR\_IAB\_RF\_Part\_2. The discussion was recorded in R4-2012730.

**Decision:** The document was **noted**.

**R4-2009793 Discussion on IAB-MT unwanted emissions**

*Type: discussion For: Discussion  
 Source: CATT*

**Discussion:**

The contribution was discussed during email thread [96e][309] NR\_IAB\_RF\_Part\_2. The discussion was recorded in R4-2012730.

**Decision:** The document was **noted**.

###### 7.4.2.1.4 Others [NR\_IAB-Core]

**R4-2010148 TP for TR38.809: conclusion on IAB-MT BC requirement**

*Type: pCR For: Approval  
 38.809 v0.2.0  
 Source: Samsung*

**Discussion:**

The contribution was discussed during email thread [96e][309] NR\_IAB\_RF\_Part\_2. The discussion was recorded in R4-2012730.

**Decision:** The document was **approved**.

**R4-2010953 TP to TS 38.174 on IAB TX IMD**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][309] NR\_IAB\_RF\_Part\_2. The discussion was recorded in R4-2012730.

**Decision:** The document was **revised to R4-2012626**.

**R4-2012626 TP to TS 38.174 on IAB TX IMD**

*Type: other For: Approval  
 Source: ZTE Corporation*

(Replaces R4-2010953)

**Discussion:**

The contribution was discussed during email thread [96e][309] NR\_IAB\_RF\_Part\_2. The discussion was recorded in R4-2012730.

**Decision:** The document was **approved**.

##### 7.4.2.2 Receiver characteristics [NR\_IAB-Core]

###### 7.4.2.2.1 Sensitivity and dynamic range requirements [NR\_IAB-Core]

**R4-2010954 IAB-MT REFSENS and FRC design**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][310] NR\_IAB\_RF\_Part\_3. The discussion was recorded in R4-2012731.

**Decision:** The document was **noted**.

**R4-2011034 Proposals for REFSENS FRC and REFSENS requirement for IAB-MT**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

in this paper, we provide our proposals for REFSENS FRC and REFSENS requirement for IAB-MT. Simulation results of the proposed RFCs are also presented within.

**Discussion:**

The contribution was discussed during email thread [96e][310] NR\_IAB\_RF\_Part\_3. The discussion was recorded in R4-2012731.

**Decision:** The document was **noted**.

**R4-2011294 IAB-MT Sensitivity parameters**

*Type: discussion For: Discussion  
 Source: Huawei*

**Abstract:**

discussion o the IAB-MT FRC's and other open parameters.

**Discussion:**

The contribution was discussed during email thread [96e][310] NR\_IAB\_RF\_Part\_3. The discussion was recorded in R4-2012731.

**Decision:** The document was **noted**.

**R4-2011295 TP to TS 38.174 -IAB RX sensitivity and dynamic range**

*Type: pCR For: Approval  
 38.174 v0.1.0  
 Source: Huawei*

**Abstract:**

capture the IAB-MT sensitivity and Rx dynamic range agreements in the requirements specification

**Discussion:**

The contribution was discussed during email thread [96e][310] NR\_IAB\_RF\_Part\_3. The discussion was recorded in R4-2012731.

**Decision:** The document was **revised to R4-2012628**.

**R4-2012628 TP to TS 38.174 -IAB RX sensitivity and dynamic range**

*Type: pCR For: Approval  
 38.174 v0.1.0  
 Source: Huawei*

(Replaces R4-2011295)

**Discussion:**

The contribution was discussed during email thread [96e][310] NR\_IAB\_RF\_Part\_3. The discussion was recorded in R4-2012731.

**Decision:** The document was **approved**.

**R4-2011296 TP to TR 38.809 -IAB RX sensitivity**

*Type: pCR For: Approval  
 38.809 v0.2.0  
 Source: Huawei*

**Abstract:**

capture the IAB-MT sensitivity agreements background in the TR

**Discussion:**

The contribution was discussed during email thread [96e][310] NR\_IAB\_RF\_Part\_3. The discussion was recorded in R4-2012731.

**Decision:** The document was **revised to R4-2012629**.

**R4-2012629 TP to TR 38.809 -IAB RX sensitivity**

*Type: pCR For: Approval  
 38.809 v0.2.0  
 Source: Huawei*

(Replaces R4-2011296)

**Discussion:**

The contribution was discussed during email thread [96e][310] NR\_IAB\_RF\_Part\_3. The discussion was recorded in R4-2012731.

**Decision:** The document was **approved**.

**R4-2009794 Discussion on IAB-MT REFSENS FRC**

*Type: discussion For: Discussion  
 Source: CATT*

**Discussion:**

The contribution was discussed during email thread [96e][310] NR\_IAB\_RF\_Part\_3. The discussion was recorded in R4-2012731.

**Decision:** The document was **noted**.

###### 7.4.2.2.2 In-band selectivity and blocking requirements [NR\_IAB-Core]

**R4-2010723 IAB-MT Rx interferer details**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

In this document the final details required to complete in-band blocking and ACS requirements are proposed.

**Discussion:**

The contribution was discussed during email thread [96e][310] NR\_IAB\_RF\_Part\_3. The discussion was recorded in R4-2012731.

**Decision:** The document was **noted**.

**R4-2010955 ACS and In-band blocking for IAB MT**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][310] NR\_IAB\_RF\_Part\_3. The discussion was recorded in R4-2012731.

**Decision:** The document was **noted**.

**R4-2011035 TP for TS ACS, inband blocking and out of band blocking**

*Type: pCR For: Approval  
 38.174 v0.1.0  
 Source: Ericsson*

**Abstract:**

In this paper, the interference signal of ACS and IBB for wide area IAB-MT is discussed and TP is proposed

**Discussion:**

The contribution was discussed during email thread [96e][310] NR\_IAB\_RF\_Part\_3. The discussion was recorded in R4-2012731.

**Decision:** The document was **revised to R4-2012631**.

**R4-2012631 TP for TS ACS, inband blocking and out of band blocking**

*Type: pCR For: Approval  
 38.174 v0.1.0  
 Source: Ericsson*

(Replaces R4-2011035)

**Discussion:**

The contribution was discussed during email thread [96e][310] NR\_IAB\_RF\_Part\_3. The discussion was recorded in R4-2012731.

**Decision:** The document was **approved**.

**R4-2011036 TP to TR 38.809: ACS and IBB**

*Type: pCR For: Approval  
 38.809 v0.2.0  
 Source: Ericsson*

**Abstract:**

in this paper, TP for ACS and IBB to TR 38.809 are proposed

**Discussion:**

The contribution was discussed during email thread [96e][310] NR\_IAB\_RF\_Part\_3. The discussion was recorded in R4-2012731.

**Decision:** The document was **revised to R4-2012632**.

**R4-2012632 TP to TR 38.809: ACS and IBB**

*Type: pCR For: Approval  
 38.809 v0.2.0  
 Source: Ericsson*

(Replaces R4-2011036)

**Discussion:**

The contribution was discussed during email thread [96e][310] NR\_IAB\_RF\_Part\_3. The discussion was recorded in R4-2012731.

**Decision:** The document was **approved**.

**R4-2011298 IAB-MT in band selectivity and blocking**

*Type: discussion For: Discussion  
 Source: Huawei*

**Abstract:**

Discuss the remaining open issues in the WF

**Discussion:**

The contribution was discussed during email thread [96e][310] NR\_IAB\_RF\_Part\_3. The discussion was recorded in R4-2012731.

**Decision:** The document was **noted**.

**R4-2009795 Discussion on LA IAB-MT ACS and IBB**

*Type: discussion For: Discussion  
 Source: CATT*

**Discussion:**

The contribution was discussed during email thread [96e][310] NR\_IAB\_RF\_Part\_3. The discussion was recorded in R4-2012731.

**Decision:** The document was **noted**.

###### 7.4.2.2.3 Others [NR\_IAB-Core]

**R4-2010149 IAB-MT Receiver FRC for QPSK**

*Type: other For: Discussion  
 Source: Samsung*

**Discussion:**

The contribution was discussed during email thread [96e][310] NR\_IAB\_RF\_Part\_3. The discussion was recorded in R4-2012731.

**Decision:** The document was **noted**.

**R4-2010956 TP to TR 38.809 IAB-MT RX IMD**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][310] NR\_IAB\_RF\_Part\_3. The discussion was recorded in R4-2012731.

**Decision:** The document was **revised to R4-2012756**.

**R4-2012756 TP to TR 38.809 IAB-MT RX IMD**

*Type: other For: Approval  
 Source: ZTE Corporation*

(Replaces R4-2010956)

**Discussion:**

The contribution was discussed during email thread [96e][310] NR\_IAB\_RF\_Part\_3. The discussion was recorded in R4-2012731.

**Decision:** The document was **approved**.

**R4-2010957 TP to TS 38.174: IAB RX IM requirement (section 7.7 and 10.8)**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][310] NR\_IAB\_RF\_Part\_3. The discussion was recorded in R4-2012731.

**Decision:** The document was **revised to R4-2012633**.

**R4-2012633 TP to TS 38.174: IAB RX IM requirement (section 7.7 and 10.8)**

*Type: other For: Approval  
 Source: ZTE Corporation*

(Replaces R4-2010957)

**Discussion:**

The contribution was discussed during email thread [96e][310] NR\_IAB\_RF\_Part\_3. The discussion was recorded in R4-2012731.

**Decision:** The document was **approved**.

**R4-2011037 TP to TR 38.809: RX spurious**

*Type: pCR For: Approval  
 38.809 v0.2.0  
 Source: Ericsson*

**Abstract:**

in this paper, TP for RX spurious to TR 38.809 are proposed

**Discussion:**

The contribution was discussed during email thread [96e][310] NR\_IAB\_RF\_Part\_3. The discussion was recorded in R4-2012731.

**Decision:** The document was **revised to R4-2012634**.

**R4-2012634 TP to TR 38.809: RX spurious**

*Type: pCR For: Approval  
 38.809 v0.2.0  
 Source: Ericsson*

(Replaces R4-2011037)

**Discussion:**

The contribution was discussed during email thread [96e][310] NR\_IAB\_RF\_Part\_3. The discussion was recorded in R4-2012731.

**Decision:** The document was **approved**.

**R4-2011038 TP to TS 38.174: RX spurious**

*Type: pCR For: Approval  
 38.174 v0.1.0  
 Source: Ericsson*

**Abstract:**

in this paper, TP for RX spurious to TS 38.174 are proposed

**Discussion:**

The contribution was discussed during email thread [96e][310] NR\_IAB\_RF\_Part\_3. The discussion was recorded in R4-2012731.

**Decision:** The document was **revised to R4-2012635**.

**R4-2012635 TP to TS 38.174: RX spurious**

*Type: pCR For: Approval  
 38.174 v0.1.0  
 Source: Ericsson*

(Replaces R4-2011038)

**Discussion:**

The contribution was discussed during email thread [96e][310] NR\_IAB\_RF\_Part\_3. The discussion was recorded in R4-2012731.

**Decision:** The document was **revised to R4-2012760**.

**R4-2012760 TP to TS 38.174: RX spurious**

*Type: pCR For: Approval  
 38.174 v0.1.0  
 Source: Ericsson*

(Replaces R4-2012635)

**Discussion:**

The contribution was discussed during email thread [96e][310] NR\_IAB\_RF\_Part\_3. The discussion was recorded in R4-2012731.

**Decision:** The document was **approved**.

#### 7.4.3 RRM core requirements (38.133) [NR\_IAB-Core]

**R4-2012042 Email discussion summary for [96e][211] NR\_IAB\_RRM**

*Type: other For: discussion  
 Source: Moderator (ZTE)*

**Discussion:**

The contribution summarized email discussion thread [96e][211] NR\_IAB\_RRM. The topic areas for discussion were RRM Core requirements. The email thread was moderated by Richie Leo (ZTE). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2012211**.

**R4-2012211 Email discussion summary for [96e][211] NR\_IAB\_RRM**

*Type: other For: discussion  
 Source: Moderator (ZTE)*

(Replaces R4-2012042)

**Discussion:**

The contribution summarized email discussion thread [96e][211] NR\_IAB\_RRM. The topic areas for discussion were RRM Core requirements. The email thread was moderated by Richie Leo (ZTE). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **noted**.

*GTW session (Aug 27th)*

**Issue 1-1: Relaxation factor K2 (to relax RLM evaluation period compared to R15 UE requirements)**

Agreement: K2 =3

**Issue 2-1: Whether define transmit timing requirements for wide area IAB-MTs in CA scenarios**

* Proposals
  + Option 1: No (ZTE, Huawei, Ericsson, Nokia)
  + Option 2: Yes (Nokia, Samsung, Qualcomm)
* Note
  + In RF session, LS R4-2012563 was agreed during this meeting:
  + Features related to EN-DC, CA and SUL are postponed until the requirements and support framework becomes clear.

Chair: the topic is not in the exception sheet

Agreement: Do not define transmit timing requirements in CA scenarios.

**R4-2012107 WF on transmit timing requirements for wide area IAB-MTs in CA scenarios**

*Type: other For: discussion  
 Source: ZTE*

**Decision:** The document was **withdrawn**.

##### 7.4.3.1 RLM requirements [NR\_IAB-Core]

**R4-2011071 Discussion on FR2 RLM requirement for IAB**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Discussion:**

The contribution was discussed during email thread [96e][211] NR\_IAB\_RRM. The discussion was recorded in R4-2012211.

**Decision:** The document was **noted**.

**R4-2009670 Remaining issues on RLM requirement for IAB-MT**

*Type: discussion For: Discussion  
 Source: Samsung*

**Discussion:**

The contribution was discussed during email thread [96e][211] NR\_IAB\_RRM. The discussion was recorded in R4-2012211.

**Decision:** The document was **noted**.

**R4-2009679 on RLM requirements for IAB-MT**

*Type: pCR For: Approval  
 38.174 v0.1.0  
 Source: ZTE Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][211] NR\_IAB\_RRM. The discussion was recorded in R4-2012211.

**Decision:** The document was **revised to R4-2012234**.

**R4-2012234 on RLM requirements for IAB-MT**

*Type: pCR For: Approval  
 38.174 v0.1.0  
 Source: ZTE Corporation*

(Replaces R4-2009679)

**Discussion:**

The contribution was discussed during email thread [96e][211] NR\_IAB\_RRM. The discussion was recorded in R4-2012211.

**Decision:** The document was **approved**.

**R4-2009990 Discussion regarding RLM requirements of IAB-MTs**

*Type: discussion For: (not specified)  
 Source: Qualcomm*

**Discussion:**

The contribution was discussed during email thread [96e][211] NR\_IAB\_RRM. The discussion was recorded in R4-2012211.

**Decision:** The document was **noted**.

##### 7.4.3.2 Other requirements maintenance [NR\_IAB-Core]

**R4-2010150 TP for TR38.809: IAB-MT RRM general**

*Type: pCR For: Approval  
 38.809 v0.2.0  
 Source: Samsung*

**Discussion:**

The contribution was discussed during email thread [96e][211] NR\_IAB\_RRM. The discussion was recorded in R4-2012211.

**Decision:** The document was **revised to R4-2012110**.

**R4-2012110 TP for TR38.809: IAB-MT RRM general**

*Type: pCR For: Approval  
 38.809 v0.2.0  
 Source: Samsung*

(Replaces R4-2010150)

**Discussion:**

The contribution was discussed during email thread [96e][211] NR\_IAB\_RRM. The discussion was recorded in R4-2012211.

**Decision:** The document was **postponed**.

**R4-2011072 TP to TS 38.174 on RRC release with redirection for IAB-MT**

*Type: pCR For: Approval  
 38.174 v0.1.0  
 Source: Huawei, Hisilicon*

**Discussion:**

The contribution was discussed during email thread [96e][211] NR\_IAB\_RRM. The discussion was recorded in R4-2012211.

**Decision:** The document was **merged**.

**R4-2011431 discussion on CA scenarios in Tansmit Timing requirement for IAB-MT**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Discussion CA support on transmit timing requirement for wide area IAB-MT class

**Discussion:**

The contribution was discussed during email thread [96e][211] NR\_IAB\_RRM. The discussion was recorded in R4-2012211.

**Decision:** The document was **noted**.

**R4-2012109 TP on CA scenarios in Transmit Timing requirement for IAB-MT**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

The contribution was discussed during email thread [96e][211] NR\_IAB\_RRM. The discussion was recorded in R4-2012211.

**Decision:** The document was **not pursued**.

**R4-2009680 transmit timing requirements of IAB-MTs in CA scenarios**

*Type: discussion For: Discussion  
 Source: ZTE Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][211] NR\_IAB\_RRM. The discussion was recorded in R4-2012211.

**Decision:** The document was **noted**.

**R4-2009991 TP for remaining items of RRM requirements for IAB-MTs**

*Type: discussion For: Approval  
 Source: Qualcomm*

**Discussion:**

The contribution was discussed during email thread [96e][211] NR\_IAB\_RRM. The discussion was recorded in R4-2012211.

**Decision:** The document was **revised to R4-2012108**.

**R4-2012108 TP for remaining items of RRM requirements for IAB-MTs**

*Type: pCR For: Approval  
 38.174 v0.1.0  
 Source: Qualcomm*

(Replaces R4-2009991)

**Discussion:**

The contribution was discussed during email thread [96e][211] NR\_IAB\_RRM. The discussion was recorded in R4-2012211.

**Decision:** The document was **approved**.

#### 7.4.4 EMC core requirements [NR\_IAB-Core]

**R4-2010647 Proposal on the skeleton of IAB EMC**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][304] NR\_EMC. The discussion was recorded in R4-2012717.

**Decision:** The document was **approved**.

##### 7.4.4.1 General [NR\_IAB-Core]

**R4-2010649 References for IAB EMC**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][304] NR\_EMC. The discussion was recorded in R4-2012717.

**Decision:** The document was **revised to R4-2012643**.

**R4-2012643 References for IAB EMC**

*Type: other For: Approval  
 Source: ZTE Corporation*

(Replaces R4-2010649)

**Discussion:**

The contribution was discussed during email thread [96e][304] NR\_EMC. The discussion was recorded in R4-2012717.

**Decision:** The document was **approved**.

**R4-2011267 IAB EMC specification: Exclusion bands (4.4)**

*Type: other For: Approval  
 Source: Huawei*

**Abstract:**

In this contribution we provide discussion on the transmitter and receiver Exclusion bands for the purposes of the EMC RI testing of the NR IAB node. The proposed TP to the IAB EMC specification is attached.

**Discussion:**

The contribution was discussed during email thread [96e][304] NR\_EMC. The discussion was recorded in R4-2012717.

**Decision:** The document was **revised to R4-2012640**.

**R4-2012640 IAB EMC specification: Exclusion bands (4.4)**

*Type: other For: Approval  
 Source: Huawei*

(Replaces R4-2011267)

**Discussion:**

The contribution was discussed during email thread [96e][304] NR\_EMC. The discussion was recorded in R4-2012717.

**Decision:** The document was **approved**.

**R4-2011282 TPs to TS on IAB EMC section 1 (Scope)**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

TP to TS on IAB EMC for chapter 1 (Scope)

**Discussion:**

The contribution was discussed during email thread [96e][304] NR\_EMC. The discussion was recorded in R4-2012717.

**Decision:** The document was **revised to R4-2012636**.

**R4-2012636 TPs to TS on IAB EMC section 1 (Scope)**

*Type: other For: Approval  
 Source: Ericsson*

(Replaces R4-2011282)

**Discussion:**

The contribution was discussed during email thread [96e][304] NR\_EMC. The discussion was recorded in R4-2012717.

**Decision:** The document was **approved**.

##### 7.4.4.2 Emission requirements [NR\_IAB-Core]

**R4-2010648 Emission for IAB EMC**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][304] NR\_EMC. The discussion was recorded in R4-2012717.

**Decision:** The document was **revised to R4-2012642**.

**R4-2012642 Emission for IAB EMC**

*Type: other For: Approval  
 Source: ZTE Corporation*

(Replaces R4-2010648)

**Discussion:**

The contribution was discussed during email thread [96e][304] NR\_EMC. The discussion was recorded in R4-2012717.

**Decision:** The document was **approved**.

**R4-2011266 IAB EMC specification: Emission (7.1)**

*Type: other For: Approval  
 Source: Huawei*

**Abstract:**

In this contribution we provide discussion on the EMC emission requirements applicability of the NR IAB node. The proposed TP to the IAB EMC specification is attached.

**Discussion:**

The contribution was discussed during email thread [96e][304] NR\_EMC. The discussion was recorded in R4-2012717.

**Decision:** The document was **revised to R4-2012641**.

**R4-2012641 IAB EMC specification: Emission (7.1)**

*Type: other For: Approval  
 Source: Huawei*

(Replaces R4-2011266)

**Discussion:**

The contribution was discussed during email thread [96e][304] NR\_EMC. The discussion was recorded in R4-2012717.

**Decision:** The document was **approved**.

**R4-2011283 TP to TR 38.809 on IAB EMC emission requirements**

*Type: pCR For: Approval  
 38.809 v0.2.0  
 Source: Ericsson*

**Abstract:**

TP to TR 38.809 including text agreements on IAB EMC Emissions

**Discussion:**

The contribution was discussed during email thread [96e][304] NR\_EMC. The discussion was recorded in R4-2012717.

**Decision:** The document was **revised to R4-2012637**.

**R4-2012637 TP to TR 38.809 on IAB EMC emission requirements**

*Type: pCR For: Approval  
 38.809 v0.2.0  
 Source: Ericsson*

(Replaces R4-2011283)

**Discussion:**

The contribution was discussed during email thread [96e][304] NR\_EMC. The discussion was recorded in R4-2012717.

**Decision:** The document was **approved**.

##### 7.4.4.3 Immunity requirements [NR\_IAB-Core]

**R4-2011284 TPs to TS on IAB EMC section 9 (Immunity)**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

TP to TS on IAB EMC for chapters 9 (Immunity)

**Discussion:**

The contribution was discussed during email thread [96e][304] NR\_EMC. The discussion was recorded in R4-2012717.

**Decision:** The document was **revised to R4-2012638**.

**R4-2012638 TPs to TS on IAB EMC section 9 (Immunity)**

*Type: other For: Approval  
 Source: Ericsson*

(Replaces R4-2011284)

**Discussion:**

The contribution was discussed during email thread [96e][304] NR\_EMC. The discussion was recorded in R4-2012717.

**Decision:** The document was **approved**.

**R4-2011375 Definitions and immunity of IAB EMC**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

this document provides a text proposal to Sections 3 and 7.2 based on the TS skeleton [1].

**Discussion:**

The contribution was discussed during email thread [96e][304] NR\_EMC. The discussion was recorded in R4-2012717.

**Decision:** The document was **revised to R4-2012639**.

**R4-2012639 Definitions and immunity of IAB EMC**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2011375)

**Discussion:**

The contribution was discussed during email thread [96e][304] NR\_EMC. The discussion was recorded in R4-2012717.

**Decision:** The document was **approved**.

#### 7.4.5 Demodulation and CSI requirements [NR\_IAB-Perf]

##### 7.4.5.1 General [NR\_IAB-Perf]

**R4-2012549 Email discussion summary for [96e][327] NR\_IAB\_Demod**

*Type: other For: discussion  
 Source: Moderator (Nokia)*

**Discussion:**

The contribution summarized email discussion thread [96e][327] NR\_IAB\_Demod. The topic areas for discussion were Rel-16 IAB demodulation and CSI requirements. The email thread was moderated by Axel Mueller (Nokia). All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2012732**.

**R4-2012732 Email discussion summary for [96e][327] NR\_IAB\_Demod**

*Type: other For: discussion  
 Source: Moderator (Nokia)*

(Replaces R4-2012549)

**Discussion:**

The contribution summarized email discussion thread [96e][327] NR\_IAB\_Demod. The topic areas for discussion were Rel-16 IAB demodulation and CSI requirements. The email thread was moderated by Axel Mueller (Nokia). All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **noted**.

**R4-2012644 WF on Rel-16 NR IAB demodulation requirements**

*Type: other For: discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

The contribution was discussed during email thread [96e][327] NR\_IAB\_Demod. The discussion was recorded in R4-2012732.

**Decision:** The document was **approved**.

**R4-2010843 IAB demodulation general aspects**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

Discussion on general approach for IAB demod and IAB-DU

**Discussion:**

The contribution was discussed during email thread [96e][327] NR\_IAB\_Demod. The discussion was recorded in R4-2012732.

**Decision:** The document was **noted**.

**R4-2010917 Initial considerations on IAB performance requirements**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

The contribution was discussed during email thread [96e][327] NR\_IAB\_Demod. The discussion was recorded in R4-2012732.

**Decision:** The document was **noted**.

**R4-2011326 On NR IAB general demodulation requirements**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision:** The document was **withdrawn**.

**R4-2011399 On NR IAB general demodulation requirements**

*Type: discussion For: Decision  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This paper gives an overview of NR IAB and discusses in general the IAB-node performance demodulation requirements.

**Discussion:**

The contribution was discussed during email thread [96e][327] NR\_IAB\_Demod. The discussion was recorded in R4-2012732.

**Decision:** The document was **noted**.

**R4-2011516 General discussion on IAB demodulation performance requirements**

*Type: discussion For: Discussion  
 Source: Huawei Technologies France*

**Discussion:**

The contribution was discussed during email thread [96e][327] NR\_IAB\_Demod. The discussion was recorded in R4-2012732.

**Decision:** The document was **noted**.

##### 7.4.5.2 IAB-DU performance requirements [NR\_IAB-Perf]

**R4-2011327 On NR IAB-node UL demodulation requirements**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

The scope of IAB-node demodulation in UL BH direction is considered. Several simplifications in the existing BS performance requirements are proposed to address the IAB architecture and deployments.

**Discussion:**

The contribution was discussed during email thread [96e][327] NR\_IAB\_Demod. The discussion was recorded in R4-2012732.

**Decision:** The document was **noted**.

**R4-2011517 Initial discussion on IAB DU demodulation performance requirements**

*Type: discussion For: Discussion  
 Source: Huawei Technologies France*

**Discussion:**

The contribution was discussed during email thread [96e][327] NR\_IAB\_Demod. The discussion was recorded in R4-2012732.

**Decision:** The document was **noted**.

##### 7.4.5.3 IAB-MT performance requirements [NR\_IAB-Perf]

**R4-2010844 IAB demodulation MT aspects**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

Discussion on IAB-MT demod considerations

**Discussion:**

The contribution was discussed during email thread [96e][327] NR\_IAB\_Demod. The discussion was recorded in R4-2012732.

**Decision:** The document was **noted**.

**R4-2011328 On NR IAB-node DL demodulation requirements**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

The scope of IAB-node demodulation in DL BH direction is considered. An approach how to formulate requirements that match the IAB architecture and deployment scenarios is proposed.

**Discussion:**

The contribution was discussed during email thread [96e][327] NR\_IAB\_Demod. The discussion was recorded in R4-2012732.

**Decision:** The document was **noted**.

**R4-2011518 Initial discussion on IAB MT demodulation performance requirements**

*Type: discussion For: Discussion  
 Source: Huawei Technologies France*

**Discussion:**

The contribution was discussed during email thread [96e][327] NR\_IAB\_Demod. The discussion was recorded in R4-2012732.

**Decision:** The document was **noted**.

### 7.5 Multi-RAT Dual-Connectivity and Carrier Aggregation enhancements [LTE\_NR\_DC\_CA\_enh]

**R4-2012043 Email discussion summary for [96e][212] LTE\_NR\_DC\_CA\_RRM\_1**

*Type: other For: discussion  
 Source: Moderator (Nokia)*

**Discussion:**

The contribution summarized email discussion thread [96e][212] LTE\_NR\_DC\_CA\_RRM\_1. The topic areas for discussion were RRM Core requirements: Early Measurement reporting, Others. The email thread was moderated by Lars Dalsgaard (Nokia). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2012212**.

**R4-2012212 Email discussion summary for [96e][212] LTE\_NR\_DC\_CA\_RRM\_1**

*Type: other For: discussion  
 Source: Moderator (Nokia)*

(Replaces R4-2012043)

**Discussion:**

The contribution summarized email discussion thread [96e][212] LTE\_NR\_DC\_CA\_RRM\_1. The topic areas for discussion were RRM Core requirements: Early Measurement reporting, Others. The email thread was moderated by Lars Dalsgaard (Nokia). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **noted**.

*GTW session (Aug 19th)*

**Sub-topic 1-1 s-NonIntraSearch thresholds and EMR carriers**

* Background:
  + RAN4 95e
    - Conclusion: Send LS to RAN2 to clarify RAN2 agreement and ask feedback on 2 Options above.
    - Agreement
      * Further discuss between the 2 options
        + Search thresholds do not apply to carriers configured for EMR measurements.
        + Search thresholds do not affect measurement procedures to carriers configured for EMR measurements, but the search thresholds are used to define the EMR measurement requirements.
      * Send LS to RAN2 to ask whether Option 1 or 2 contradict RAN2 agreements
    - Chair: Agreements need to be made no later than in RAN4 #96e. In case no conclusions are reached then no requirements may be defined for this scenario
  + RAN2 LS reply
    - RAN2 discussed RAN4 LS (R2-2006131) and reached following agreement:
      * RAN2 intended that search thresholds (s-nonIntraSearchP and s-NonIntraSearchQ) do not apply to EMR measurements performed on carriers configured for EMR measurements
* Proposals
  + Option 1: *s-NonIntraSearch* thresholds do not apply to EMR carriers (Nokia, ZTE, Apple)
  + Option 2: *s-NonIntraSearch* thresholds do apply to EMR carriers (Huawei, MTK, QC)
* Recommended WF
  + Agree on option 1, based on the RAN2 LS reply (R2-2006287/ R4-2009523).

Discussion

Nokia: still diverse view

MTK: Reply LS does not force RAN4 not to use search thresholds for EMR measurements. Option 1 contradicts to the previous agreements. EMR is an enhancement feature. If we don’t apply thresholds then it will change UE implementation.

QC: Agree with Huawei observations. Agree with Option 2 but not sure it will resolve all issues.

Apple: Support Option 1. For legacy networks it is up to network on how to use the thresholds.

Huawei: RAN2 is defining the procedures and RAN4 is defining the measurements.

ZTE: RAN4 requirements shall follow RAN2 procedures.

Nokia: If we go with Option 2 then we’ll need to inform RAN2.

Huawei: UE still measures EMR carriers disregards the configured

Tentative agreement

Option 1:

UE applies EMR carrier measurements disregards whether the signal exceeds the configured s-NonIntraSearch thresholds

UE will follow conventional measurement interval for both overlapping and non-overlapping EMR carrier measurements when s-NonIntraSearch thresholds are configured

Note: conventional measurement interval is the measurement period used for cell reselection purpose

Option 2: No requirements defined for the case s-NonIntraSearch thresholds are configured

*1st round email discussion conclusions*

**Topic #1: NR measurements for EMR (38.133)**

Issue 1-2-2-1: Number of non-overlapping EMR carrier

Agreement: The number of non-overlapping inter-frequency EMR carriers is ≤7

Issue 1-2-2-2: Number of non-overlapping EMR carrier when the total number limit is exceeded

Agreement: RAN4 will not define requirements for number of non-overlapping EMR carrier when the total number limit is exceeded

Issue 1-2-3-1: NR inter-frequency beam-level measurement capability

Agreement: RAN4 agree following related to NR inter-frequency beam-level measurement capability:

* FR1: 7 SSBs with different SSB index and/or PCI per inter-frequency layer
* FR2: 10 SSBs with different SSB index and/or PCI per inter-frequency layer

Issue 1-2-5-1: For overlapping EMR carriers

Agreement: For overlapping EMR carriers, the UE measurement accuracy requirements for carriers configured for EMR:

* Option 1: RAN4 to define relaxed NR measurement requirements for overlapping carrier compared to existing NR inter-frequency requirements in terms of SNR and accuracy
* Option 2: LTE inter-RAT measurement requirements for overlapping carrier follows existing LTE inter-frequency requirements for CA Idle mode measurements for overlapping carrier

**Topic #2: LTE NR Inter-RAT EMR (36.133)**

Agreements: s-NonIntraSearch thresholds and NR inter-RAT EMR carriers follow agreements for NR measurements for EMR

Agreement: Capture the UE capability according to the proposed applicability text in 36.133 (R4-2010569) with necessary name correction.

Agreement: UE should be able to measure up to 8 overlapping and non-overlapping inter-RAT NR EMR carriers in total:

* Overlapping NR inter-RAT carriers: ≤8
* Non-overlapping NR inter-RAT carriers: ≤2

Agreement: Measurement requirements for non-overlapping NR inter-RAT carriers are defined same as overlapping NR inter-RAT carriers

Agreement: For Measurement accuracy requirements for NR Inter-RAT EMR carrier same principles as in Issue 1-2-5-2 will be applied.

Agreement: For NR inter-RAT EMR, the UE beam-level measurement capability requirements for EMR is the same as the number of beams in the existing Rel-15 inter-frequency requirements for RRC\_CONNECTED state:

* FR1: 7 SSBs with different SSB index and/or PCI per inter-frequency layer
* FR2: 10 SSBs with different SSB index and/or PCI per inter-frequency layer

*GTW session (Aug 28h)*

**Sub-topic#1-1 s-NonIntraSearch thresholds and EMR carriers**

Tentative agreement

Option 1:

UE applies EMR carrier measurements disregards whether the signal exceeds the configured s-NonIntraSearch thresholds

UE will follow conventional measurement interval for both overlapping and non-overlapping EMR carrier measurements when s-NonIntraSearch thresholds are configured

Note: conventional measurement interval is the measurement period used for cell reselection purpose

Option 2: No requirements defined for the case s-NonIntraSearch thresholds are configured

Moderator proposal

* RAN4 does not capture in RAN4 Rel-16 specifications anything specific related to search thresholds when UE is configured to perform EMR measurements. Following is proposed:
  + UE shall be able to support EMR measurement both when search thresholds are configured and when search thresholds are not configured.
  + It is up to UE implementation how to perform the EMR related measurements.
  + UE has to fulfil the accuracy requirements for EMR measurements as defined 38.133 (to be defined)
  + Leave the current sections 4.2.2.4 and 4.2.2.5 in 38.133 unchanged.

**R4-2012044 Email discussion summary for [96e][213] LTE\_NR\_DC\_CA\_RRM\_2**

*Type: other For: discussion  
 Source: Moderator (Ericsson)*

**Discussion:**

The contribution summarized email discussion thread [96e][213] LTE\_NR\_DC\_CA\_RRM\_2. The topic areas for discussion were RRM Core requirements: Efficient and low latency serving cell configuration, activation and setup. The email thread was moderated by Joakim Axmon (Ericsson). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2012213**.

**R4-2012213 Email discussion summary for [96e][213] LTE\_NR\_DC\_CA\_RRM\_2**

*Type: other For: discussion  
 Source: Moderator (Ericsson)*

(Replaces R4-2012044)

**Discussion:**

The contribution summarized email discussion thread [96e][213] LTE\_NR\_DC\_CA\_RRM\_2. The topic areas for discussion were RRM Core requirements: Efficient and low latency serving cell configuration, activation and setup. The email thread was moderated by Joakim Axmon (Ericsson). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **noted**.

*GTW session (Aug 19th)*

**Sub-topic 2-1: General**

**Sub-topic 2-2: Switching of single SCell between dormancy and non-dormancy, triggering inside active time**

Issue 2-2-1: Delay requirement, triggering within first 3 OFDM symbols

* Proposals
  + Option 1 (MediaTek): For DCI received in first 3 OFDM symbols of a slot the switching delay between non-dormancy and dormancy shall follow the Rel-15 BWP switching delay specified in Table 8.6.2-1
  + Option 2 (vivo): The current DCI based BWP switch delay requirement within one CC applies for this scenario providing that: the timing difference between the CC where the DCI triggering BWP switch is received and CC where the BWP switch happens is within the MRTD for inter-band CA as defined in clause 7.6.4.
  + Option 3 (Ericsson): The switching delay shall take into account the smallest numerology of spCell (where triggering is carried out) and SCell(s) for which switching is triggered.
  + Option 4 (Huawei): For the baseline requirements and dormancy switch within DRX active time, when DCI is received in the first 3 symbols of a slot, the dormancy switch delay TDormancy\_normalDCI is
    - For self-scheduling case: TBWPswitchDelay (Rel-15 BWP switch delay defined in Table 8.6.2-1 of 38.133)
    - For cross-carrier scheduling case:
      * If SCS of scheduling cell is larger than SCS of scheduled cell: TBWPswitchDelay
      * If SCS of scheduling cell is equal to or smaller than SCS of scheduled cell: TBWPswitchDelay+Y, where Y=1 slot with respect to the SCS of the scheduled cell
      * The start point of the dormancy switch is the beginning of the slot where UE receives the DCI on the scheduling cell
      * TBWPswitchDelay corresponds to the smallest SCS among the scheduling cell and the scheduled cell.
* Discussion
  + Huawei: may need to resolve issue in the WI. Dormancy switch can be triggered using cross-carrier scheduling only.
  + vivo: Rel-15 does not have cross-carrier scheduling feature and this is specific to SCell dormancy in Rel-16.
  + QC: This is Dormant SCell BWP switching and not active BWP switching. We think that only non-Dormant BWP switching needs to be adjusted
  + ZTE: Cross-carrier scheduling shall be supported in Rel-16.
  + Huawei: Current agreement does not consider cross-carrier scheduling case. We need to include the BWP switching requirements for both Dormant BWP and Active BWP switching.
  + Chair: recommend to continue discussion on the BWP switching based on cross-carrier scheduling with the focus on Dormant BWP switching use case
* Agreement
  + For Dormancy switch requirement additional [1] slot relaxation is applied
    - In case SCS differs between spCell and SCell, the smaller SCS applies.

*1st round email discussion conclusions*

**Topic #1: Direct SCell Activation**

Delay requirement for multiple SCells

Agreements:

* Delay requirements for direct activation of multiple SCells are based on those for MAC CE based activation of multiple SCells, with adaptation for RRC-based instead of MAC-based triggering.
  + The applicable scenarios are same as for MAC CE based multiple SCell activation.
  + Delay requirements for Direct SCell activation of multiple SCells shall fulfill:
    - For SCell addition and RRC resume: Ndirect\_multiple\_scells = TRRC\_Process + T1 + Tactivation\_time\_multiple\_scells + TCSI\_Reporting - 3ms, where Tactivation\_time\_multiple\_scells is defined in clause 8.3.7
    - For Handover: Ndirect\_multiple\_scells = TRRC\_process + Tinterrupt + T2 + T3 + Tactivation\_time\_multiple\_scells + TCSI\_Reporting - 3ms, where Tactivation\_time\_multiple\_scells is defined in clause 8.3.7

TFirstSSB\_MAX\_multiple\_scells used in Tactivation\_time\_multiple\_scells is clarified with respect to start time of the activation process in direct activation (accounting for difference between MAC and RRC-based triggering)

Interruption window for multiple SCells

Agreements:

* Definition of interruption windows for Direct Scell activation of Multiple Downlink Scells at Scell addition, RRC Resume, and Handover shall be based on the corresponding interruption windows for single Scell, with the following case added:
  + TFirstSSB\_MAX\_multiple\_scells, for any scenario where Tactivation\_time\_multiple\_cells includes TFirstSSB\_MAX\_multiple\_scells

Number of Scells to support in Direct Scell activation

Agreements:

* Direct Scell Activation of Multiple Downlink Scells at Scell addition, RRC Resume, and Handover shall be supported for [2] Scells.

**Topic #2: SCell Dormancy**

Triggering options

Agreements:

* Remove Timer-based triggering from scope and only support DCI-based triggering

Optimizations w.r.t. parameter changes

Agreements:

* RAN4 to only introduce generic requirements, and the further need for optimizations w.r.t. parameter change can be discussed in the future release, if needed

Delay requirement, triggering within first 3 OFDM symbols

Agreements:

* For Dormancy switch requirement additional [1] slot relaxation is applied
  + In case SCS differs between spCell and SCell, the smaller SCS applies.

*2nd round email discussion conclusions*

*GTW session (Aug 28h)*

Issue 2-2-4: Interruption requirement

Agreement:

* Upon BWP transition in a single SCell into/out of dormancy, RAN4 to define the interruption requirements as follows:
  + Interruption length as in Table 8.2.2.2.5-1 applies
  + The starting time of interruption is only allowed within the BWP switching delay for transition between dormancy and non-dormancy
  + If UE is not capable of per-FR gap, UE is allowed to cause interruption of up to X slots to other active serving cells.
  + If UE is capable of per-FR gap, UE is allowed to cause interruption of up to X slots to other active serving cells in the same frequency range
  + If UE is capable of per-FR gap, and the BWP switching involves a SCS change, the UE is additionally allowed to cause interruptions of up to X slots to other active serving cells in any frequency range.
  + Interruptions are allowed regardless of which parameters change between dormancy and non-dormancy

Issue 2-4-1: Interruptions due to CSI and RRM measurements

* Agreement
  + RAN4 to specify the interruption requirements for CSI and RRM measurement during SCell dormancy by defining the limit on the percentage of interrupted slots as [0.5]%

Issue 2-5-1: Delay requirements, switching of multiple Scells

* 2nd round conclusions
  + A majority of the companies support or can compromise to Option 2a. One company supports other option.
  + (Option 2a)
    - Delay requirements for switching of multiple Scells between dormancy and non-dormancy shall be based on corresponding delay requirements for switching of multiple Scells between non-dormant BWPs, i.e., TMultipleBWPswitchDelay or TMultipleBWPswitchDelay+Z for simultaneous BWP switching case.
    - The further need for optimizations can be discussed in the future release, if needed

Agreement

* Delay requirements for switching of multiple Scells between dormancy and non-dormancy shall be based on corresponding delay requirements for switching of multiple Scells between non-dormant BWPs, i.e., TMultipleBWPswitchDelay or TMultipleBWPswitchDelay+Z for simultaneous BWP switching case.
* The further need for optimizations can be discussed in the future release, if needed
* Reuse the existing simultaneous BWP switching capability for D value as baseline
* Companies can further discuss in the next meeting whether any improvement of the D values is possible for simultaneous SCell dormancy switching for multiple cells (e.g. dedicated UE capability)

**R4-2012111 WF on MR-DC EMR RRM requirements**

*Type: other For: discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Decision:** The document was **revised to R4-2012246**.

**R4-2012246 WF on MR-DC EMR RRM requirements**

*Type: other For: discussion  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2012111)

**Decision:** The document was **revised to R4-2012301**.

**R4-2012301 WF on MR-DC EMR RRM requirements**

*Type: other For: discussion  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2012246)

**Decision:** The document was **approved**.

**R4-2012117 WF on MR-DC Direct SCell activation and SCell dormancy RRM requirements**

*Type: other For: discussion  
 Source: Ericcson*

**Decision:** The document was **revised to R4-2012278**.

**R4-2012278 WF on MR-DC Direct SCell activation and SCell dormancy RRM requirements**

*Type: other For: discussion  
 Source: Ericcson*

(Replaces R4-2012117)

**Decision:** The document was **approved**.

**R4-2012118 Reply LS on SCell Dormancy**

*Type: LS out For: Approval  
 to RAN1  
 Source: Huawei*

**Decision:** The document was **revised to R4-2012281**.

**R4-2012281 Reply LS on SCell Dormancy**

*Type: LS out For: Approval  
 to RAN1  
 Source: RAN4*

(Replaces R4-2012118)

**Decision:** The document was **approved**.

#### 7.5.1 General [LTE\_NR\_DC\_CA\_enh-Core]

#### 7.5.2 RF requirements maintenance [LTE\_NR\_DC\_CA\_enh-Core]

**R4-2011544 Email discussion summary for [96e][111] LTE\_NR\_DC\_CA\_enh\_RF**

*Type: other For: discussion  
 Source: Moderator (Ericsson)*

**Discussion:**

The contribution summarized email discussion thread [96e][111] LTE\_NR\_DC\_CA\_enh\_RF. The subject for discussion was General, RF requirements. The email thread was moderated by Christian Bergljung (Ericsson) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **revised to R4-2011851**.

**R4-2011851 Email discussion summary for [96e][111] LTE\_NR\_DC\_CA\_enh\_RF**

*Type: other For: discussion  
 Source: Moderator (Ericsson)*

(Replaces R4-2011544)

**Discussion:**

The contribution summarized email discussion thread [96e][111] LTE\_NR\_DC\_CA\_enh\_RF. The subject for discussion was General, RF requirements. The email thread was moderated by Christian Bergljung (Ericsson) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **noted**.

**R4-2011934 WF on only single switched UL**

*Type: other For: discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][111] LTE\_NR\_DC\_CA\_enh\_RF. The discussion was recorded in R4-2011851.

**Decision:** The document was **approved**.

**R4-2011719 Clarification on the network and UE behaviors between**

*Type: other For: discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][111] LTE\_NR\_DC\_CA\_enh\_RF. The discussion was recorded in R4-2011851.

**Decision:** The document was **noted**.

**R4-2011720 CR for 38.101-3 Switching time mask for inter-band EN-DC UEs only supporting single switched UL**

*Type: CR For: Agreement  
 38.101-3 v16.4.0 CR-0352 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

To specify the RF requirements switching time mask for inter-band ENDC combinations which the only single switched UL is supported for.

A clarification is needed when LTE and NR transmissions collide for EN-DC band combinations which only single switched UL is supported for.

**Discussion:**

The contribution was discussed during email thread [96e][111] LTE\_NR\_DC\_CA\_enh\_RF. The discussion was recorded in R4-2011851.

**Decision:** The document was **revised to R4-2011933**.

**R4-2011933 CR for 38.101-3 Switching time mask for inter-band EN-DC UEs only supporting single switched UL**

*Type: CR For: Agreement  
 38.101-3 v16.4.0 CR-0352 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2011720)

**Abstract:**

To specify the RF requirements switching time mask for inter-band ENDC combinations which the only single switched UL is supported for.

A clarification is needed when LTE and NR transmissions collide for EN-DC band combinations which only single switched UL is supported for.

**Discussion:**

The contribution was discussed during email thread [96e][111] LTE\_NR\_DC\_CA\_enh\_RF. The discussion was recorded in R4-2011851.

**Decision:** The document was **agreed**.

**R4-2011721 Reply LS on power control for NR-DC**

*Type: LS out For: Approval  
 to RAN2, cc RAN1  
 Source: RAN4*

**Discussion:**

The contribution was discussed during email thread [96e][111] LTE\_NR\_DC\_CA\_enh\_RF. The discussion was recorded in R4-2011851.

**Decision:** The document was **approved**.

**R4-2010534 Discussion and draft Reply LS on power control for NR-DC**

*Type: LS out For: Approval  
 to RAN2  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

The contribution was discussed during email thread [96e][111] LTE\_NR\_DC\_CA\_enh\_RF. The discussion was recorded in R4-2011851.

**Decision:** The document was **noted**.

**R4-2010535 Introduction of p-Max to FR2**

*Type: CR For: Agreement  
 38.101-2 v16.4.0 CR-0236 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

It is not possible to limit the UE output power in network deployment, when interfrence coordination is needed among operators for unsynchronized network operation.

**Discussion:**

The contribution was discussed during email thread [96e][111] LTE\_NR\_DC\_CA\_enh\_RF. The discussion was recorded in R4-2011851.

**Decision:** The document was **not pursued**.

**R4-2010850 On p-UE-FR2 for Rel-16**

*Type: discussion For: Approval  
 Source: vivo*

**Discussion:**

The contribution was discussed during email thread [96e][111] LTE\_NR\_DC\_CA\_enh\_RF. The discussion was recorded in R4-2011851.

**Decision:** The document was **noted**.

**R4-2010932 Further discussion on RF requirements about DC\_12\_n71**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][111] LTE\_NR\_DC\_CA\_enh\_RF. The discussion was recorded in R4-2011851.

**Decision:** The document was **noted**.

**R4-2011524 Mandatory Single Uplink Operation for EN-DC**

*Type: discussion For: Approval  
 38.101-3 v..  
 Source: Skyworks Solutions Inc.*

**Discussion:**

The contribution was discussed during email thread [96e][111] LTE\_NR\_DC\_CA\_enh\_RF. The discussion was recorded in R4-2011851.

**Decision:** The document was **noted**.

#### 7.5.3 RRM core requirements (38.133) [LTE\_NR\_DC\_CA\_enh-Core]

##### 7.5.3.1 Early Measurement reporting [LTE\_NR\_DC\_CA\_enh-Core]

**R4-2011348 LS response on measurement capability for EMR**

*Type: LS out For: Approval  
 to RAN2  
 Source: Ericsson*

**Abstract:**

LS response on measurement capability for EMR

**Discussion:**

The contribution was discussed during email thread [96e][212] LTE\_NR\_DC\_CA\_RRM\_1. The discussion was recorded in R4-2012212.

**Decision:** The document was **revised to R4-2012112**.

**R4-2012112 LS response on measurement capability for EMR**

*Type: LS out For: Approval  
 to RAN2  
 Source: RAN4*

(Replaces R4-2011348)

**Discussion:**

The contribution was discussed during email thread [96e][212] LTE\_NR\_DC\_CA\_RRM\_1. The discussion was recorded in R4-2012212.

**Decision:** The document was **approved**.

**R4-2012237 LS on EMR measurement requirements in NR**

*Type: LS out For: Approval  
 to RAN2  
 Source: Ericsson*

**Discussion:**

The contribution was discussed during email thread [96e][212] LTE\_NR\_DC\_CA\_RRM\_1. The discussion was recorded in R4-2012212.

**Decision:** The document was **revised to R4-2012297**.

**R4-2012297 LS on EMR measurement requirements in NR**

*Type: LS out For: Approval  
 to RAN2  
 Source: RAN4*

(Replaces R4-2012237)

**Decision:** The document was **approved**.

###### 7.5.3.1.1 NR measurements for EMR [LTE\_NR\_DC\_CA\_enh-Core]

**R4-2010117 Early measurement reporting in MR-DC**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: Qualcomm Incorporated*

**Discussion:**

The contribution was discussed during email thread [96e][212] LTE\_NR\_DC\_CA\_RRM\_1. The discussion was recorded in R4-2012212.

**Decision:** The document was **noted**.

**R4-2010567 MR-DCCA and EMR RRM requirements for NR (38.133)**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

The contribution was discussed during email thread [96e][212] LTE\_NR\_DC\_CA\_RRM\_1. The discussion was recorded in R4-2012212.

**Decision:** The document was **noted**.

**R4-2010568 CR on UE requirement for MR-DC early measurement reporting in 38.133**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1009 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

UE requirement for MR-DC early measurement reporting in TS 38.133 is not finalized. This CR brings changes for finalization of the feature.

**Discussion:**

The contribution was discussed during email thread [96e][212] LTE\_NR\_DC\_CA\_RRM\_1. The discussion was recorded in R4-2012212.

**Decision:** The document was **revised to R4-2012113**.

**R4-2012113 CR on UE requirement for MR-DC early measurement reporting in 38.133**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1009 rev 1 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2010568)

**Abstract:**

UE requirement for MR-DC early measurement reporting in TS 38.133 is not finalized. This CR brings changes for finalization of the feature.

**Discussion:**

The contribution was discussed during email thread [96e][212] LTE\_NR\_DC\_CA\_RRM\_1. The discussion was recorded in R4-2012212.

**Decision:** The document was **revised to R4-2012247**.

**R4-2012247 CR on UE requirement for MR-DC early measurement reporting in 38.133**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1009 rev 2 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2012113)

**Abstract:**

UE requirement for MR-DC early measurement reporting in TS 38.133 is not finalized. This CR brings changes for finalization of the feature.

**Discussion:**

The contribution was discussed during email thread [96e][212] LTE\_NR\_DC\_CA\_RRM\_1. The discussion was recorded in R4-2012212.

**Decision:** The document was **postponed**.

**R4-2012303 CR on UE requirement for MR-DC early measurement reporting in 38.133**

*Type: other For: Agreement  
 Source: Nokia, Nokia Shanghai Bell*

**Decision:** The document was **withdrawn**.

**R4-2011145 Discussion on early measurement in NR**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Discussion:**

The contribution was discussed during email thread [96e][212] LTE\_NR\_DC\_CA\_RRM\_1. The discussion was recorded in R4-2012212.

**Decision:** The document was **noted**.

**R4-2011146 CR on EMR in 38.133**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1079 Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

The EMR requirements for UE in NR idle state has been introduced in RAN4#95-e with R4-2009264. However the requirements are not complete due to remaining open issues.

**Discussion:**

The contribution was discussed during email thread [96e][212] LTE\_NR\_DC\_CA\_RRM\_1. The discussion was recorded in R4-2012212.

**Decision:** The document was **postponed**.

**R4-2011317 Remaining open issues on NR EMR**

*Type: discussion For: Discussion  
 Source: ZTE*

**Discussion:**

The contribution was discussed during email thread [96e][212] LTE\_NR\_DC\_CA\_RRM\_1. The discussion was recorded in R4-2012212.

**Decision:** The document was **noted**.

**R4-2009893 CR on TS38.133 for measurement capability of IDLE mode DC/CA measurement (Section 4.2.2.1, 4.4.2)**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0949 Cat: F (Rel-16)  
  
 Source: MediaTek inc.*

**Abstract:**

1. In WF agreed in RAN4 #95e, the agreed measurement capability is total number of LTE inter-RAT EMR carriers ≤7, not total number of FDD E-UTRA inter-RAT carriers ≤7 and total number of TDD E-UTRA inter-RAT carriers ≤7.

2. The measurement capabilities for UE supporting inter-freq. or inter-RAT EMR measurement in NR IDLE/INACTIVE mode are specified in different sections 4.2.2.1 and 4.3.2.2. A clarification must be added to show that measurement capabilities in section 4.2.2.1 and in section 4.3.2.2 should be simultaneously followed.

3. RAN2’s capability names have been updated to idleInactiveEUTRA-MeasReport-r16 and idleInactiveNR-MeasReport-r16.

4. For UE supporting idleInactiveEUTRA-MeasReport-r16, the requirement should be specified in the section “measurements of inter-RAT DC candidate cells,” not in the section “measurements of inter-frequency CA/DC candidate cells”

**Discussion:**

The contribution was discussed during email thread [96e][212] LTE\_NR\_DC\_CA\_RRM\_1. The discussion was recorded in R4-2012212.

**Decision:** The document was **postponed**.

**R4-2009894 Discussion on LTE CRS based and NR SSB based measurement in NR IDLE/INACTIVE mode**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

The contribution was discussed during email thread [96e][212] LTE\_NR\_DC\_CA\_RRM\_1. The discussion was recorded in R4-2012212.

**Decision:** The document was **noted**.

###### 7.5.3.1.2 LTE NR Inter-RAT EMR [LTE\_NR\_DC\_CA\_enh-Core]

**R4-2010569 NR inter-RAT EMR requirements for 36.133**

*Type: discussion For: Discussion  
 36.133 v..  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

The contribution was discussed during email thread [96e][212] LTE\_NR\_DC\_CA\_RRM\_1. The discussion was recorded in R4-2012212.

**Decision:** The document was **noted**.

**R4-2010570 CR on UE requirement for MR-DC early measurement reporting in 36.133**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6930 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

UE requirement for MR-DC early measurement reporting into TS 36.133 is not finalized. This CR brings changes for finalization of the feture.

**Discussion:**

The contribution was discussed during email thread [96e][212] LTE\_NR\_DC\_CA\_RRM\_1. The discussion was recorded in R4-2012212.

**Decision:** The document was **postponed**.

**R4-2011147 Discussion on LTE**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Discussion:**

The contribution was discussed during email thread [96e][212] LTE\_NR\_DC\_CA\_RRM\_1. The discussion was recorded in R4-2012212.

**Decision:** The document was **noted**.

**R4-2011148 CR to introduce EMR in 36.133**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6944 Cat: B (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

One objective of the WI is to introduce NR inter-RAT EMR for LTE.

**Discussion:**

The contribution was discussed during email thread [96e][212] LTE\_NR\_DC\_CA\_RRM\_1. The discussion was recorded in R4-2012212.

**Decision:** The document was **revised to R4-2012114**.

**R4-2012114 CR to introduce EMR in 36.133**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6944 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei, Hisilicon*

(Replaces R4-2011148)

**Abstract:**

One objective of the WI is to introduce NR inter-RAT EMR for LTE.

**Discussion:**

The contribution was discussed during email thread [96e][212] LTE\_NR\_DC\_CA\_RRM\_1. The discussion was recorded in R4-2012212.

**Decision:** The document was **revised to R4-2012248**.

**R4-2012248 CR to introduce EMR in 36.133**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6944 rev 2 Cat: B (Rel-16)  
  
 Source: Huawei, Hisilicon*

(Replaces R4-2012114)

**Abstract:**

One objective of the WI is to introduce NR inter-RAT EMR for LTE.

**Discussion:**

The contribution was discussed during email thread [96e][212] LTE\_NR\_DC\_CA\_RRM\_1. The discussion was recorded in R4-2012212.

**Decision:** The document was **agreed**.

**R4-2011318 Remaining open issues on NR inter-RAT EMR measurements**

*Type: discussion For: Discussion  
 Source: ZTE*

**Discussion:**

The contribution was discussed during email thread [96e][212] LTE\_NR\_DC\_CA\_RRM\_1. The discussion was recorded in R4-2012212.

**Decision:** The document was **noted**.

##### 7.5.3.2 Efficient and low latency serving cell configuration, activation and setup [LTE\_NR\_DC\_CA\_enh-Core]

###### 7.5.3.2.1 Direct SCell activation [LTE\_NR\_DC\_CA\_enh-Core]

**R4-2010664 On Direct SCell Activation of Multiple Downlink SCells**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution we are providing proposals on delay requirements and interruption window definitions for the case where multiple downlink SCells are directly activated upon addition, handover, or resume.

**Discussion:**

The contribution was discussed during email thread [96e][213] LTE\_NR\_DC\_CA\_RRM\_2. The discussion was recorded in R4-2012213.

**Decision:** The document was **noted**.

**R4-2010665 CR 38.133 (8.3.9-8.3.11) Direct SCell activation delay for multiple downlink SCells**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1016 Cat: B (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Delay requirements for Direct SCell activation of multiple downlink SCells are currently missing, and are covered by the exception sheet RP-200608.

**Discussion:**

The contribution was discussed during email thread [96e][213] LTE\_NR\_DC\_CA\_RRM\_2. The discussion was recorded in R4-2012213.

**Decision:** The document was **revised to R4-2012115**.

**R4-2012115 CR 38.133 (8.3.9-8.3.11) Direct SCell activation delay for multiple downlink SCells**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1016 rev 1 Cat: B (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2010665)

**Abstract:**

Delay requirements for Direct SCell activation of multiple downlink SCells are currently missing, and are covered by the exception sheet RP-200608.

**Discussion:**

The contribution was discussed during email thread [96e][213] LTE\_NR\_DC\_CA\_RRM\_2. The discussion was recorded in R4-2012213.

**Decision:** The document was **agreed**.

**R4-2011149 Discussion on remaining issues in direct SCell activation**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Discussion:**

The contribution was discussed during email thread [96e][213] LTE\_NR\_DC\_CA\_RRM\_2. The discussion was recorded in R4-2012213.

**Decision:** The document was **noted**.

**R4-2011150 CR on direct SCell activation**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1080 Cat: B (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

It was agreed in WI exception to introduce requirements for direct activation of multiple SCells.

**Discussion:**

The contribution was discussed during email thread [96e][213] LTE\_NR\_DC\_CA\_RRM\_2. The discussion was recorded in R4-2012213.

**Decision:** The document was **revised to R4-2012116**.

**R4-2012116 CR on direct SCell activation**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1080 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei, Hisilicon*

(Replaces R4-2011150)

**Abstract:**

It was agreed in WI exception to introduce requirements for direct activation of multiple SCells.

**Discussion:**

The contribution was discussed during email thread [96e][213] LTE\_NR\_DC\_CA\_RRM\_2. The discussion was recorded in R4-2012213.

**Decision:** The document was **agreed**.

**R4-2011151 CR on interruption for direct activation of multiple SCells 36133**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6945 Cat: B (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

It was agreed in WI exception to introduce requirements for direct activation of multiple SCells.

**Discussion:**

The contribution was discussed during email thread [96e][213] LTE\_NR\_DC\_CA\_RRM\_2. The discussion was recorded in R4-2012213.

**Decision:** The document was **agreed**.

###### 7.5.3.2.2 SCell dormancy [LTE\_NR\_DC\_CA\_enh-Core]

**R4-2010118 Scell BWP dormancy**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: Qualcomm Incorporated*

**Discussion:**

The contribution was discussed during email thread [96e][213] LTE\_NR\_DC\_CA\_RRM\_2. The discussion was recorded in R4-2012213.

**Decision:** The document was **noted**.

**R4-2010365 On SCell dormancy RRM requirements**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: vivo*

**Discussion:**

The contribution was discussed during email thread [96e][213] LTE\_NR\_DC\_CA\_RRM\_2. The discussion was recorded in R4-2012213.

**Decision:** The document was **noted**.

**R4-2010669 On SCell Dormancy Switching Delay**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this contribution we are discussing open issues for SCell dormancy, including those collected in the WF document at RAN4#95e and those listed in the WI exception sheet at RAN#88e. Additionally, we are discussing the LS received from RAN1 on SCell dorma

**Discussion:**

The contribution was discussed during email thread [96e][213] LTE\_NR\_DC\_CA\_RRM\_2. The discussion was recorded in R4-2012213.

**Decision:** The document was **noted**.

**R4-2010670 CR 38.133 SCell dormancy switching of multiple SCells**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1017 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

As captured in the WI exception sheet, RP-200608, delay and interruption requirements for dormancy switching of multiple SCells shall be introduced in Rel-16 scope. Such requirements are currently missing in the specification.

**Discussion:**

The contribution was discussed during email thread [96e][213] LTE\_NR\_DC\_CA\_RRM\_2. The discussion was recorded in R4-2012213.

**Decision:** The document was **revised to R4-2012119**.

**R4-2012119 CR 38.133 SCell dormancy switching of multiple SCells**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1017 rev 1 Cat: F (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2010670)

**Abstract:**

As captured in the WI exception sheet, RP-200608, delay and interruption requirements for dormancy switching of multiple SCells shall be introduced in Rel-16 scope. Such requirements are currently missing in the specification.

**Discussion:**

The contribution was discussed during email thread [96e][213] LTE\_NR\_DC\_CA\_RRM\_2. The discussion was recorded in R4-2012213.

**Decision:** The document was **revised to R4-2012275**.

**R4-2012275 CR 38.133 SCell dormancy switching of multiple SCells**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1017 rev 2 Cat: F (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2012119)

**Abstract:**

As captured in the WI exception sheet, RP-200608, delay and interruption requirements for dormancy switching of multiple SCells shall be introduced in Rel-16 scope. Such requirements are currently missing in the specification.

**Discussion:**

The contribution was discussed during email thread [96e][213] LTE\_NR\_DC\_CA\_RRM\_2. The discussion was recorded in R4-2012213.

**Decision:** The document was **agreed**.

**R4-2010703 CR on delay requirements for SCell dormancy**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1018 Cat: B (Rel-16)  
  
 Source: OPPO*

**Abstract:**

Clarify UE behavious after switching to a new dormancy BWP .

**Discussion:**

The contribution was discussed during email thread [96e][213] LTE\_NR\_DC\_CA\_RRM\_2. The discussion was recorded in R4-2012213.

**Decision:** The document was **agreed**.

**R4-2010754 Discussion on RRM requirements for SCell dormancy**

*Type: discussion For: Approval  
 Source: NEC*

**Abstract:**

Provided our views on UE SCell dormancy switch delay requirements, UE requirements for a SCell dormancy and interruption requirements

**Discussion:**

The contribution was discussed during email thread [96e][213] LTE\_NR\_DC\_CA\_RRM\_2. The discussion was recorded in R4-2012213.

**Decision:** The document was **noted**.

**R4-2010755 Reply LS on SCell Dormancy**

*Type: LS out For: Approval  
 to RAN1  
 Source: NEC*

**Abstract:**

We provided RAN4 RRM discussion or agreements for SCell dormancy triggered inside active time and outside active time for questions requested by RAN1 in LS R1-2005081

**Discussion:**

The contribution was discussed during email thread [96e][213] LTE\_NR\_DC\_CA\_RRM\_2. The discussion was recorded in R4-2012213.

**Decision:** The document was **noted**.

**R4-2011152 Discussion on SCell dormancy**

*Type: LS out For: Approval  
 to RAN1  
 Source: Huawei, Hisilicon*

**Discussion:**

The contribution was discussed during email thread [96e][213] LTE\_NR\_DC\_CA\_RRM\_2. The discussion was recorded in R4-2012213.

**Decision:** The document was **noted**.

**R4-2011153 CR on requirements for SCell dormancy**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1081 Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

The delay and interruption requirements for SCell dormancy are incomplete.

**Discussion:**

The contribution was discussed during email thread [96e][213] LTE\_NR\_DC\_CA\_RRM\_2. The discussion was recorded in R4-2012213.

**Decision:** The document was **revised to R4-2012120**.

**R4-2012120 CR on requirements for SCell dormancy**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1081 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

(Replaces R4-2011153)

**Abstract:**

The delay and interruption requirements for SCell dormancy are incomplete.

**Discussion:**

The contribution was discussed during email thread [96e][213] LTE\_NR\_DC\_CA\_RRM\_2. The discussion was recorded in R4-2012213.

**Decision:** The document was **revised to R4-2012276**.

**R4-2012276 CR on requirements for SCell dormancy**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1081 rev 2 Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

(Replaces R4-2012120)

**Abstract:**

The delay and interruption requirements for SCell dormancy are incomplete.

**Discussion:**

The contribution was discussed during email thread [96e][213] LTE\_NR\_DC\_CA\_RRM\_2. The discussion was recorded in R4-2012213.

**Decision:** The document was **agreed**.

**R4-2011154 CR on interruption requirements for SCell dormancy 36133**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6946 Cat: B (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

SCell dormancy related operation may cause interruption to LTE serving cells in EN-DC and NE-DC, including dormancy switch and RRM/CSI measurement during dormancy.

**Discussion:**

The contribution was discussed during email thread [96e][213] LTE\_NR\_DC\_CA\_RRM\_2. The discussion was recorded in R4-2012213.

**Decision:** The document was **revised to R4-2012121**.

**R4-2012121 CR on interruption requirements for SCell dormancy 36133**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6946 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei, Hisilicon*

(Replaces R4-2011154)

**Abstract:**

SCell dormancy related operation may cause interruption to LTE serving cells in EN-DC and NE-DC, including dormancy switch and RRM/CSI measurement during dormancy.

**Discussion:**

The contribution was discussed during email thread [96e][213] LTE\_NR\_DC\_CA\_RRM\_2. The discussion was recorded in R4-2012213.

**Decision:** The document was **revised to R4-2012277**.

**R4-2012277 CR on interruption requirements for SCell dormancy 36133**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6946 rev 2 Cat: B (Rel-16)  
  
 Source: Huawei, Hisilicon*

(Replaces R4-2012121)

**Abstract:**

SCell dormancy related operation may cause interruption to LTE serving cells in EN-DC and NE-DC, including dormancy switch and RRM/CSI measurement during dormancy.

**Discussion:**

The contribution was discussed during email thread [96e][213] LTE\_NR\_DC\_CA\_RRM\_2. The discussion was recorded in R4-2012213.

**Decision:** The document was **agreed**.

**R4-2011319 Remaining open issues on NR SCell dormancy**

*Type: discussion For: Discussion  
 Source: ZTE*

**Discussion:**

The contribution was discussed during email thread [96e][213] LTE\_NR\_DC\_CA\_RRM\_2. The discussion was recorded in R4-2012213.

**Decision:** The document was **noted**.

**R4-2009897 Discussion on dormancy Scell**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

The contribution was discussed during email thread [96e][213] LTE\_NR\_DC\_CA\_RRM\_2. The discussion was recorded in R4-2012213.

**Decision:** The document was **noted**.

##### 7.5.3.3 Other requirements [LTE\_NR\_DC\_CA\_enh-Core]

### 7.6 UE power saving in NR [NR\_UE\_pow\_sav]

**R4-2012045 Email discussion summary for [96e][214] NR\_UE\_pow\_sav\_RRM**

*Type: other For: discussion  
 Source: Moderator (CATT)*

**Discussion:**

The contribution summarized email discussion thread [96e][214] NR\_UE\_pow\_sav\_RRM. The topic areas for discussion were RRM requirements (Core maintenance and Perf). The email thread was moderated by Yuexia Song (CATT). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2012214**.

**R4-2012214 Email discussion summary for [96e][214] NR\_UE\_pow\_sav\_RRM**

*Type: other For: discussion  
 Source: Moderator (CATT)*

(Replaces R4-2012045)

**Discussion:**

The contribution summarized email discussion thread [96e][214] NR\_UE\_pow\_sav\_RRM. The topic areas for discussion were RRM requirements (Core maintenance and Perf). The email thread was moderated by Yuexia Song (CATT). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **noted**.

#### 7.6.1 General [NR\_UE\_pow\_sav]

**R4-2010336 Discussion on RLM/BFD relaxation in R17 Power saving**

*Type: discussion For: Information  
 Source: vivo*

**Decision:** The document was **noted**.

#### 7.6.2 RRM core requirements maintenance (38.133) [NR\_UE\_pow\_sav-Core]

**R4-2012122 Reply LS on RRM relaxation in power saving**

*Type: LS out For: Approval  
 to RAN2  
 Source: RAN4*

**Discussion:**

The contribution was discussed during email thread [96e][214] NR\_UE\_pow\_sav\_RRM. The discussion was recorded in R4-2012214.

**Decision:** The document was **approved**.

**R4-2010359 On the higher priority inter frequency layer relaxation indicator for the UE power savings**

*Type: discussion For: Approval  
 38.133 v..  
 Source: vivo*

**Discussion:**

The contribution was discussed during email thread [96e][214] NR\_UE\_pow\_sav\_RRM. The discussion was recorded in R4-2012214.

**Decision:** The document was **noted**.

**R4-2010360 CR for IDLE state measurement relaxation for UE power saving**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0997 Cat: F (Rel-16)  
  
 Source: vivo*

**Abstract:**

The conditions on when UE power saving is used is not right.

The performance requirements when using highPriorityMeasRelax are not completed.

**Discussion:**

The contribution was discussed during email thread [96e][214] NR\_UE\_pow\_sav\_RRM. The discussion was recorded in R4-2012214.

**Decision:** The document was **postponed**.

**R4-2010704 Discussion on RRM requirements maintenance of measurement relaxation for UE power saving**

*Type: discussion For: Approval  
 Source: OPPO*

**Discussion:**

The contribution was discussed during email thread [96e][214] NR\_UE\_pow\_sav\_RRM. The discussion was recorded in R4-2012214.

**Decision:** The document was **noted**.

**R4-2010705 CR on RRM Measurement relaxation requirements for UE power saving (TS 38.133)**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1019 Cat: B (Rel-16)  
  
 Source: OPPO*

**Abstract:**

The agreements of RRM measurements relaxation for power saving were not correctly captured.

**Discussion:**

The contribution was discussed during email thread [96e][214] NR\_UE\_pow\_sav\_RRM. The discussion was recorded in R4-2012214.

**Decision:** The document was **postponed**.

**R4-2011111 Discussion on measurement relaxation in power saving**

*Type: LS out For: Approval  
 to RAN2  
 Source: Huawei, Hisilicon*

**Discussion:**

The contribution was discussed during email thread [96e][214] NR\_UE\_pow\_sav\_RRM. The discussion was recorded in R4-2012214.

**Decision:** The document was **noted**.

**R4-2011112 CR on measurement relaxation for power saving**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1063 Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

The current relaxed measurement requirements don’t well capture the agreements.

**Discussion:**

The contribution was discussed during email thread [96e][214] NR\_UE\_pow\_sav\_RRM. The discussion was recorded in R4-2012214.

**Decision:** The document was **postponed**.

**R4-2011211 Correction CR to Rel-16 UE power saving requirements**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1088 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Incomplete references, and conditions when both relaxation criteria (low mobility and not-at-cell edge) are configured is missing

**Discussion:**

The contribution was discussed during email thread [96e][214] NR\_UE\_pow\_sav\_RRM. The discussion was recorded in R4-2012214.

**Decision:** The document was **revised to R4-2012123**.

**R4-2012123 Correction CR to Rel-16 UE power saving requirements**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1088 rev 1 Cat: F (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2011211)

**Abstract:**

Incomplete references, and conditions when both relaxation criteria (low mobility and not-at-cell edge) are configured is missing

**Discussion:**

The contribution was discussed during email thread [96e][214] NR\_UE\_pow\_sav\_RRM. The discussion was recorded in R4-2012214.

**Decision:** The document was **revised to R4-2012268**.

**R4-2012268 Correction CR to Rel-16 UE power saving requirements**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1088 rev 2 Cat: F (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2012123)

**Abstract:**

Incomplete references, and conditions when both relaxation criteria (low mobility and not-at-cell edge) are configured is missing

**Discussion:**

The contribution was discussed during email thread [96e][214] NR\_UE\_pow\_sav\_RRM. The discussion was recorded in R4-2012214.

**Decision:** The document was **agreed**.

**R4-2009764 CR on measurement relaxation requirements for UEs under power saving mode**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0929 Cat: F (Rel-16)  
  
 Source: Xiaomi*

**Abstract:**

The CR (R4-2009133) agreed in RAN4#95e meeting was not fully captured the agreement in agreed WF (R4-2009265). In addition, some further revision is needed based on the RAN2’s latest agreement.

**Discussion:**

The contribution was discussed during email thread [96e][214] NR\_UE\_pow\_sav\_RRM. The discussion was recorded in R4-2012214.

**Decision:** The document was **postponed**.

**R4-2009808 Discussion on RRM requirements for power saving**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: CATT*

**Discussion:**

The contribution was discussed during email thread [96e][214] NR\_UE\_pow\_sav\_RRM. The discussion was recorded in R4-2012214.

**Decision:** The document was **noted**.

**R4-2009809 CR for RRM requirements for power saving**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0936 Cat: F (Rel-16)  
  
 Source: CATT*

**Abstract:**

1. The intra-frequency measuremetn condition “Srxlev > SnonIntraSearchP and Squal > SnonIntraSearchQ” is not correct.

2. The conditions “Srxlev > SnonIntraSearchP or Squal > SnonIntraSearchQ” in the beginning of sub-clause 4.2.2.10.1 and 4.2.2.11.1 need to be deleted.

3. The parameter combineRelaxedMeasCondition need to be reflected in RRM requirement for power saving.

4. The RRM requirements relaxation for higher priority frequency layer are missing for inter-RAT measurements.

**Discussion:**

The contribution was discussed during email thread [96e][214] NR\_UE\_pow\_sav\_RRM. The discussion was recorded in R4-2012214.

**Decision:** The document was **postponed**.

#### 7.6.3 RRM perf. requirements (38.133) [NR\_UE\_pow\_sav-Perf]

**R4-2012124 WF on RRM test cases for NR Power Saving**

*Type: other For: discussion  
 Source: CATT*

**Discussion:**

The contribution was discussed during email thread [96e][214] NR\_UE\_pow\_sav\_RRM. The discussion was recorded in R4-2012214.

**Decision:** The document was **approved**.

##### 7.6.3.1 General [NR\_UE\_pow\_sav-Perf]

**R4-2011113 Test case list for measurement relaxation in power saving**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Discussion:**

The contribution was discussed during email thread [96e][214] NR\_UE\_pow\_sav\_RRM. The discussion was recorded in R4-2012214.

**Decision:** The document was **noted**.

**R4-2009765 Discussion on test cases for power saving RRM**

*Type: discussion For: Approval  
 Source: Xiaomi*

**Discussion:**

The contribution was discussed during email thread [96e][214] NR\_UE\_pow\_sav\_RRM. The discussion was recorded in R4-2012214.

**Decision:** The document was **noted**.

**R4-2009985 Features for performance tests in power saving WI**

*Type: discussion For: (not specified)  
 Source: Qualcomm*

**Discussion:**

The contribution was discussed during email thread [96e][214] NR\_UE\_pow\_sav\_RRM. The discussion was recorded in R4-2012214.

**Decision:** The document was **noted**.

##### 7.6.3.2 Test cases [NR\_UE\_pow\_sav-Perf]

**R4-2010337 Discussion on RRM test cases for R16 UE power saving**

*Type: discussion For: Discussion  
 Source: vivo*

**Discussion:**

The contribution was discussed during email thread [96e][214] NR\_UE\_pow\_sav\_RRM. The discussion was recorded in R4-2012214.

**Decision:** The document was **noted**.

**R4-2011210 Discussions on test cases for Rel-16 UE power saving**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

The core part of the release 16 work item on UE power saving was finalized at last meeting. In this contribution, we discuss the corresponding test cases.

**Discussion:**

The contribution was discussed during email thread [96e][214] NR\_UE\_pow\_sav\_RRM. The discussion was recorded in R4-2012214.

**Decision:** The document was **noted**.

**R4-2009810 Discussion on RRM Test cases for power saving**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: CATT*

**Discussion:**

The contribution was discussed during email thread [96e][214] NR\_UE\_pow\_sav\_RRM. The discussion was recorded in R4-2012214.

**Decision:** The document was **noted**.

**R4-2009898 Discussion on RRM measurement relaxation for RRC\_IDLE/INACTIVE**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

The contribution was discussed during email thread [96e][214] NR\_UE\_pow\_sav\_RRM. The discussion was recorded in R4-2012214.

**Decision:** The document was **noted**.

#### 7.6.4 Demodulation and CSI requirements (38.101-4) [NR\_UE\_pow\_sav-Perf]

**R4-2012550 Email discussion summary for [96e][317] NR\_UE\_pow\_sav\_Demod**

*Type: other For: discussion  
 Source: Moderator (CMCC)*

**Discussion:**

The contribution summarized email discussion thread [96e][317] NR\_UE\_pow\_sav\_Demod. The topic areas for discussion were Rel-16 UE power saving: Demod and CSI. The email thread was moderated by Xiaoran Zhang (China Mobile Com. Corporation). All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2012733**.

**R4-2012733 Email discussion summary for [96e][317] NR\_UE\_pow\_sav\_Demod**

*Type: other For: discussion  
 Source: Moderator (CMCC)*

(Replaces R4-2012550)

**Discussion:**

The contribution summarized email discussion thread [96e][317] NR\_UE\_pow\_sav\_Demod. The topic areas for discussion were Rel-16 UE power saving: Demod and CSI. The email thread was moderated by Xiaoran Zhang (China Mobile Com. Corporation). All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **noted**.

**GTW session on Aug 25th**

**Issue 1-0: Whether to define a joint test case for PDCCH-WUS**

1. The testing time considering Pm-dsg (1% or 1.099% or 0.1% Pm-dsg) and error samples (100 or 1000)
2. Whether different UE behavior for detection of WUS-PDCCH need to be obviously distinguished during the test, and how to test.

Recommended WF:

Continue to discuss in 2nd round:

1. Whether error samples can be reduced to 100 in order to support 0.1% Pm-dsg?
2. Whether different UE behavior for detection of WUS-PDCCH need to be obviously distinguished during the test, and how to test.

Agreement:

RAN4 agree to introduce demodulation test cases for PDCCH-WUS in Rel-16.

The purpose of such test case was to verify UE supporting PDCCH-WUS feature/function designed in RAN1/RAN2.

Further discuss among option 1/option2 needed considering test time issue.

RAN4 also aware that with option 1/option 2, UE behaviour following PDCCH-WUS indication “0” not verified.

PDCCH-WUS indication bit 1 -> PDCCH in DRX on -> ACK/NACK/DTX

PDCCH-WUS indication bit 0-> PDCCH in DRX on -> ACK/NACK/DTX

Whether need to verify both PDCCH-WUS with indication “1” and “0” or “1” only？

Question 1: Test purpose?

Huawei: We verify PDCCH-WUS or jointly?

Intel: we would like to check whether below options meet test purpose. We would like to further discuss needed.

Huawei: op1 is jointly test cases. Which beyond test purpose.

ViVo: Option 1/option 2 only focused on WUS indication 1. Not covered WUS indication 0 case.

MTK: option 2 is similar as option with jointly test cases, option 2 with power boosting.

CATT: similar as view MTK. Option 1 following up PDCCH performance not degraded.

QC: similar comment as CATT, for demodulation performance we need to ensure PDCCH performance not degraded following PDCCH WUS indication.

Intel: For option 1/option 2 How we can ensure UE monitor PDCCH-WUS, UE can skip PDCCH-WUS and wake up in PDCCH on period and pass the test cases.

QC: we want to ensure operation mode with realistic reason to ensure performance. We don’t such cheating UE really exist.

Huawei: During test case, both PDCCH-WUS and normal PDCCH need to be configured for test procedure? Key point do we want to only verify PDCCH-WUS? Power boosting approach already applied in past test cases.

MTK: For both methods, PDCCH-WUS and PDCCH need to be decoding?

CMCC: In Our view, we are OK with op1 or op2. We want to ensure test time.

CATT: In our view, PDCCH WUS designed to support power saving mode. We just verify UE which declare this feature.

**Issue 1-2: Test metric**

* + Option 1 (Ericsson, CATT, MTK, CMCC, Qualcomm):

BLERPDCCH-JOINT = BLERPDCCH-WUS + (1 – BLERPDCCH-WUS) \* BLERPDCCH

* + - BLERPDCCH: BLER of PDCCH for the case that only PDCCH transmission
    - BLERPDCCH-WUS: BLER of PDCCH-WUS for the case that only PDCCH-WUS transmission
    - BLERPDCCH-JOINT: BLER of PDCCH for the case that joint transmission of PDCCH-WUS and PDCCH (UE does not wake up when missing PDCCH-WUS in DRX-OFF period)
  + Option 2 (Huawei, R4-2010995):
    - Only focus on DCI format 2\_6 BLER instead of the joint BLER, i.e. set enough high power for the normal PDCCH to ensure 100% successful decoding and set the test metric as 0.1% BLER. By this way the performance of DCI format 2\_6 can be verified, but the normal PDCCH has no impact on BLER.
    - From the simulation results we can see that the impact of normal PDCCH to the test can be negligible, i.e. one order of magnitude lower comparing to the target 10^-3 BLER for DCI format 2\_6, if normal PDCCH power boosting factor is greater than 5 dB.
  + Option 3 (vivo):
    - Only focus on DCI format 2\_6 BLER instead. The PUCCH on-power is used as test metric. If PDCCH-WUS indicates wakeup, UE should transmit CSI on PUCCH normally. If PDCCH-WUS indicates not wakeup or is not sent, UE does not start on-duration time and therefore UE should not transmit CSI on PUCCH. TE generates the “1” indication of PDCCH-WUS once per 2 DRX cycles and “0” indication once per 2 DRX cycle. Then TE checks whether UE uplink power is under expectation. By this way the performance of DCI format 2\_6 can be verified without any impact from normal PDCCHs.

Recommended WF:

Continue to discuss in 2nd round based on the above 3 options.

**Issue 1-3: BLER of PDCCH to be tested**

Recommended WF:

This issue is related to the test metric and procedure. Moderator suggests using following as baseline for further discussion.

* If option 1 in issue 1-2 is adopted, 1% or 1.099% is adopted.
* If option 2 or option 3 in issue 1-2 is adopted, 1% or 0.1% is adopted.

**Issue 1-4: Test procedure**

* + Option 1 : (CMCC, MTK, Qualcomm, CATT)
    - Configure UE not to wake up when missing DCI format 2\_6 in DRX-OFF period
    - Transmit PDCCH-WUS in DRX-OFF period and PDCCH in DRX-ON period with the SNR reference value
    - Verify that BLER of PDCCH meets the performance requirement.
    - Pm-dsg\_total = PPDCCH-WUS + (1- PPDCCH-WUS) PPDCCH = 1.099% or 1%
  + Option 2 (Huawei):
    - *ps-WakeUp* is not configured and “Wake-up indication” in DCI format 2\_6 is set to ‘1’
    - *drx-LongCycleStartOffset* is set to ms10.
    - Two search space sets for transmission of DCI format 2\_6 is configured for UE, but there is only one position selected randomly to transmit DCI format 2\_6 before each DRX on duration.
    - Avoid the impact of normal PDCCH to PDCCH-WUS by setting high enough power level for normal PDCCH during the test.
    - Transmit PDCCH-WUS in DRX-OFF period (opportunity for DRX) and PDCCH in DRX-ON period (On duration).
    - Verify that BLER of PDCCH meets the performance requirement. (0.1%)
  + Option 3 (vivo):
    - *“PSWakeUpOrNot” should be set as “UE not wakeup” or not configured.*
    - *To minimize the test time needed, DRX cycle should be selected as the minimum value of 10ms.*
    - *Before every DRX active time, TE sends “1” indication in PDCCH-WUS once per 2 DRX cycles and sends “0” indication in PDCCH-WUS once per 2 DRX cycles.*
    - *TE check whether UE behavior in the next DRX on-duration is under expectation or not, i.e. if UE sends periodic CSI during On-duration after TE sends PDCCH-WUS indication, or if UE does not send periodic CSI during On-duration after TE cancel the PDCCH-WUS transmission, ACK\_WUS = ACK\_WUS + 1; otherwise NACK\_WUS = NACK\_WUS + 1.*
    - *- Verify that BLER of PDCCH-WUS , i.e. NACK\_WUS / (ACK\_WUS + NACK\_WUS), equals to Pm-dsg(1% or 0.1%).*

**Agreement:**

**R4-2012645 WF on power saving demodulation**

*Type: other For: discussion  
 Source: CATT*

**Discussion:**

The contribution was discussed during email thread [96e][317] NR\_UE\_pow\_sav\_Demod. The discussion was recorded in R4-2012733.

**Decision:** The document was **approved**.

**R4-2010101 Demodulation on UE power saving**

*Type: discussion For: Discussion  
 Source: CMCC*

**Discussion:**

The contribution was discussed during email thread [96e][317] NR\_UE\_pow\_sav\_Demod. The discussion was recorded in R4-2012733.

**Decision:** The document was **noted**.

**R4-2010478 Evaluation of WUS-PDCCH decoding performance**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the PDCCH-WUS decoding performance requirements.

**Discussion:**

The contribution was discussed during email thread [96e][317] NR\_UE\_pow\_sav\_Demod. The discussion was recorded in R4-2012733.

**Decision:** The document was **noted**.

**R4-2010718 Discussion on performance requirements for PDCCH-WUS**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

The contribution was discussed during email thread [96e][317] NR\_UE\_pow\_sav\_Demod. The discussion was recorded in R4-2012733.

**Decision:** The document was **noted**.

**R4-2010995 Discussion on the performance requirements for NR power saving**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][317] NR\_UE\_pow\_sav\_Demod. The discussion was recorded in R4-2012733.

**Decision:** The document was **noted**.

**R4-2009721 Discussion on PDCCH-WUS requirements**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][317] NR\_UE\_pow\_sav\_Demod. The discussion was recorded in R4-2012733.

**Decision:** The document was **noted**.

**R4-2009811 Demodulation test for PDCCH-WUS**

*Type: discussion For: Discussion  
 38.101-4 v..  
 Source: CATT*

**Discussion:**

The contribution was discussed during email thread [96e][317] NR\_UE\_pow\_sav\_Demod. The discussion was recorded in R4-2012733.

**Decision:** The document was **noted**.

### 7.7 NR Positioning Support [NR\_pos]

**R4-2012046 Email discussion summary for [96e][215] NR\_pos\_RRM\_1**

*Type: other For: discussion  
 Source: Moderator (Huawei)*

**Discussion:**

The contribution summarized email discussion thread [96e][215] NR\_pos\_RRM\_1. The topic areas for discussion were RRM Core requirements: General, UE requirements (PRS-RSTD, UE Rx-Tx time difference). The email thread was moderated by Li Zhang (Huawei). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2012215**.

**R4-2012215 Email discussion summary for [96e][215] NR\_pos\_RRM\_1**

*Type: other For: discussion  
 Source: Moderator (Huawei)*

(Replaces R4-2012046)

**Discussion:**

The contribution summarized email discussion thread [96e][215] NR\_pos\_RRM\_1. The topic areas for discussion were RRM Core requirements: General, UE requirements (PRS-RSTD, UE Rx-Tx time difference). The email thread was moderated by Li Zhang (Huawei). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **noted**.

*GTW session (Aug 20th-21st)*

**PRS measurements**

* Discussion
  + Total measurement period for RSTD
    - E///: shall not apply CSSF and sum jointly
    - Intel: the proposal is ok
    - QC: agree with formulation. UE is not required to do measurements in parallel. There is no double counting. CSSF is for sharing between PRS and RRM measurements
    - Huawei: Agree with QC. CSSF is for sharing between PRS and RRM measurements
    - Mediatek: same view as QC and Huawei
    - Huawei/Intel/QC/Mediatek: support the proposal
    - E///: object the agreement
  + Measurement period for RSTD per frequency layer
    - Huawei: suggest to discuss measurement period first
  + Number of samples and also Definition of PRS occasion
    - QC: may not necessarily need to define the PRS occasion
    - MTK: agree with QC. Can discuss full equation. Prefer 4 samples.
    - E///: agree not to define
    - Huawei: do not define PRS occasion term. Prefer 4 samples. E/// proposal implies cross-occasion combining. Prefer not to complicate the Core requirement
    - Intel: Agree not to define. Final equations shall depend on RAN1 parameters.
* Agreements
  + Periodicity of PRS measurement
    - =



* + - Note: CSSF impact will be further discussed
  + Do not define the term “PRS occasion”
  + Number of PRS measurement samples (



* + - Option 1: [4] in the units of



* + - Option 2: ≤ [4] in the units of



* + Scaling due to UE buffering and processing capability



* + Measurement period for RSTD per positioning frequency layer
    - Option 1: (MTK, Intel, Huawei, QC)



* + - * is the CSSF for sharing between PRS and RRM measurements within a single positioning frequency layer



* + - * is the RX beam sweeping scaling factor within a single positioning frequency layer



* + - Option 2:  *)* (CATT, Intel, Huawei, QC)



* + - * is the CSSF for sharing between PRS and RRM measurements within a single positioning frequency layer



* + - * is the RX beam sweeping scaling factor within a single positioning frequency layer



* + - Option 3: (avoid multiplying Ti with CSSF) (E///)



* + Processing of the last PRS measurement sample
    - Option 1:  *= + (Huawei, MTK)*



* + - Option 2:  *= (Intel)*



* + - Option 3:  *= (CATT)*



* + - Option 4:  *=*



* + - *Other options are not precluded*
  + Start of the measurement period is FFS
    - Option 1: the start of the earliest MG which contains the PRS resources of the positioning frequency layer after UE has received all assistance data
  + Total measurement period for RSTD
    - When MGs and processing time T have overlap between different frequency positioning frequency layers
      * *+X*



* + - * + where is X is FFS to account for last sample processing
    - When MGs and processing time T do not have overlap between different positioning frequency layers
      * Option 1:*+X*, (Huawei, QC, Intel, MTK)



* + - * + where is X is FFS to account for last sample processing
      * Option 2: (E///)



* + - Note: impact of CSSF is under discussion
  + *for FR2*



* + - when QCL info is not provided



* + - FFS when QCL info is provided
      * Option 1:
        + when different PRS overlap in time on the same frequency layer



* + - * + otherwise



*1st round email discussion conclusions*

**Topic #2: Measurement period for RSTD**

Chair: 2nd round discussion shall be based on Fri GTW agreements

Measurement period extension due to MG reconfiguration

Chair: No further discussion. Companies can work on the wording in the CR, and R4-2009883 can be used as a starting point.

Measurement period and response time

Chair: No further discussion.

Principles for defining RSTD measurement period

Chair: No further discussion.

*GTW session (Aug 26th)*

Issue 0-1: Measurement period for RSTD per positioning frequency layer

Agreement



* + is the CSSF for sharing between PRS and RRM measurements within a single positioning frequency layer



* + is the RX beam sweeping scaling factor within a single positioning frequency layer



* + Note: if issues are identified with CSSF then the equation can be revisited in the maintenance part

Issue 0-2: Number of PRS measurement samples (



Agreement:

= [4]



How to address the case with multiple PRS repetitions will be discussed in the Performance part

Issue 0-3: Processing of the last PRS measurement sample

Agreement:

*= +*



*Note: RAN4 assumption is that is the sample duration in ms. The decision can be further revisited in case the definition is not aligned with RAN1/2 specification.*



Issue 0-4: Start of the measurement period

Agreement:

Start of the measurement period the start of the earliest MG which contains the PRS resources of the positioning frequency layer after UE has received all assistance data

Issue 0-5: for FR2 when QCL info is provided



Agreement

* When QCL info is provided
  + If PRS from different TRPs on the same frequency layer overlap withing the same MG



Issue 0-6: Total measurement period for RSTD – overlapping case

Agreement: X = .



Issue 0-7: Total measurement period for RSTD – non-overlapping case

* Note: it was agreed in GTW that when MGs and processing time T have overlap between different frequency positioning frequency layers, the total measurement period is as follows
  + *+X,* where is X is FFS to account for last sample processing



* + Different options were proposed for the case when MGs and processing time T do not have overlap between different positioning frequency layers. This issue is for non-overlapping case.
* Option 1 (Huawei, QC, Intel, MTK):
  + *+X*, i.e. same as overlapping case for overlapping case in Issue 0-6



* Option 2 (E///):



Conclusion: further discuss to identify if any scenarios can be defined for Option 2. If no scenarios identified then Option 1 will be used.

Issue 3-1: Whether SRS periodicity should be accounted in measurement period

Conclusion: no consensus that SRS periodicity should be accounted in measurement period

Issue 3-2: Whether SRS dropping should be accounted in measurement period

Conclusion: no consensus that SRS dropping should be accounted in measurement period

**R4-2012047 Email discussion summary for [96e][216] NR\_pos\_RRM\_2**

*Type: other For: discussion  
 Source: Moderator (Intel Corporation)*

**Discussion:**

The contribution summarized email discussion thread [96e][216] NR\_pos\_RRM\_2. The topic areas for discussion were RRM Core requirements: UE requirements (PRS-RSRP measurements, SSB and CSI-RS RSRP/RSRQ measurements). The email thread was moderated by Huang Rui (Intel). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2012216**.

**R4-2012216 Email discussion summary for [96e][216] NR\_pos\_RRM\_2**

*Type: other For: discussion  
 Source: Moderator (Intel Corporation)*

(Replaces R4-2012047)

**Discussion:**

The contribution summarized email discussion thread [96e][216] NR\_pos\_RRM\_2. The topic areas for discussion were RRM Core requirements: UE requirements (PRS-RSRP measurements, SSB and CSI-RS RSRP/RSRQ measurements). The email thread was moderated by Huang Rui (Intel). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **noted**.

*1st round email discussion conclusions*

**Topic #6: PRS RSRP measurement under cell change**

Agreements:

* When configured together with UE Rx-Tx, the UE behavior rules for PRS-RSRP are the same as for these for UE Rx-Tx (agreed in [R4-1915854])
* When configured together with RSTD, the UE behavior rules for PRS-RSPR measurement under cell change are the same as for RSTD (the rules for RSTD were agreed in [R4-1915854]):
  + The UE shall continue RSTD measurement after each serving cell change for:
    - intra-frequency handover,
    - inter-frequency handover.
* When not configured together with either UE Rx-Tx or RSTD, the UE behavior rules for PRS-RSPR measurement under cell change are the same as for RSTD (the rules for RSTD were agreed in [R4-1915854]).

*GTW session (Aug 27th)*

Issue 1-1: Principles for defining measurement period for PRS RSRP

Agreement

* When configured with UE Rx-Tx time difference, PRS-RSRP measurement period requirements can be same as that of UE Rx-Tx time difference measurement
* When configured with PRS-RSTD, PRS-RSRP measurement period requirements can be same as that of RSTD measurement
* When not configured with either UE Rx-Tx or RSTD, measurement period requirements of RSTD can be reused for PRS-RSRP measurement.
* Note: The agreements above are valid for the case when the number of samples for PRS-RSRP measurements = [4]. Agreement can be revisited if more samples are needed for PRS-RSRP measurements.



**R4-2012048 Email discussion summary for [96e][217] NR\_pos\_RRM\_3**

*Type: other For: discussion  
 Source: Moderator (Ericsson)*

**Discussion:**

The contribution summarized email discussion thread [96e][217] NR\_pos\_RRM\_3. The topic areas for discussion were RRM Core requirements: New MG, gNB requirements, Others. The email thread was moderated by Muhammad Kazmi (Ericsson). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2012217**.

**R4-2012217 Email discussion summary for [96e][217] NR\_pos\_RRM\_3**

*Type: other For: discussion  
 Source: Moderator (Ericsson)*

(Replaces R4-2012048)

**Discussion:**

The contribution summarized email discussion thread [96e][217] NR\_pos\_RRM\_3. The topic areas for discussion were RRM Core requirements: New MG, gNB requirements, Others. The email thread was moderated by Muhammad Kazmi (Ericsson). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **noted**.

*GTW session (Aug 20th)*

**Topic #1: New measurement gap patterns for positioning measurements (AI 7.7.2.2)**

Sub-topic 1-1: Measurement gaps for positioning measurements

Issue 1-1-1: New MG patterns

* Summary

|  |  |  |
| --- | --- | --- |
| MG length (ms) | MG period (ms) | Companies |
| 20 | 160 | ZTE, QC, HW, E/// |
| 40 | 160 | ZTE, QC, Nokia |
| 10 | 80 | CATT, OPPO, NEC, HW, E///, Nokia, MTK |
| 10 | 160 | CATT, OPPO, MTK |
| 18 | 80 | MTK |
| 18 | 160 | MTK |
| 34 | 160 | MTK |
| 18 | 320 | MTK |
| 34 | 320 | MTK |
| 34 | 640 | MTK |
| 66 | 640 | MTK |

* Discussion
  + Chair: candidate proposals based on majority ar
    - 20ms MGL and 160ms MGRP
    - 10ms MGL and 80ms MGRP
  + QC: we are fine
  + ZTE: we are fine
  + Intel: we are ok to compromise but we need to conclude on other aspects as well
  + Chair: we can make tentative agreements on the MG topics. Per RAN4 #95e agreements in case all design is not finalized then the feature will not be supported. In such case the agreements will be reverted.
* Agreements
  + Introduce 2 new MG patterns for PRS measurements

|  |  |
| --- | --- |
| MG length (ms) | MG period (ms) |
| 20 | 160 |
| 10 | 80 |

Issue 1-1-2: New MG patterns are used only when UE is configured with at least PRS measurements i.e. cannot be used for only RRM

Proposals

* + Option 1: Yes (CATT, Apple, Oppo, QC, E///, HW, Nokia)

Discussion

* + Intel: ok for us

Agreement: New MG patterns can only be configured when the UE is configured with PRS measurements

Issue 1-1-3: Whether new MG patterns is applicable for only PRS measurements or for both PRS and RRM measurements?

Proposals:

* + Option 1: New MG patterns are applicable only for PRS measurements i.e. new gaps cannot be shared with RRM measurements (CATT, Oppo, NEC, Apple)
  + Option 2: New MG patterns are applicable for PRS and all RRM measurements i.e. new gaps can be shared between PRS and RRM measurements (QC, ZTE, HW, E///, Nokia, MTK)
  + Option 3: New MG patterns are applicable for PRS and NR/LTE all RRM measurements except 2G/3G and LTE PRS measurements i.e. new gaps are not can be shared between PRS and selected 2G/3G RRM measurements (HW)

Discussion:

* + Intel: all 3 options will introduce new issues. Option 2 will affect existing requirements. Option 1 may have small impact but there is contradiction to previous WF which said we don’t introduce new independent MGs R4-2005379
    - E///: the agreement meant 2 independent MG for RRM and Positioning. Now we suggest a single one.
    - QC: same view
  + QC: Option 1 has drawbacks that UE stops doing RRM measurements when it requests MG for PRS measurements. We think Option 2 has small impact.
  + Apple: Support Option 1. CSSF and per-FR gap capability can have problems for Option 2. There are no accurate solutions to address our issues.
  + E///: Same view as QC. Also, Option 2 is aligned with RAN2 procedure.
  + CMCC: Option 1 will have impact on RRM measurement for the case of periodic measurements.
    - Apple: PRS measurements are not done often. CSSF scaling will increase the delay a lot in case both PRS and RRM are supported. There will be joint delay.
  + MTK: Support Option 2. Rule of CSSF can be defined more simply.
  + CATT: New MG pattern has too big length and can have impact on the system performance/throughput. Option 1 may have small impact.
  + ZTE: Option 2. Similar view with QC and CMCC.
  + Nokia: Option 2. CSSF can be defined.
  + OPPO: Option 1. Same view with Apple. For Option 2 UE behavior will be more complicated. Current requirements for RRM will be adjusted.
  + Apple: Compromise is to use new MG for both RRM and PRS but in this case RRM requirements will not apply.
    - Huawei: what kind of requirements will apply for PRS?
      * Apple: we’ll design all CSSF for legacy. For new MG the PRS requirements will apply based on legacy CSSF but RRM requirements will not apply
    - NEC: what is the impact on RRM measurements?
      * Apple: UE will do the best but no guarantee
    - E///: we should try to define RRM requirements. This is even worse than Option 1.
  + Nokia: for Option 2 we can prioritize PRS measurements
  + MTK: we also need to discuss how to share legacy MG between RRM and PRS measurements
    - E///: this is already under discussion

Conclusion: come back in the 2nd round

*1st round email discussion conclusions*

**Topic #1: New measurement gap patterns for positioning measurements (AI 7.7.2.2)**

**Topic #2: gNB requirements (AI 7.7.2.3)**

**Topic #3: Other requirements (AI 7.7.2.4)**

*GTW session (Aug 27th)*

**Issue 1-1-3: Whether new MG patterns is applicable for only PRS measurements or for both PRS and RRM measurements?**

* Option 1: CATT, Oppo, NEC, Apple
  + New MG patterns are applicable only for PRS measurements i.e. new gaps cannot be shared with RRM measurements.
* Option 2: QC, ZTE, HW, E///, Nokia, CMCC
  + New MG patterns are applicable for PRS and all RRM measurements i.e. new gaps can be shared between PRS and RRM measurements.
* Option 3: HW, MTK, E///, QC
  + New MG patterns are applicable for PRS and NR/LTE RRM measurements i.e. new gaps are not shared between PRS and 2G/3G RRM measurements.
* Option 4: Apple
  + New MG patterns are applicable for PRS and RRM measurements;
  + the UE is required to meet requirements for PRS measurements performed in the new MG gap pattern; and
  + while the new MG pattern is configured for the PRS measurements the UE is not required to meet requirements for RRM measurements which need gaps.

Discussion:

* Option 4: objected by MTK, Intel, CATT. QC is ok.
* Option 1: objected by MTK, ZTE. QC is ok.
* Option 2/3: objected by Apple, Intel, CATT, NEC.

Tentative conclusion: No consensus on whether new MG patterns is applicable for only PRS measurements or for both PRS and RRM measurements. No new MGs introduced in Rel-16.

Not concluded on Fri GTW

**Issue 1-1-4: New MG patterns is defined as per-UE or per-UE and per-FR capabilities?**

* + Option 1: QC, HW, E///, NEC, ZTE, Nokia, CATT
    - Defined as per-UE and per-FR capabilities
  + Option 2. Apple, MTK
    - Defined as only per-UE capability

Tentative agreement: If New MG patterns are defined for PRS only then they are defined as per-UE or per-UE and per-FR capabilities

Not concluded on Fri GTW

*GTW session (Aug 28th)*

**Issue 1-1-3: Whether new MG patterns is applicable for only PRS measurements or for both PRS and RRM measurements?**

* Option 1: CATT, Oppo, NEC, Apple, QC, Intel, ZTE (7)
  + New MG patterns are applicable only for PRS measurements i.e. new gaps cannot be shared with RRM measurements.
* Option 2: QC, ZTE, HW, E///, Nokia, CMCC, MTK, Apple (8)
  + New MG patterns are applicable for PRS and all RRM measurements i.e. new gaps can be shared between PRS and RRM measurements.
* Option 3: HW, MTK, E///, QC, Apple, CATT, ZTE, Nokia, OPPO (9)
  + New MG patterns are applicable for PRS and NR/LTE RRM measurements i.e. new gaps are not shared between PRS and 2G/3G RRM measurements.
* Option 4: Apple, Intel, Nokia (3)
  + New MG patterns are applicable for PRS and RRM measurements;
  + the UE is required to meet requirements for PRS measurements performed in the new MG gap pattern; and
  + while the new MG pattern is configured for the PRS measurements the UE is not required to meet requirements for RRM measurements which need gaps.

Agreement

* New MG patterns are applicable for PRS and NR/LTE RRM measurements i.e. new gaps are not shared between PRS and 2G/3G RRM measurements.

Discussion:

* Apple: Can compromise to Option 2 or Option 3
* QC: Can compromise to Option 1.
* OPPO: Option 1.
* ZTE: Can compromise on Option 1. Option 3 is ok.
* MTK: Option 2. Can compromise to Option 3.
* Intel: Option 1. Can compromise to Option 4.
* Nokia: Option 2. Option 4 with restriction conditions.
* CATT: can compromise to Option 3.

**Issue 1-1-4: New MG patterns is defined as per-UE or per-UE and per-FR capabilities?**

Agreement: New MG patterns are defined as per-UE capabilities

**Issue 1-2-2: If new gaps are shared between PRS and RRM measurements then use the existing CSSF for sharing new MG pattern between RRM and PRS measurements?**

Agreement: Use the existing CSSF approach for sharing new MG pattern between RRM and PRS measurements

**R4-2012126 Reply LS on the UE DL PRS processing**

*Type: LS out For: Approval  
 to RAN1, cc RAN2  
 Source: Huawei, HiSilicon*

**Decision:** The document was **noted**.

**R4-2012127 WF on requirements for RSTD and UE Rx-Tx time difference measurement**

*Type: other For: discussion  
 Source: Huawei, HiSilicon*

**Decision:** The document was **revised to R4-2012251**.

**R4-2012251 WF on requirements for RSTD and UE Rx-Tx time difference measurement**

*Type: other For: discussion  
 Source: Huawei, HiSilicon*

(Replaces R4-2012127)

**Decision:** The document was **revised to R4-2012283**.

**R4-2012283 WF on requirements for RSTD and UE Rx-Tx time difference measurement**

*Type: other For: discussion  
 Source: Huawei, HiSilicon*

(Replaces R4-2012251)

**Decision:** The document was **approved**.

**R4-2012133 WF on requirements for PRS-RSRP measurements**

*Type: other For: discussion  
 Source: Intel Corporation*

**Decision:** The document was **revised to R4-2012263**.

**R4-2012263 WF on requirements for PRS-RSRP measurements**

*Type: other For: discussion  
 Source: Intel Corporation*

(Replaces R4-2012133)

**Decision:** The document was **approved**.

**R4-2012135 WF on impact of NR positioning measurements on RRM**

*Type: other For: discussion  
 Source: Ericsson*

**Decision:** The document was **revised to R4-2012298**.

**R4-2012298 WF on impact of NR positioning measurements on RRM**

*Type: other For: discussion  
 Source: Ericsson*

(Replaces R4-2012135)

**Decision:** The document was **approved**.

**R4-2012136 LS on new measurement gap patterns for NR positioning**

*Type: LS out For: Approval  
 to RAN2  
 Source: Ericsson*

**Decision:** The document was **revised to R4-2012285**.

**R4-2012285 LS on new measurement gap patterns for NR positioning**

*Type: LS out For: Approval  
 to RAN2  
 Source: RAN4*

(Replaces R4-2012136)

**Decision:** The document was **approved**.

**R4-2012140 WF on gNB requirements for NR positioning**

*Type: other For: discussion  
 Source: Ericsson*

**Decision:** The document was **revised to R4-2012302**.

**R4-2012302 WF on gNB requirements for NR positioning**

*Type: other For: discussion  
 Source: Ericsson*

(Replaces R4-2012140)

**Decision:** The document was **approved**.

**R4-2012141 System simulation assumptions for deriving side conditions**

*Type: other For: discussion  
 Source: Ericsson*

**Decision:** The document was **revised to R4-2012289**.

**R4-2012289 System simulation assumptions for deriving side conditions**

*Type: other For: discussion  
 Source: Ericsson*

(Replaces R4-2012141)

**Discussion:**

Chair: Common understanding other setting for neighbour cell SRS configurations can be also investigated.

**Decision:** The document was **approved**.

**R4-2012142 Link simulation assumptions for deriving positioning SRS configurations**

*Type: other For: discussion  
 Source: Nokia*

**Decision:** The document was **approved**.

**R4-2012143 Reply LS on positioning SRS during DRX inactive time**

*Type: LS out For: Approval  
 to RAN2, cc RAN1  
 Source: RAN4*

**Decision:** The document was **approved**.

#### 7.7.1 General [NR\_pos-Core/Perf]

**R4-2011364 General introduction of NR positioning measurements**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1107 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Many positioning-specific abbreviations and definitions are not defined in TS 38.133

**Discussion:**

The contribution was discussed during email thread [96e][215] NR\_pos\_RRM\_1. The discussion was recorded in R4-2012215.

**Decision:** The document was **agreed**.

**R4-2012128 General introduction of NR positioning measurements**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1107 rev 1 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Decision:** The document was **withdrawn**.

#### 7.7.2 RRM core requirements (38.133) [NR\_pos-Core]

**R4-2009881 Revision of CSSF within gap to include NR positioning measurements with gap sharing**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0941 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

Per agreement in R4-2009266, gap sharing for NR positioning measurement should follow that of LTE-PRS. As NR positioning measurement requirement is defined with only MG, the gap sharing with other measurement objects should be specified. It is noted that this CR is independent of whether new MG patterns are adopted for positioning or not.

**Discussion:**

The contribution was discussed during email thread [96e][215] NR\_pos\_RRM\_1. The discussion was recorded in R4-2012215.

**Decision:** The document was **revised to R4-2012137**.

**R4-2012137 Revision of CSSF within gap to include NR positioning measurements with gap sharing**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0941 rev 1 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated*

(Replaces R4-2009881)

**Abstract:**

Per agreement in R4-2009266, gap sharing for NR positioning measurement should follow that of LTE-PRS. As NR positioning measurement requirement is defined with only MG, the gap sharing with other measurement objects should be specified. It is noted that this CR is independent of whether new MG patterns are adopted for positioning or not.

**Discussion:**

The contribution was discussed during email thread [96e][215] NR\_pos\_RRM\_1. The discussion was recorded in R4-2012215.

**Decision:** The document was **revised to R4-2012286**.

**R4-2012286 Revision of CSSF within gap to include NR positioning measurements with gap sharing**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0941 rev 2 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated*

(Replaces R4-2012137)

**Abstract:**

Per agreement in R4-2009266, gap sharing for NR positioning measurement should follow that of LTE-PRS. As NR positioning measurement requirement is defined with only MG, the gap sharing with other measurement objects should be specified. It is noted that this CR is independent of whether new MG patterns are adopted for positioning or not.

**Discussion:**

The contribution was discussed during email thread [96e][215] NR\_pos\_RRM\_1. The discussion was recorded in R4-2012215.

**Decision:** The document was **agreed**.

##### 7.7.2.1 UE requirements [NR\_pos-Core]

###### 7.7.2.1.1 PRS-RSTD measurement requirements [NR\_pos-Core]

**R4-2010203 Discussion of remaining issues for PRS-RSTD measurement**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

The contribution was discussed during email thread [96e][215] NR\_pos\_RRM\_1. The discussion was recorded in R4-2012215.

**Decision:** The document was **noted**.

**R4-2010706 On PRS RSTD measurement requirements for NR positioning**

*Type: discussion For: Approval  
 Source: OPPO*

**Discussion:**

The contribution was discussed during email thread [96e][215] NR\_pos\_RRM\_1. The discussion was recorded in R4-2012215.

**Decision:** The document was **noted**.

**R4-2011155 CR for general applicability of PRS measurement requirements**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1082 Cat: B (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

RAN4 has made several agreements regarging the applicability of the PRS measurement requirements, and they need to be captured in the spec.

**Discussion:**

The contribution was discussed during email thread [96e][215] NR\_pos\_RRM\_1. The discussion was recorded in R4-2012215.

**Decision:** The document was **revised to R4-2012125**.

**R4-2012125 CR for general applicability of PRS measurement requirements**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1082 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei, Hisilicon*

(Replaces R4-2011155)

**Abstract:**

RAN4 has made several agreements regarging the applicability of the PRS measurement requirements, and they need to be captured in the spec.

**Discussion:**

The contribution was discussed during email thread [96e][215] NR\_pos\_RRM\_1. The discussion was recorded in R4-2012215.

**Decision:** The document was **agreed**.

**R4-2011156 Discussion on RSTD measurement**

*Type: LS out For: Approval  
 to RAN1, cc RAN2  
 Source: Huawei, Hisilicon*

**Discussion:**

The contribution was discussed during email thread [96e][215] NR\_pos\_RRM\_1. The discussion was recorded in R4-2012215.

**Decision:** The document was **noted**.

**R4-2011357 On RSTD measurements and measurement reporting**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

On RSTD measurements and measurement reporting

**Discussion:**

The contribution was discussed during email thread [96e][215] NR\_pos\_RRM\_1. The discussion was recorded in R4-2012215.

**Decision:** The document was **noted**.

**R4-2011358 Measurement report mapping and additional path reporting for RSTD**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1104 Cat: B (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

The CR is based on R4-2009253, endorsed in RAN4#95-e. The additional updates to resolve the remaining open issues are highlighted with a different track changes markup.

Measurement report mapping and additional path reporting for RSTD are missing.

**Discussion:**

The contribution was discussed during email thread [96e][215] NR\_pos\_RRM\_1. The discussion was recorded in R4-2012215.

**Decision:** The document was **revised to R4-2012132**.

**R4-2012132 Measurement report mapping and additional path reporting for RSTD**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1104 rev 1 Cat: B (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2011358)

**Abstract:**

The CR is based on R4-2009253, endorsed in RAN4#95-e. The additional updates to resolve the remaining open issues are highlighted with a different track changes markup.

Measurement report mapping and additional path reporting for RSTD are missing.

**Discussion:**

The contribution was discussed during email thread [96e][215] NR\_pos\_RRM\_1. The discussion was recorded in R4-2012215.

**Decision:** The document was **revised to R4-2012260**.

**R4-2012260 Measurement report mapping and additional path reporting for RSTD**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1104 rev 2 Cat: B (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2012132)

**Abstract:**

The CR is based on R4-2009253, endorsed in RAN4#95-e. The additional updates to resolve the remaining open issues are highlighted with a different track changes markup.

Measurement report mapping and additional path reporting for RSTD are missing.

**Discussion:**

The contribution was discussed during email thread [96e][215] NR\_pos\_RRM\_1. The discussion was recorded in R4-2012215.

**Decision:** The document was **agreed**.

**R4-2009673 Measurement period for PRS-RSTD**

*Type: discussion For: Discussion  
 Source: ZTE Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][215] NR\_pos\_RRM\_1. The discussion was recorded in R4-2012215.

**Decision:** The document was **noted**.

**R4-2009741 Further discussion on NR PRS RSTD requirements**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][215] NR\_pos\_RRM\_1. The discussion was recorded in R4-2012215.

**Decision:** The document was **noted**.

**R4-2009744 CR to TS 38.133: PRS RSTD requirements**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0925 Cat: B (Rel-16)  
  
 Source: Intel Corporation*

**Abstract:**

NR DL RSTD measurement requirements needs to be defined in TS 38.133.

**Discussion:**

The contribution was discussed during email thread [96e][215] NR\_pos\_RRM\_1. The discussion was recorded in R4-2012215.

**Decision:** The document was **revised to R4-2012129**.

**R4-2012129 CR to TS 38.133: PRS RSTD requirements**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0925 rev 1 Cat: B (Rel-16)  
  
 Source: Intel Corporation*

(Replaces R4-2009744)

**Abstract:**

NR DL RSTD measurement requirements needs to be defined in TS 38.133.

**Discussion:**

The contribution was discussed during email thread [96e][215] NR\_pos\_RRM\_1. The discussion was recorded in R4-2012215.

**Decision:** The document was **revised to R4-2012264**.

**R4-2012264 CR to TS 38.133: PRS RSTD requirements**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0925 rev 2 Cat: B (Rel-16)  
  
 Source: Intel Corporation*

(Replaces R4-2012129)

**Abstract:**

NR DL RSTD measurement requirements needs to be defined in TS 38.133.

**Discussion:**

The contribution was discussed during email thread [96e][215] NR\_pos\_RRM\_1. The discussion was recorded in R4-2012215.

**Decision:** The document was **agreed**.

**R4-2009845 Discussion on PRS RSTD measurement requirements**

*Type: discussion For: Discussion  
 Source: CATT*

**Discussion:**

The contribution was discussed during email thread [96e][215] NR\_pos\_RRM\_1. The discussion was recorded in R4-2012215.

**Decision:** The document was **noted**.

**R4-2009874 On PRS-RSTD measurements for NR positioning**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

The contribution was discussed during email thread [96e][215] NR\_pos\_RRM\_1. The discussion was recorded in R4-2012215.

**Decision:** The document was **noted**.

###### 7.7.2.1.2 PRS-RSRP measurement requirements [NR\_pos-Core]

**R4-2010204 Discussion of remaining issues for PRS-RSRP measurement**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

The contribution was discussed during email thread [96e][216] NR\_pos\_RRM\_2. The discussion was recorded in R4-2012216.

**Decision:** The document was **noted**.

**R4-2011157 Discussion on PRS-RSRP measurement**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Discussion:**

The contribution was discussed during email thread [96e][216] NR\_pos\_RRM\_2. The discussion was recorded in R4-2012216.

**Decision:** The document was **noted**.

**R4-2011158 CR for measurement requirements for PRS-RSRP**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1083 Cat: B (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

PRS-RSRP measurement requirements are not defined.

**Discussion:**

The contribution was discussed during email thread [96e][216] NR\_pos\_RRM\_2. The discussion was recorded in R4-2012216.

**Decision:** The document was **revised to R4-2012134**.

**R4-2012134 CR for measurement requirements for PRS-RSRP**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1083 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei, Hisilicon*

(Replaces R4-2011158)

**Abstract:**

PRS-RSRP measurement requirements are not defined.

**Discussion:**

The contribution was discussed during email thread [96e][216] NR\_pos\_RRM\_2. The discussion was recorded in R4-2012216.

**Decision:** The document was **revised to R4-2012282**.

**R4-2012282 CR for measurement requirements for PRS-RSRP**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1083 rev 2 Cat: B (Rel-16)  
  
 Source: Huawei, Hisilicon*

(Replaces R4-2012134)

**Abstract:**

PRS-RSRP measurement requirements are not defined.

**Discussion:**

The contribution was discussed during email thread [96e][216] NR\_pos\_RRM\_2. The discussion was recorded in R4-2012216.

**Decision:** The document was **agreed**.

**R4-2011359 On PRS-RSRP measurements**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

On PRS-RSRP measurements

**Discussion:**

The contribution was discussed during email thread [96e][216] NR\_pos\_RRM\_2. The discussion was recorded in R4-2012216.

**Decision:** The document was **noted**.

**R4-2009742 Further discussion on PRS RSRP measurement requirements for NR positioning**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][216] NR\_pos\_RRM\_2. The discussion was recorded in R4-2012216.

**Decision:** The document was **noted**.

**R4-2009846 Discussion on PRS-RSRP measurement requirements**

*Type: discussion For: Discussion  
 Source: CATT*

**Discussion:**

The contribution was discussed during email thread [96e][216] NR\_pos\_RRM\_2. The discussion was recorded in R4-2012216.

**Decision:** The document was **noted**.

**R4-2009875 On PRS-RSRP measurements for NR positioning**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

The contribution was discussed during email thread [96e][216] NR\_pos\_RRM\_2. The discussion was recorded in R4-2012216.

**Decision:** The document was **noted**.

###### 7.7.2.1.3 UE Rx-Tx time difference measurement requirements [NR\_pos-Core]

**R4-2010707 On UE Rx-Tx time difference measurement requirements**

*Type: discussion For: Approval  
 Source: OPPO*

**Discussion:**

The contribution was discussed during email thread [96e][215] NR\_pos\_RRM\_1. The discussion was recorded in R4-2012215.

**Decision:** The document was **noted**.

**R4-2011159 Discussion on Rx-Tx time difference measurement**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Discussion:**

The contribution was discussed during email thread [96e][215] NR\_pos\_RRM\_1. The discussion was recorded in R4-2012215.

**Decision:** The document was **noted**.

**R4-2011160 Simulation results for UE Rx-Tx time difference**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Discussion:**

The contribution was discussed during email thread [96e][215] NR\_pos\_RRM\_1. The discussion was recorded in R4-2012215.

**Decision:** The document was **noted**.

**R4-2011355 On UE Rx-Tx measurements and measurement reporting**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

On UE Rx-Tx measurements and measurement reporting

**Discussion:**

The contribution was discussed during email thread [96e][215] NR\_pos\_RRM\_1. The discussion was recorded in R4-2012215.

**Decision:** The document was **noted**.

**R4-2011356 Measurement report mapping and additional path reporting for UE Rx-Tx**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1103 Cat: B (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

The CR is based on R4-2009254, endorsed in RAN4#95-e. The additional updates to resolve the remaining open issues are highlighted with a different track changes markup.

UE Rx-Tx time difference measurement reporting mapping and additional path reporting are missing.

**Discussion:**

The contribution was discussed during email thread [96e][215] NR\_pos\_RRM\_1. The discussion was recorded in R4-2012215.

**Decision:** The document was **revised to R4-2012131**.

**R4-2012131 Measurement report mapping and additional path reporting for UE Rx-Tx**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1103 rev 1 Cat: B (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2011356)

**Abstract:**

The CR is based on R4-2009254, endorsed in RAN4#95-e. The additional updates to resolve the remaining open issues are highlighted with a different track changes markup.

UE Rx-Tx time difference measurement reporting mapping and additional path reporting are missing.

**Discussion:**

The contribution was discussed during email thread [96e][215] NR\_pos\_RRM\_1. The discussion was recorded in R4-2012215.

**Decision:** The document was **revised to R4-2012259**.

**R4-2012259 Measurement report mapping and additional path reporting for UE Rx-Tx**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1103 rev 2 Cat: B (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2012131)

**Abstract:**

The CR is based on R4-2009254, endorsed in RAN4#95-e. The additional updates to resolve the remaining open issues are highlighted with a different track changes markup.

UE Rx-Tx time difference measurement reporting mapping and additional path reporting are missing.

**Discussion:**

The contribution was discussed during email thread [96e][215] NR\_pos\_RRM\_1. The discussion was recorded in R4-2012215.

**Decision:** The document was **agreed**.

**R4-2009671 UE Rx-Tx measurements**

*Type: discussion For: Discussion  
 Source: ZTE Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][215] NR\_pos\_RRM\_1. The discussion was recorded in R4-2012215.

**Decision:** The document was **noted**.

**R4-2009743 Discussion on UE RX-TX time difference measurement requirements for NR positioning**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][215] NR\_pos\_RRM\_1. The discussion was recorded in R4-2012215.

**Decision:** The document was **noted**.

**R4-2009847 Discussion on UE Rx-Tx time difference measurement requirements**

*Type: discussion For: Discussion  
 Source: CATT*

**Discussion:**

The contribution was discussed during email thread [96e][215] NR\_pos\_RRM\_1. The discussion was recorded in R4-2012215.

**Decision:** The document was **noted**.

**R4-2009876 On UE Rx-Tx time difference measurement for NR positioning**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

The contribution was discussed during email thread [96e][215] NR\_pos\_RRM\_1. The discussion was recorded in R4-2012215.

**Decision:** The document was **noted**.

**R4-2009883 Introduction of UE Rx-Tx time difference measurement requirements for NR positioning**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0943 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

Per work split agreement in RAN4#94-e-Bis, the measurement requirements for UE Rx-Tx time difference in NR positioning is introduced with this CR.

**Discussion:**

The contribution was discussed during email thread [96e][215] NR\_pos\_RRM\_1. The discussion was recorded in R4-2012215.

**Decision:** The document was **revised to R4-2012130**.

**R4-2012130 Introduction of UE Rx-Tx time difference measurement requirements for NR positioning**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0943 rev 1 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated*

(Replaces R4-2009883)

**Abstract:**

Per work split agreement in RAN4#94-e-Bis, the measurement requirements for UE Rx-Tx time difference in NR positioning is introduced with this CR.

**Discussion:**

The contribution was discussed during email thread [96e][215] NR\_pos\_RRM\_1. The discussion was recorded in R4-2012215.

**Decision:** The document was **revised to R4-2012284**.

**R4-2012284 Introduction of UE Rx-Tx time difference measurement requirements for NR positioning**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0943 rev 2 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated*

(Replaces R4-2012130)

**Abstract:**

Per work split agreement in RAN4#94-e-Bis, the measurement requirements for UE Rx-Tx time difference in NR positioning is introduced with this CR.

**Discussion:**

The contribution was discussed during email thread [96e][215] NR\_pos\_RRM\_1. The discussion was recorded in R4-2012215.

**Decision:** The document was **agreed**.

###### 7.7.2.1.4 Link simulation results for UE measurements [NR\_pos-Core]

**R4-2010708 Link-level simulation results for UE Rx-Tx time difference measurements**

*Type: discussion For: Approval  
 Source: OPPO*

**Discussion:**

The contribution was discussed during email thread s[96e][215] NR\_pos\_RRM\_1 and [96e][216] NR\_pos\_RRM\_2. The discussion was recorded in R4-2012215 and R4-2012216.

**Decision:** The document was **noted**.

**R4-2011161 Further simulation results for RSTD and PRS-RSRP**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Discussion:**

The contribution was discussed during email thread s[96e][215] NR\_pos\_RRM\_1 and [96e][216] NR\_pos\_RRM\_2. The discussion was recorded in R4-2012215 and R4-2012216.

**Decision:** The document was **noted**.

**R4-2011362 Link-level simulation results for NR UE Rx-Tx**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Link-level simulation results for NR UE Rx-Tx

**Discussion:**

The contribution was discussed during email thread s[96e][215] NR\_pos\_RRM\_1 and [96e][216] NR\_pos\_RRM\_2. The discussion was recorded in R4-2012215 and R4-2012216.

**Decision:** The document was **noted**.

**R4-2009848 Link level simulation results for UE RX-Tx time difference**

*Type: discussion For: Discussion  
 Source: CATT*

**Discussion:**

The contribution was discussed during email thread s[96e][215] NR\_pos\_RRM\_1 and [96e][216] NR\_pos\_RRM\_2. The discussion was recorded in R4-2012215 and R4-2012216.

**Decision:** The document was **noted**.

**R4-2009877 Link-level simulation assumptions for RSTD and UE Rx-Tx time difference measurements**

*Type: discussion For: Approval  
 Source: Qualcomm Incorporated*

**Discussion:**

The contribution was discussed during email thread s[96e][215] NR\_pos\_RRM\_1 and [96e][216] NR\_pos\_RRM\_2. The discussion was recorded in R4-2012215 and R4-2012216.

**Decision:** The document was **noted**.

##### 7.7.2.2 New measurement gap patterns for positioning measurements [NR\_pos-Core]

**R4-2010205 Discussion on measurement gaps for positioning**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

The contribution was discussed during email thread [96e][217] NR\_pos\_RRM\_3. The discussion was recorded in R4-2012217.

**Decision:** The document was **noted**.

**R4-2010709 On new measurement gap patterns for positioning measurements**

*Type: discussion For: Approval  
 Source: OPPO*

**Discussion:**

The contribution was discussed during email thread [96e][217] NR\_pos\_RRM\_3. The discussion was recorded in R4-2012217.

**Decision:** The document was **noted**.

**R4-2010756 Discussion on new measurement gap patterns for positioning requirements**

*Type: discussion For: Approval  
 Source: NEC*

**Abstract:**

In this contribution, we provide our views on introduction of new measurement gap patterns for positioning measurements in Rel-16

**Discussion:**

The contribution was discussed during email thread [96e][217] NR\_pos\_RRM\_3. The discussion was recorded in R4-2012217.

**Decision:** The document was **noted**.

**R4-2011162 Impact of positioning on existing RRM requirements**

*Type: LS out For: Approval  
 to RAN2, cc RAN1  
 Source: Huawei, Hisilicon*

**Discussion:**

The contribution was discussed during email thread [96e][217] NR\_pos\_RRM\_3. The discussion was recorded in R4-2012217.

**Decision:** The document was **noted**.

**R4-2011163 CR on CSSF and measurement gap related requirements for positioning**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1084 Cat: B (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

The existing CSSF related requirements in clause 9.1.5.2 have not considered PRS measurements.

The existing MG related requirements in clause 9.1.2 have not considered PRS measurements.

**Discussion:**

The contribution was discussed during email thread [96e][217] NR\_pos\_RRM\_3. The discussion was recorded in R4-2012217.

**Decision:** The document was **postponed**.

**R4-2011164 CR on measurement gap related requirements for positioning 36.133**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6947 Cat: B (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

The existing MG related requirements in clause 9.1.2 have not considered PRS measurements.

**Discussion:**

The contribution was discussed during email thread [96e][217] NR\_pos\_RRM\_3. The discussion was recorded in R4-2012217.

**Decision:** The document was **revised to R4-2012139**.

**R4-2012139 CR on measurement gap related requirements for positioning 36.133**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6947 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei, Hisilicon*

(Replaces R4-2011164)

**Abstract:**

The existing MG related requirements in clause 9.1.2 have not considered PRS measurements.

**Discussion:**

The contribution was discussed during email thread [96e][217] NR\_pos\_RRM\_3. The discussion was recorded in R4-2012217.

**Decision:** The document was **postponed**.

**R4-2012288 CR on measurement gap related requirements for positioning 36133**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6947 rev 2 Cat: B (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Decision:** The document was **withdrawn**.

**R4-2011360 LS on new measurement gaps for NR positioning**

*Type: LS out For: Approval  
 to RAN2  
 Source: Ericsson*

**Abstract:**

LS on new measurement gaps for NR positioning

**Discussion:**

The contribution was discussed during email thread [96e][217] NR\_pos\_RRM\_3. The discussion was recorded in R4-2012217.

**Decision:** The document was **noted**.

**R4-2011361 Introduction of new measurement gaps for PRS-based measurements**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1105 Cat: B (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

New measurement gap patterns are not specified.

CSSF for positioning measurements is not defined.

**Discussion:**

The contribution was discussed during email thread [96e][217] NR\_pos\_RRM\_3. The discussion was recorded in R4-2012217.

**Decision:** The document was **postponed**.

**R4-2011506 On new measurement gap patterns for NR positioning**

*Type: discussion For: Agreement  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Disussion on new MGP's for NR positioning

**Discussion:**

The contribution was discussed during email thread [96e][217] NR\_pos\_RRM\_3. The discussion was recorded in R4-2012217.

**Decision:** The document was **noted**.

**R4-2009674 New gap patterns for PRS measurements**

*Type: LS out For: Approval  
 to RAN2, cc RAN1  
 Source: ZTE Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][217] NR\_pos\_RRM\_3. The discussion was recorded in R4-2012217.

**Decision:** The document was **noted**.

**R4-2009740 Further discussion on new gap patterns for NR Pos measurement**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][217] NR\_pos\_RRM\_3. The discussion was recorded in R4-2012217.

**Decision:** The document was **noted**.

**R4-2009849 Discussion on new measurement gap patterns for positioning measurements**

*Type: discussion For: Discussion  
 Source: CATT*

**Discussion:**

The contribution was discussed during email thread [96e][217] NR\_pos\_RRM\_3. The discussion was recorded in R4-2012217.

**Decision:** The document was **noted**.

**R4-2009879 On new MG patterns for NR positioning**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

The contribution was discussed during email thread [96e][217] NR\_pos\_RRM\_3. The discussion was recorded in R4-2012217.

**Decision:** The document was **noted**.

**R4-2009882 Introduction of new MG patterns for NR positioning**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0942 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

Introduction of two new MG patterns: MG pattern ID 24 and 25

**Discussion:**

The contribution was discussed during email thread [96e][217] NR\_pos\_RRM\_3. The discussion was recorded in R4-2012217.

**Decision:** The document was **revised to R4-2012138**.

**R4-2012138 Introduction of new MG patterns for NR positioning**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0942 rev 1 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated*

(Replaces R4-2009882)

**Abstract:**

Introduction of two new MG patterns: MG pattern ID 24 and 25

**Discussion:**

The contribution was discussed during email thread [96e][217] NR\_pos\_RRM\_3. The discussion was recorded in R4-2012217.

**Decision:** The document was **revised to R4-2012287**.

**R4-2012287 Introduction of new MG patterns for NR positioning**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0942 rev 2 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated*

(Replaces R4-2012138)

**Abstract:**

Introduction of two new MG patterns: MG pattern ID 24 and 25

**Discussion:**

The contribution was discussed during email thread [96e][217] NR\_pos\_RRM\_3. The discussion was recorded in R4-2012217.

**Decision:** The document was **revised to R4-2012304**.

**R4-2012304 Introduction of new MG patterns for NR positioning**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0942 rev 3 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated*

(Replaces R4-2012287)

**Abstract:**

Introduction of two new MG patterns: MG pattern ID 24 and 25

**Discussion:**

The contribution was discussed during email thread [96e][217] NR\_pos\_RRM\_3. The discussion was recorded in R4-2012217.

**Decision:** The document was **agreed**.

**R4-2009913 On new positioning measurement gaps**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: Apple*

**Discussion:**

The contribution was discussed during email thread [96e][217] NR\_pos\_RRM\_3. The discussion was recorded in R4-2012217.

**Decision:** The document was **noted**.

##### 7.7.2.3 gNB requirements [NR\_pos-Core]

**R4-2011165 Discussion on the scope gNB requirements for NR positioning**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon, CMCC*

**Discussion:**

The contribution was discussed during email thread [96e][217] NR\_pos\_RRM\_3. The discussion was recorded in R4-2012217.

**Decision:** The document was **noted**.

**R4-2011166 Discussion on gNB positioning measurement requirements**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Discussion:**

The contribution was discussed during email thread [96e][217] NR\_pos\_RRM\_3. The discussion was recorded in R4-2012217.

**Decision:** The document was **noted**.

**R4-2011302 gNB Positioning System Simulation on SRS signals**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

For rx tx measurement the BS must detect the SRS signal. The signal strength depends on the interference in the cell. The simulations give an overview about the levels in the serving and the neighbour cell.

**Discussion:**

The contribution was discussed during email thread [96e][217] NR\_pos\_RRM\_3. The discussion was recorded in R4-2012217.

**Decision:** The document was **noted**.

**R4-2011303 gNB Positioning Requirement Analysis**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

It is proposed to divided the requirements for gNB positioning in 38.104 and 38.133 and give an update to the contorversal discussions of the last meeting.

**Discussion:**

The contribution was discussed during email thread [96e][217] NR\_pos\_RRM\_3. The discussion was recorded in R4-2012217.

**Decision:** The document was **noted**.

**R4-2011507 On gNB measurement accuracy requirements for NR positioning**

*Type: discussion For: Agreement  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Discussion on gNB measurement accuracy requirements for NR positioning.

**Discussion:**

The contribution was discussed during email thread [96e][217] NR\_pos\_RRM\_3. The discussion was recorded in R4-2012217.

**Decision:** The document was **noted**.

**R4-2009672 gNB requirements for NR positioning**

*Type: discussion For: Discussion  
 Source: ZTE Corporation*

**Abstract:**

This paper discusses some pending issues left from last meeting.

**Discussion:**

The contribution was discussed during email thread [96e][217] NR\_pos\_RRM\_3. The discussion was recorded in R4-2012217.

**Decision:** The document was **noted**.

**R4-2009850 Discussion on gNB measurement requirements**

*Type: discussion For: Discussion  
 Source: CATT*

**Discussion:**

The contribution was discussed during email thread [96e][217] NR\_pos\_RRM\_3. The discussion was recorded in R4-2012217.

**Decision:** The document was **noted**.

**R4-2009878 on gNB requirements for NR positioning**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

The contribution was discussed during email thread [96e][217] NR\_pos\_RRM\_3. The discussion was recorded in R4-2012217.

**Decision:** The document was **noted**.

##### 7.7.2.4 Other requirements [NR\_pos-Core]

**R4-2011167 Discussion on positioning SRS transmission during DRX inactive time**

*Type: LS out For: Approval  
 to RAN2, cc RAN1  
 Source: Huawei, Hisilicon*

**Discussion:**

The contribution was discussed during email thread [96e][217] NR\_pos\_RRM\_3. The discussion was recorded in R4-2012217.

**Decision:** The document was **noted**.

**R4-2011168 CR to add CSI-RS related reporting criteria for ECID**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1085 Cat: B (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

In RAN4#95-e, the reporitng criteria for ECID measruement has been introduced for SSB based measruement. However, CSI-RS related reporting criteria are missing as it has not been discussed in CSI-RS WI.

**Discussion:**

The contribution was discussed during email thread [96e][217] NR\_pos\_RRM\_3. The discussion was recorded in R4-2012217.

**Decision:** The document was **revised to R4-2012144**.

**R4-2012144 CR to add CSI-RS related reporting criteria for ECID**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1085 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei, Hisilicon*

(Replaces R4-2011168)

**Abstract:**

In RAN4#95-e, the reporitng criteria for ECID measruement has been introduced for SSB based measruement. However, CSI-RS related reporting criteria are missing as it has not been discussed in CSI-RS WI.

**Discussion:**

The contribution was discussed during email thread [96e][217] NR\_pos\_RRM\_3. The discussion was recorded in R4-2012217.

**Decision:** The document was **revised to R4-2012299**.

**R4-2012299 CR to add CSI-RS related reporting criteria for ECID**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1085 rev 2 Cat: B (Rel-16)  
  
 Source: Huawei, Hisilicon*

(Replaces R4-2012144)

**Abstract:**

In RAN4#95-e, the reporitng criteria for ECID measruement has been introduced for SSB based measruement. However, CSI-RS related reporting criteria are missing as it has not been discussed in CSI-RS WI.

**Discussion:**

The contribution was discussed during email thread [96e][217] NR\_pos\_RRM\_3. The discussion was recorded in R4-2012217.

**Decision:** The document was **agreed**.

**R4-2011249 SRS for positioning during DRX inactive time**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

This paper analyzes the impact of SRS transmission during DRX inactive time

**Discussion:**

The contribution was discussed during email thread [96e][217] NR\_pos\_RRM\_3. The discussion was recorded in R4-2012217.

**Decision:** The document was **noted**.

**R4-2011363 Reporting criteria for NR positioning measurements**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1106 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

In R4-1912793 , it was agreed “1 reporting criteria (Ecat = 1) per frequency layer for RSTD measurement.” which is not reflected in the requirements.

The maximum number of TRPs per frequency layer for PRS-based measurements is 64, as agreed by RAN1 has agreed in RAN1#99.

The word “multiple” in reporting criteria for NR RSTD, UE Rx-Tx, and PRS-RSRP is not clear enough.

**Discussion:**

The contribution was discussed during email thread [96e][217] NR\_pos\_RRM\_3. The discussion was recorded in R4-2012217.

**Decision:** The document was **revised to R4-2012145**.

**R4-2012145 Reporting criteria for NR positioning measurements**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1106 rev 1 Cat: F (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2011363)

**Abstract:**

In R4-1912793 , it was agreed “1 reporting criteria (Ecat = 1) per frequency layer for RSTD measurement.” which is not reflected in the requirements.

The maximum number of TRPs per frequency layer for PRS-based measurements is 64, as agreed by RAN1 has agreed in RAN1#99.

The word “multiple” in reporting criteria for NR RSTD, UE Rx-Tx, and PRS-RSRP is not clear enough.

**Discussion:**

The contribution was discussed during email thread [96e][217] NR\_pos\_RRM\_3. The discussion was recorded in R4-2012217.

**Decision:** The document was **agreed**.

**R4-2009914 On positioning SRS transmission in CDRX**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: Apple*

**Discussion:**

The contribution was discussed during email thread [96e][217] NR\_pos\_RRM\_3. The discussion was recorded in R4-2012217.

**Decision:** The document was **noted**.

### 7.8 Physical layer enhancements for NR URLLC [NR\_L1enh\_URLLC-Core]

#### 7.8.1 Demodulation and CSI requirements (38.101-4/38.104) [NR\_L1enh\_URLLC-Perf]

**R4-2012551 Email discussion summary for [96e][318] NR\_L1enh\_URLLC\_Demod\_Part1**

*Type: other For: discussion  
 Source: Moderator (Ericsson)*

**Discussion:**

The contribution summarized email discussion thread [96e][318] NR\_L1enh\_URLLC\_Demod\_Part1. The topic areas for discussion were Rel-16 URLLC test methodology and test cases with ultra-low BLER. The email thread was moderated by Thomas Chapman (Ericsson). All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2012734**.

**R4-2012734 Email discussion summary for [96e][318] NR\_L1enh\_URLLC\_Demod\_Part1**

*Type: other For: discussion  
 Source: Moderator (Ericsson)*

(Replaces R4-2012551)

**Discussion:**

The contribution summarized email discussion thread [96e][318] NR\_L1enh\_URLLC\_Demod\_Part1. The topic areas for discussion were Rel-16 URLLC test methodology and test cases with ultra-low BLER. The email thread was moderated by Thomas Chapman (Ericsson). All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **noted**.

**GTW session on Aug 25th**

1. **Topic 1(318): FR2 test for Ultra-BLER**

**Issue 1-1: Applicability of 10^-5 BLER in FR2 scenario**

Please provide further comments on the following reasons why it is suggested that the FR2 requirement is not realistic:

* Spatial and frequency selectivity and deep fades due to uncontrollable environment changes
* Beam management impacts
* Higher pathloss and CQI feedback
* Evaluations done for FR1

It is suggested that the requirement may be realistic in an industrial environment. Please provide further argument why/why not

**Issue 1-2: Any issues for setting an FR2 requirement**

Please provide further comments on the following issues which have been identified in respect to FR2 requirements:

* AWGN cannot be used for realistic testing in FR2 (as it will not correlate with actual performance)
* Beamforming mechanism and stability need to be considered for the requirement
* RF impacts for FR2 may impact BLER performance more
* OTA Test equipment setup ability to achieve complete fidelity for FR2
* TDD slot pattern lengthening test time

It is suggested that with locking of the beam direction (after beam setting before testing commences) will ensure FR2 testing works. Please comment further on this.

**Issue 1-3: Create FR2 requirements**

Based on the discussion of Issue 1-1 and 1-2, opinion on whether to create FR2 requirements:

* Option 1: Yes
* Option 2: No

Agreement: Not introduce FR2 requirements in Rel-16 for URLLC with ultra-BLER.

1. **Topic 2-2(319): FR2 test for high reliability in UE side**

**Issue 2-2-1: Whether to define URLLC high reliability requirements for FR2**

* Proposals
  + Option 1: Yes (Intel, DoCoMo, Ericsson, Samsung)
  + Option 2: No (Apple, Huawei, QC)
  + Option 3: Yes with test applicability rule.
* Recommended WF
  + TBD

Huawei: we don’t see the usage cases.

QC: we already not define test cases for 1e-05.

Intel: We just want to verify FR2 Device PDSCH repetition, not related high reliability.

Ericsson: It’s not ultra-reliability, high reliability, It’s different use cases. We already agree to define test cases in BS side.

NTT DoCoMO: similar view as E///.

Apple: the purpose to verify slot aggregation with low BLER. Test metric 1% BLER on PDSCH.

Intel: Test metric, we can further discuss.

E///: regarding test metric, we prefer using 1% BLER similar as FR1.

Samsung: similar view as E///.

Agreement:

*Introduce test cases with PDSCCH repetition in FR2 with 1% BLER as test metric*

**Issue 2-2-2: Test applicability rule for FR2 (only if FR2 is defined)**

* Proposals
  + Option 1: The performance requirements are only applicable for UE supporting FR2 operating bands. (Ericsson, Huawei, Intel)
  + Option 2:
* Recommended WF
  + TBD

Agreement: Option 1.

**Issue 2-2-3: Test applicability rule for FR1 and FR2 if UE support both (only if FR2 is defined)**

* Proposals
  + Option 1: UE should be tested only for FR1 if UE support both FR1 and FR2.
  + Option 2: UE should be tested for both FR1 and FR2 if UE support FR1 and FR2 (DoCoMo, Intel)
* Recommended WF
  + TBD

Agreement: Option 2

1. **Topic 2(318): CQI test with ultra-low BLER**

**Issue 2-1: Is the CQI test feasible if a lower confidence level is used than for the BLER test ?**

* Option 1: We are OK to define the requirement with 95% confidence
* Option 2: We are OK with 99% confidence
* Option 3: Yes, with 99.999% confidence
* Option 4: We do not see the requirement as feasible with any confidence level
* Please explain why you indicate the confidence level you do (or not feasible); what test time do you expect ?

Agreements:

Work assumption: Introduce ultra-BLER static CQI test cases under the assumption that test time is similar as Fixed MCS test cases ; further discuss how to ensure reasonable test time with below possible options:

-Decrease confidence level (from 99.999% ~95%)

-Early pass/fail criteria

Note both options adopted not excluded.

Apple: Whether such low confidence level will be applied for Fixed MCS test cases?

E///: We have high probability that early pass/fail not actual matched with real UE performance.

Apple: How we can introduce CQI test case with low confidence level?

E///: If we define low confidence level, UE can early pass/fail with shorted test time. In Fixed MCS, NW have confidence; but for CQI, NW not always rely on UE reporting.

QC: If not verified, UE maybe choose very pessimistic way to report CQI with low TP.

Intel: We have similar concern for test time; early pass/fail for Fixed MCS may not feasible for CQI test cases.

Apple: We have to avoid long test time; we propose fading CQI test cases without BLER requirements. With this we can meet test purpose, with less test time. Using same confidence level, we think not feasible to introduce static CQI test cases.

QC: Test time calculation assumes no early pass/fail in Intel paper, in our analysis we conclude achievable test time with early pass/fail. We don’ think fading CQI test case not meet test purpose.

E///: We share similar view as QC. We are also fine with same confidence level if test time still workable.

Apple: Follow CQI/Fixed median CQI in fading test cases, also have BLER requirements 0.02; but we are not going with 1e-5 BLER.

Intel: In 1st round discussion, we consider with early pass/fail, test time still not achievable without confidence level changes.

Huawei: If you don’t increase BLER, test purpose still not verified under fading CQI test cases. We are fine to discuss the confidence level.

**R4-2012646 WF on ultra-low BLER requirement**

*Type: other For: discussion  
 Source: Ericsson*

**Decision:** The document was **approved**.

**R4-2012552 Email discussion summary for [96e][319] NR\_L1enh\_URLLC\_Demod\_Part2**

*Type: other For: discussion  
 Source: Moderator (Huawei)*

**Discussion:**

The contribution summarized email discussion thread [96e][319] NR\_L1enh\_URLLC\_Demod\_Part2. The topic areas for discussion were Rel-16 URLLC UE demodulation and CSI requirements and BS demodulation requirements with higher BLER. The email thread was moderated by Lu Bai (HiSilicon Technologies Co. Ltd). All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2012735**.

**R4-2012735 Email discussion summary for [96e][319] NR\_L1enh\_URLLC\_Demod\_Part2**

*Type: other For: discussion  
 Source: Moderator (Huawei)*

(Replaces R4-2012552)

**Discussion:**

The contribution summarized email discussion thread [96e][319] NR\_L1enh\_URLLC\_Demod\_Part2. The topic areas for discussion were Rel-16 URLLC UE demodulation and CSI requirements and BS demodulation requirements with higher BLER. The email thread was moderated by Lu Bai (HiSilicon Technologies Co. Ltd). All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **noted**.

**R4-2012648 Way forward on NR URLLC UE performance requirements**

*Type: other For: discussion  
 Source: Intel*

**Discussion:**

The contribution was discussed during email thread [96e][318] NR\_L1enh\_URLLC\_Demod\_Part1. The discussion was recorded in R4-2012734.

**Decision:** The document was **approved**.

**R4-2012649 Way forward on NR URLLC BS performance requirements**

*Type: other For: discussion  
 Source: Huawei*

**Discussion:**

The contribution was discussed during email thread [96e][318] NR\_L1enh\_URLLC\_Demod\_Part1. The discussion was recorded in R4-2012734.

**Decision:** The document was **approved**.

**R4-2010994 Work plan for Physical layer enhancements for NR ultra-reliable and low latency communication**

*Type: Work Plan For: Approval  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][318] NR\_L1enh\_URLLC\_Demod\_Part1. The discussion was recorded in R4-2012734.

**Decision:** The document was **noted**.

**R4-2011340 draftCR for 38.104: High reliability and low latency BS demod requirements**

*Type: draftCR For: Endorsement  
 38.104 v16.4.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

- Decision to introduce requirements for higher reliability and lower latency

**Discussion:**

The contribution was discussed during email thread [96e][318] NR\_L1enh\_URLLC\_Demod\_Part1. The discussion was recorded in R4-2012734.

**Decision:** The document was **revised to R4-2012659**.

**R4-2012659 draftCR for 38.104: High reliability and low latency BS demod requirements**

*Type: draftCR For: Endorsement  
 38.104 v16.4.0  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2011340)

**Abstract:**

- Decision to introduce requirements for higher reliability and lower latency

**Discussion:**

The contribution was discussed during email thread [96e][318] NR\_L1enh\_URLLC\_Demod\_Part1. The discussion was recorded in R4-2012734.

**Decision:** The document was **endorsed**.

##### 7.8.1.1 Performance requirements with ultra-low BLER [NR\_L1enh\_URLLC-Perf]

###### 7.8.1.1.1 UE demodulation requirements [NR\_L1enh\_URLLC-Perf]

**R4-2010193 On UE demod and CSI requirements for Ultra low BLER**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision:** The document was **withdrawn**.

**R4-2010976 Discussion on URLLC UE demodulation requirements with ultra-low BLER**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][318] NR\_L1enh\_URLLC\_Demod\_Part1. The discussion was recorded in R4-2012734.

**Decision:** The document was **noted**.

**R4-2010977 Simulation results on URLLC UE demodulation requireemnts with ultra-low BLER**

*Type: other For: Information  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][318] NR\_L1enh\_URLLC\_Demod\_Part1. The discussion was recorded in R4-2012734.

**Decision:** The document was **noted**.

**R4-2010986 CR to TS 38.101-4: Applicability rules for URLLC UE demodulation requirements**

*Type: CR For: Agreement  
 38.101-4 v16.1.0 CR-0070 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

For URLLC UE demodulation requirements, four new demodulation requirements are defined. To clearly introduce new demodulation requirements in specification, applicability rules for these demodulation requirements should be clarified.

**Discussion:**

The contribution was discussed during email thread [96e][318] NR\_L1enh\_URLLC\_Demod\_Part1. The discussion was recorded in R4-2012734.

**Decision:** The document was **revised to R4-2012651**.

**R4-2012651 CR to TS 38.101-4: Applicability rules for URLLC UE demodulation requirements**

*Type: CR For: Agreement  
 38.101-4 v16.1.0 CR-0070 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2010986)

**Abstract:**

For URLLC UE demodulation requirements, four new demodulation requirements are defined. To clearly introduce new demodulation requirements in specification, applicability rules for these demodulation requirements should be clarified.

**Discussion:**

The contribution was discussed during email thread [96e][318] NR\_L1enh\_URLLC\_Demod\_Part1. The discussion was recorded in R4-2012734.

**Decision:** The document was **not pursued**.

**R4-2011370 Simulation on UE URLLC performance requirements for Ultra low BLER**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this paper we provide simulation results for Ultra low BLER requirements

**Discussion:**

The contribution was discussed during email thread [96e][318] NR\_L1enh\_URLLC\_Demod\_Part1. The discussion was recorded in R4-2012734.

**Decision:** The document was **noted**.

**R4-2011435 LS on Test Methodology for UE URLLC Ultra Low BLER Tests**

*Type: LS out For: Approval  
 to RAN WG5  
 Source: Qualcomm Incorporated*

**Discussion:**

The contribution was discussed during email thread [96e][318] NR\_L1enh\_URLLC\_Demod\_Part1. The discussion was recorded in R4-2012734.

**Decision:** The document was **revised to R4-2012647**.

**R4-2012647 LS on Test Methodology for UE URLLC Ultra Low BLER Tests**

*Type: LS out For: Approval  
 to RAN WG5  
 Source: Qualcomm Incorporated*

(Replaces R4-2011435)

**Discussion:**

The contribution was discussed during email thread [96e][318] NR\_L1enh\_URLLC\_Demod\_Part1. The discussion was recorded in R4-2012734.

**Decision:** The document was **revised to R4-2012769**.

**R4-2012769 LS on Test Methodology for UE URLLC Ultra Low BLER Tests**

*Type: LS out For: Approval  
 to RAN WG5  
 Source: Qualcomm Incorporated*

(Replaces R4-2012647)

**Decision:** The document was **revised to R4-2012770**.

**R4-2012770 LS on Test Methodology for UE URLLC Ultra Low BLER Tests**

*Type: LS out For: Approval  
 to RAN5  
 Source: RAN4*

(Replaces R4-2012769)

**Decision:** The document was **approved**.

**R4-2011443 Views on URLLC Ultra-low BLER Demodulation Test Cases**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

The contribution was discussed during email thread [96e][318] NR\_L1enh\_URLLC\_Demod\_Part1. The discussion was recorded in R4-2012734.

**Decision:** The document was **noted**.

**R4-2009611 On UE demod and CSI requirements for Ultra low BLER**

*Type: discussion For: Discussion  
 Source: Apple*

**Discussion:**

The contribution was discussed during email thread [96e][318] NR\_L1enh\_URLLC\_Demod\_Part1. The discussion was recorded in R4-2012734.

**Decision:** The document was **noted**.

**R4-2009722 Discussion on UE demodulation requirements for Ultra-low BLER**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][318] NR\_L1enh\_URLLC\_Demod\_Part1. The discussion was recorded in R4-2012734.

**Decision:** The document was **noted**.

###### 7.8.1.1.2 CSI requirements [NR\_L1enh\_URLLC-Perf]

**R4-2010980 Discussion on CSI requireements with ultra low-BLER**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][318] NR\_L1enh\_URLLC\_Demod\_Part1. The discussion was recorded in R4-2012734.

**Decision:** The document was **noted**.

**R4-2011444 Views on URLLC Ultra-low BLER CSI Reporting Test Cases**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

The contribution was discussed during email thread [96e][318] NR\_L1enh\_URLLC\_Demod\_Part1. The discussion was recorded in R4-2012734.

**Decision:** The document was **noted**.

**R4-2009723 Discussion on CSI requirements for Ultra-low BLER**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][318] NR\_L1enh\_URLLC\_Demod\_Part1. The discussion was recorded in R4-2012734.

**Decision:** The document was **noted**.

###### 7.8.1.1.3 BS demodulation requirements [NR\_L1enh\_URLLC-Perf]

**R4-2010836 Draft CR to 38.141-2: Introduction of URLLC 0.001% BLER requirement**

*Type: draftCR For: Endorsement  
 38.141-2 v16.4.0  
 Source: Ericsson*

**Abstract:**

There is a need to introduce the URLLC requirement for 0.001% BLER, as discussed for the CR split at RAN4#95-e.

**Discussion:**

The contribution was discussed during email thread [96e][318] NR\_L1enh\_URLLC\_Demod\_Part1. The discussion was recorded in R4-2012734.

**Decision:** The document was **revised to R4-2012660**.

**R4-2012660 Draft CR to 38.141-2: Introduction of URLLC 0.001% BLER requirement**

*Type: draftCR For: Endorsement  
 38.141-2 v16.4.0  
 Source: Ericsson*

(Replaces R4-2010836)

**Abstract:**

There is a need to introduce the URLLC requirement for 0.001% BLER, as discussed for the CR split at RAN4#95-e.

**Discussion:**

The contribution was discussed during email thread [96e][318] NR\_L1enh\_URLLC\_Demod\_Part1. The discussion was recorded in R4-2012734.

**Decision:** The document was **not pursued**.

**R4-2010837 Draft CR to 38.141-1 on test methodology and FRCs for URLLC and test requirements for 0.001% BLER**

*Type: draftCR For: Endorsement  
 38.141-1 v16.4.0  
 Source: Ericsson*

**Abstract:**

This draft CR to introduce URLLC into the performance specifications is created according to the CR work split agreed at RAN4#95-e. The following areas are covered:

FRC

Test Methodology

Requirements/Measurement of Performance requirements Annex C.3 / Measurement system set-up Annex D (for 0.001% BLER)

These areas have been combined into 1 draft CR considering the Chairman guidance of one draft CR per AI/spec/company.

**Discussion:**

The contribution was discussed during email thread [96e][318] NR\_L1enh\_URLLC\_Demod\_Part1. The discussion was recorded in R4-2012734.

**Decision:** The document was **revised to R4-2012654**.

**R4-2012654 Draft CR to 38.141-1 FRCs for URLLC**

*Type: draftCR For: Endorsement  
 38.141-1 v16.4.0  
 Source: Ericsson*

(Replaces R4-2010837)

**Abstract:**

This draft CR to introduce URLLC into the performance specifications is created according to the CR work split agreed at RAN4#95-e. The following areas are covered:

FRC

**Discussion:**

The contribution was discussed during email thread [96e][318] NR\_L1enh\_URLLC\_Demod\_Part1. The discussion was recorded in R4-2012734.

**Decision:** The document was **endorsed**.

**R4-2010840 Ultra-low BLER remaining issues for FR1 and FR2**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

Discussion on applicability for FR1 and the need for FR2

**Discussion:**

The contribution was discussed during email thread [96e][318] NR\_L1enh\_URLLC\_Demod\_Part1. The discussion was recorded in R4-2012734.

**Decision:** The document was **noted**.

**R4-2010841 Simulation results for URLLC ultra-low BLER requirements**

*Type: other For: Information  
 Source: Ericsson*

**Abstract:**

Simulation results

**Discussion:**

The contribution was discussed during email thread [96e][318] NR\_L1enh\_URLLC\_Demod\_Part1. The discussion was recorded in R4-2012734.

**Decision:** The document was **noted**.

**R4-2010978 Discussion on URLLC BS demodulation requireemnts with ultra-low BLER**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][318] NR\_L1enh\_URLLC\_Demod\_Part1. The discussion was recorded in R4-2012734.

**Decision:** The document was **noted**.

**R4-2010979 Simulation results on URLLC BS demodulation requirements with ultra-low BLER**

*Type: other For: Information  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][318] NR\_L1enh\_URLLC\_Demod\_Part1. The discussion was recorded in R4-2012734.

**Decision:** The document was **noted**.

**R4-2010990 CR to TS 38.141-1: Applicability of URLLC BS demodulation requirements**

*Type: CR For: Agreement  
 38.141-1 v16.4.0 CR-0147 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

As demodulation requirements for PUSCH mapping Type B with 2 symbol length allocated were agreed to be introduced in specification, the existing applicability for mapping type is needed to be updated when considering the new requirements.

**Discussion:**

The contribution was discussed during email thread [96e][318] NR\_L1enh\_URLLC\_Demod\_Part1. The discussion was recorded in R4-2012734.

**Decision:** The document was **revised to R4-2012661**.

**R4-2012661 CR to TS 38.141-1: Applicability of URLLC BS demodulation requirements**

*Type: CR For: Agreement  
 38.141-1 v16.4.0 CR-0147 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2010990)

**Abstract:**

As demodulation requirements for PUSCH mapping Type B with 2 symbol length allocated were agreed to be introduced in specification, the existing applicability for mapping type is needed to be updated when considering the new requirements.

**Discussion:**

The contribution was discussed during email thread [96e][318] NR\_L1enh\_URLLC\_Demod\_Part1. The discussion was recorded in R4-2012734.

**Decision:** The document was **endorsed**.

**R4-2009700 Views on NR BS performance for ultra-low BLER**

*Type: other For: Approval  
 Source: NTT DOCOMO, INC.*

**Discussion:**

The contribution was discussed during email thread [96e][318] NR\_L1enh\_URLLC\_Demod\_Part1. The discussion was recorded in R4-2012734.

**Decision:** The document was **noted**.

**R4-2009724 Discussion on BS requirements for Ultra-low BLER**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][318] NR\_L1enh\_URLLC\_Demod\_Part1. The discussion was recorded in R4-2012734.

**Decision:** The document was **noted**.

**R4-2009856 On NR Rel-16 ultra low BLER BS demodulation requirements and simulation results**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

In this contribution we have provided our views on various open ultra-low BLER URLLC issues. In particular, FR2 requirements, SCS test applicability, and test tolerances. Additionally, the simulation results were included.

**Discussion:**

The contribution was discussed during email thread [96e][318] NR\_L1enh\_URLLC\_Demod\_Part1. The discussion was recorded in R4-2012734.

**Decision:** The document was **noted**.

##### 7.8.1.2 Performance requirements with higher BLER [NR\_L1enh\_URLLC-Perf]

###### 7.8.1.2.1 UE demodulation requirements [NR\_L1enh\_URLLC-Perf]

**R4-2010194 On UE demod and CSI requirements with higher BLER**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision:** The document was **withdrawn**.

**R4-2010720 Discussion on eMBB UE performance requirement with pre-emption**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

The contribution was discussed during email thread [96e][319] NR\_L1enh\_URLLC\_Demod\_Part2. The discussion was recorded in R4-2012735.

**Decision:** The document was **noted**.

**R4-2010981 Discussion on URLLC UE demodulation requirements with higher BLER**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][319] NR\_L1enh\_URLLC\_Demod\_Part2. The discussion was recorded in R4-2012735.

**Decision:** The document was **noted**.

**R4-2010982 Simulation results on URLLC UE demodulation requirements with higher BLER**

*Type: other For: Information  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][319] NR\_L1enh\_URLLC\_Demod\_Part2. The discussion was recorded in R4-2012735.

**Decision:** The document was **noted**.

**R4-2010987 CR to TS 38.101-4: Performance requirements for URLLC PDSCH repetitions over multiple slots**

*Type: CR For: Agreement  
 38.101-4 v16.1.0 CR-0071 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

New feature of PDSCH repetitions over multiple slots were defined for URLLC. In order to test the performance of this new feature, a demodulation requirements are introduced as per RAN4 agreements.

**Discussion:**

The contribution was discussed during email thread [96e][319] NR\_L1enh\_URLLC\_Demod\_Part2. The discussion was recorded in R4-2012735.

**Decision:** The document was **revised to R4-2012650**.

**R4-2012650 CR to TS 38.101-4: Performance requirements for URLLC PDSCH repetitions over multiple slots**

*Type: CR For: Agreement  
 38.101-4 v16.1.0 CR-0071 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2010987)

**Abstract:**

New feature of PDSCH repetitions over multiple slots were defined for URLLC. In order to test the performance of this new feature, a demodulation requirements are introduced as per RAN4 agreements.

**Discussion:**

The contribution was discussed during email thread [96e][319] NR\_L1enh\_URLLC\_Demod\_Part2. The discussion was recorded in R4-2012735.

**Decision:** The document was **endorsed**.

**R4-2010993 Summary of simulation results of NR UE demod (FR1)**

*Type: other For: Information  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][319] NR\_L1enh\_URLLC\_Demod\_Part2. The discussion was recorded in R4-2012735.

**Decision:** The document was **noted**.

**R4-2011046 Views on URLLC requirements with higher BLER**

*Type: discussion For: Discussion  
 Source: NTT DOCOMO, INC.*

**Discussion:**

The contribution was discussed during email thread [96e][319] NR\_L1enh\_URLLC\_Demod\_Part2. The discussion was recorded in R4-2012735.

**Decision:** The document was **noted**.

**R4-2011280 Summary of simulation results of NR UE demod with higher BLER (FR1)**

*Type: other For: Information  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][319] NR\_L1enh\_URLLC\_Demod\_Part2. The discussion was recorded in R4-2012735.

**Decision:** The document was **noted**.

**R4-2011371 Discussion and simulation on UE URLLC demodulation performance requirements with higher BLER**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this paper we provide simulation results and our views on high BLER URLLC feature testing

**Discussion:**

The contribution was discussed during email thread [96e][319] NR\_L1enh\_URLLC\_Demod\_Part2. The discussion was recorded in R4-2012735.

**Decision:** The document was **noted**.

**R4-2011403 Draft CR on FR1 PDSCH Mapping Type B and Processing Capability 2 Requirements**

*Type: draftCR For: Endorsement  
 38.101-4 v16.1.0  
 Source: Qualcomm Incorporated*

**Abstract:**

FR1 PDSCH Mapping Type B and Processing Capability 2 requirements are not defined.

**Discussion:**

The contribution was discussed during email thread [96e][319] NR\_L1enh\_URLLC\_Demod\_Part2. The discussion was recorded in R4-2012735.

**Decision:** The document was **revised to R4-2012652**.

**R4-2012652 Draft CR on FR1 PDSCH Mapping Type B and Processing Capability 2 Requirements**

*Type: draftCR For: Endorsement  
 38.101-4 v16.1.0  
 Source: Qualcomm Incorporated*

(Replaces R4-2011403)

**Abstract:**

FR1 PDSCH Mapping Type B and Processing Capability 2 requirements are not defined.

**Discussion:**

The contribution was discussed during email thread [96e][319] NR\_L1enh\_URLLC\_Demod\_Part2. The discussion was recorded in R4-2012735.

**Decision:** The document was **endorsed**.

**R4-2011445 Views on URLLC High BLER Demodulation Test Cases**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

The contribution was discussed during email thread [96e][319] NR\_L1enh\_URLLC\_Demod\_Part2. The discussion was recorded in R4-2012735.

**Decision:** The document was **noted**.

**R4-2009612 On UE demod and CSI requirements with higher BLER**

*Type: discussion For: Discussion  
 Source: Apple*

**Discussion:**

The contribution was discussed during email thread [96e][319] NR\_L1enh\_URLLC\_Demod\_Part2. The discussion was recorded in R4-2012735.

**Decision:** The document was **noted**.

**R4-2009725 Discussion on UE demodulation requirements for URLLC**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][319] NR\_L1enh\_URLLC\_Demod\_Part2. The discussion was recorded in R4-2012735.

**Decision:** The document was **revised to R4-2012564**.

**R4-2012564 Discussion on UE demodulation requirements for URLLC**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

(Replaces R4-2009725)

**Discussion:**

The contribution was discussed during email thread [96e][319] NR\_L1enh\_URLLC\_Demod\_Part2. The discussion was recorded in R4-2012735.

**Decision:** The document was **noted**.

###### 7.8.1.2.2 CSI requirements [NR\_L1enh\_URLLC-Perf]

**R4-2010985 CR to TS 38.101-4: Applicability rules for URLLC CSI requirements**

*Type: CR For: Agreement  
 38.101-4 v16.1.0 CR-0069 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

A new CQI table is designed for URLLC, to introduce the new CQI requirements, the applicability rule for URLLC CQI requirements should be clearly defined.

**Discussion:**

The contribution was discussed during email thread [96e][319] NR\_L1enh\_URLLC\_Demod\_Part2. The discussion was recorded in R4-2012735.

**Decision:** The document was **revised to R4-2012653**.

**R4-2012653 CR to TS 38.101-4: Applicability rules for URLLC CSI requirements**

*Type: CR For: Agreement  
 38.101-4 v16.1.0 CR-0069 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2010985)

**Abstract:**

A new CQI table is designed for URLLC, to introduce the new CQI requirements, the applicability rule for URLLC CQI requirements should be clearly defined.

**Discussion:**

The contribution was discussed during email thread [96e][319] NR\_L1enh\_URLLC\_Demod\_Part2. The discussion was recorded in R4-2012735.

**Decision:** The document was **not pursued**.

**R4-2011372 Discussion and simulation on URLLC UE CQI reporting requirements for CQI table 3**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this paper we provide our views on CQI table 3 performance requirements

**Discussion:**

The contribution was discussed during email thread [96e][319] NR\_L1enh\_URLLC\_Demod\_Part2. The discussion was recorded in R4-2012735.

**Decision:** The document was **noted**.

**R4-2011446 Views on URLLC High BLER CSI Reporting Test Cases**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

The contribution was discussed during email thread [96e][319] NR\_L1enh\_URLLC\_Demod\_Part2. The discussion was recorded in R4-2012735.

**Decision:** The document was **noted**.

**R4-2009726 Discussion on CSI requirements for URLLC**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][319] NR\_L1enh\_URLLC\_Demod\_Part2. The discussion was recorded in R4-2012735.

**Decision:** The document was **noted**.

###### 7.8.1.2.3 BS demodulation requirements [NR\_L1enh\_URLLC-Perf]

**R4-2010282 Discussion and simulation results for BS URLLC requirement**

*Type: discussion For: Discussion  
 Source: Samsung*

**Discussion:**

The contribution was discussed during email thread [96e][319] NR\_L1enh\_URLLC\_Demod\_Part2. The discussion was recorded in R4-2012735.

**Decision:** The document was **noted**.

**R4-2010838 Remaining FR1 issues and FR2 issues for URLLC demod**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

Discussion on TDD pattern for FR1 and FR2 parameters

**Discussion:**

The contribution was discussed during email thread [96e][319] NR\_L1enh\_URLLC\_Demod\_Part2. The discussion was recorded in R4-2012735.

**Decision:** The document was **noted**.

**R4-2010839 Simulation results for URLLC**

*Type: other For: Information  
 Source: Ericsson*

**Abstract:**

Simulation results

**Discussion:**

The contribution was discussed during email thread [96e][319] NR\_L1enh\_URLLC\_Demod\_Part2. The discussion was recorded in R4-2012735.

**Decision:** The document was **noted**.

**R4-2010983 Discussion on URLLC BS demodulation requirements with higher BLER**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][319] NR\_L1enh\_URLLC\_Demod\_Part2. The discussion was recorded in R4-2012735.

**Decision:** The document was **noted**.

**R4-2010984 Simulation results on BS demodulation reuqirements with higher BLER**

*Type: other For: Information  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][319] NR\_L1enh\_URLLC\_Demod\_Part2. The discussion was recorded in R4-2012735.

**Decision:** The document was **noted**.

**R4-2010988 CR to TS 38.104: Performance requirements for URLLC PUSCH repetition Type A**

*Type: CR For: Agreement  
 38.104 v16.4.0 CR-0231 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

PUSCH repetition Type A was agreed to be introduced as the new feature for URLLC to improve the high reliability for PUSCH performance. In order to verify the demodulation performance for PUSCH repetition Type A, the new demodulation requirements are defined.

**Discussion:**

The contribution was discussed during email thread [96e][319] NR\_L1enh\_URLLC\_Demod\_Part2. The discussion was recorded in R4-2012735.

**Decision:** The document was **revised to R4-2012655**.

**R4-2012655 CR to TS 38.104: Performance requirements for URLLC PUSCH repetition Type A**

*Type: CR For: Agreement  
 38.104 v16.4.0 CR-0231 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2010988)

**Abstract:**

PUSCH repetition Type A was agreed to be introduced as the new feature for URLLC to improve the high reliability for PUSCH performance. In order to verify the demodulation performance for PUSCH repetition Type A, the new demodulation requirements are defined.

**Discussion:**

The contribution was discussed during email thread [96e][319] NR\_L1enh\_URLLC\_Demod\_Part2. The discussion was recorded in R4-2012735.

**Decision:** The document was **endorsed**.

**R4-2010989 CR to TS 38.141-1: Performance requirements for URLLC BS demodulation requirements with higher BLER**

*Type: CR For: Agreement  
 38.141-1 v16.4.0 CR-0146 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

PUSCH repetition Type A was defined as the new feature to improve the high reliability for PUSCH performance. PUSCH mapping Type B with low number of symbols was agreed to be configured to reduce latency. In order to verify these two features for URLLC, the demodulation requirements are defined and should be introduced in this specification.

**Discussion:**

The contribution was discussed during email thread [96e][319] NR\_L1enh\_URLLC\_Demod\_Part2. The discussion was recorded in R4-2012735.

**Decision:** The document was **revised to R4-2012656**.

**R4-2012656 CR to TS 38.141-1: Performance requirements for URLLC BS demodulation requirements with higher BLER**

*Type: CR For: Agreement  
 38.141-1 v16.4.0 CR-0146 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2010989)

**Abstract:**

PUSCH repetition Type A was defined as the new feature to improve the high reliability for PUSCH performance. PUSCH mapping Type B with low number of symbols was agreed to be configured to reduce latency. In order to verify these two features for URLLC, the demodulation requirements are defined and should be introduced in this specification.

**Discussion:**

The contribution was discussed during email thread [96e][319] NR\_L1enh\_URLLC\_Demod\_Part2. The discussion was recorded in R4-2012735.

**Decision:** The document was **endorsed**.

**R4-2010991 CR to TS 38.141-2: FRC for URLLC BS performance requirements**

*Type: CR For: Agreement  
 38.141-2 v16.4.0 CR-0217 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

For URLLC test cases, new FRCs are defined and agreed in RAN4.

**Discussion:**

The contribution was discussed during email thread [96e][319] NR\_L1enh\_URLLC\_Demod\_Part2. The discussion was recorded in R4-2012735.

**Decision:** The document was **revised to R4-2012657**.

**R4-2012657 CR to TS 38.141-2: FRC for URLLC BS performance requirements**

*Type: CR For: Agreement  
 38.141-2 v16.4.0 CR-0217 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2010991)

**Abstract:**

For URLLC test cases, new FRCs are defined and agreed in RAN4.

**Discussion:**

The contribution was discussed during email thread [96e][319] NR\_L1enh\_URLLC\_Demod\_Part2. The discussion was recorded in R4-2012735.

**Decision:** The document was **endorsed**.

**R4-2010992 Summary of simulation results of NR BS demod (FR1)**

*Type: other For: Information  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][319] NR\_L1enh\_URLLC\_Demod\_Part2. The discussion was recorded in R4-2012735.

**Decision:** The document was **noted**.

**R4-2011279 Summary of simulation results of NR BS demod with higher BLER (FR1)**

*Type: other For: Information  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][319] NR\_L1enh\_URLLC\_Demod\_Part2. The discussion was recorded in R4-2012735.

**Decision:** The document was **noted**.

**R4-2011396 Draft CR for TS 38.141-2: Introduction of performance requirements of PUSCH repetition type A and PUSCH mapping type B for URLLC**

*Type: draftCR For: Endorsement  
 38.141-2 v16.4.0  
 Source: NTT DOCOMO, INC.*

**Abstract:**

This CR introduces performance requirements of PUSCH repetition Type A and PUSCH mapping type B with low number of symbols for URLLC.

**Discussion:**

The contribution was discussed during email thread [96e][319] NR\_L1enh\_URLLC\_Demod\_Part2. The discussion was recorded in R4-2012735.

**Decision:** The document was **revised to R4-2012658**.

**R4-2012658 Draft CR for TS 38.141-2: Introduction of performance requirements of PUSCH repetition type A and PUSCH mapping type B for URLLC**

*Type: draftCR For: Endorsement  
 38.141-2 v16.4.0  
 Source: NTT DOCOMO, INC.*

(Replaces R4-2011396)

**Abstract:**

This CR introduces performance requirements of PUSCH repetition Type A and PUSCH mapping type B with low number of symbols for URLLC.

**Discussion:**

The contribution was discussed during email thread [96e][319] NR\_L1enh\_URLLC\_Demod\_Part2. The discussion was recorded in R4-2012735.

**Decision:** The document was **not pursued**.

**R4-2009701 Views on NR BS performance for high-reliability and low-latency**

*Type: other For: Approval  
 Source: NTT DOCOMO, INC.*

**Discussion:**

The contribution was discussed during email thread [96e][319] NR\_L1enh\_URLLC\_Demod\_Part2. The discussion was recorded in R4-2012735.

**Decision:** The document was **noted**.

**R4-2009727 Discussion on BS demodulation requirements for URLLC**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][319] NR\_L1enh\_URLLC\_Demod\_Part2. The discussion was recorded in R4-2012735.

**Decision:** The document was **noted**.

**R4-2009857 On NR Rel-16 high reliability and low latency BS demodulation requirements and simulation results**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

In this contribution we have provided our views on various open high reliability and low latency (e)URLLC issues. In particular, PUSCH aggregation factors, safety statements, and test applicability rules (esp. for FR2). Additionally, we have presented the

**Discussion:**

The contribution was discussed during email thread [96e][319] NR\_L1enh\_URLLC\_Demod\_Part2. The discussion was recorded in R4-2012735.

**Decision:** The document was **noted**.

### 7.9 Enhancements on MIMO for NR [NR\_eMIMO]

#### 7.9.1 UE RF core requirements (38.101) [NR\_eMIMO-Core]

**R4-2011545 Email discussion summary for [96e][112] NR\_eMIMO\_UE\_RF**

*Type: other For: discussion  
 Source: Moderator (Samsung)*

**Discussion:**

The contribution summarized email discussion thread [96e][112] NR\_eMIMO\_UE\_RF. The subject for discussion was UE RF core requirements . The email thread was moderated by He Wang (Samsung Electronics GmbH) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **revised to R4-2011852**.

**R4-2011852 Email discussion summary for [96e][112] NR\_eMIMO\_UE\_RF**

*Type: other For: discussion  
 Source: Moderator (Samsung)*

(Replaces R4-2011545)

**Discussion:**

The contribution summarized email discussion thread [96e][112] NR\_eMIMO\_UE\_RF. The subject for discussion was UE RF core requirements . The email thread was moderated by He Wang (Samsung Electronics GmbH) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **noted**.

**R4-2011761 WF on Remaining Issues for ULFPTx**

*Type: other For: discussion  
 Source: Samsung*

**Discussion:**

The contribution was discussed during email thread [96e][112] NR\_eMIMO\_UE\_RF. The discussion was recorded in R4-2011852.

**Decision:** The document was **withdrawn**.

##### 7.9.1.1 DMRS enhancement with PI/2 BPSK [NR\_eMIMO-Core]

**R4-2010029 CR for TS 38.101-1: Pi/2 BPSK DMRS**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0431 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

The WID request from RAN1 to RAN4 was “Identify impact on RF requirements for the reduced PAPR pi/2-BPSK DMRS for FR1 and, if needed, specify RF requirements”

Justification for new requirements:

Reduces MPRs with existing PC2 and PC3 assumptions and within existing framework of pi/2\_BPSK spectral shaping

This can be an optional capability to respect UE vendors decision to implement

In RAN#95-e MPR enhancement for a new waveform configuration of pi/2 BPSK DMRS with pi/2 BPSK data (PBD) was presented R4-2006822.

In TS38.101-1 section 6.2.2 the MPR tables 6.2.2-1 and 6.2.2-2 are modified to include the PBD waveform with its associated MPRs for PC3 and PC2 respectively.

PBD waveforms MPR enhancement is achieved through PAPR reduction using FDSS filtering. Therefore, in section 6.4.2.4.1 a new IE, DMRSPi2BPSK, and a new UE capability, DMRS-pi2BPSK-supported, is introduced to enable all PBD waveforms to use the EVM equalizer coefficients for Pi/2 BPSK defined in table 6.4.2.4.1-1 and filtering described in section 6.4.2.4.1.

PAPR’s of PBD waveforms are either similar or lower than CZ DMRS/pi/2 BPSK data waveforms depending on its filtering characterisitcs. Therefore, sections 6.2.3 and 6.2A.2.4 states that the A-MPRs and intra-band MPR values defined for CZ DMRS with pi/2 BPSK data can be used for PBD waveforms as well.

**Discussion:**

The contribution was discussed during email thread [96e][112] NR\_eMIMO\_UE\_RF. The discussion was recorded in R4-2011852.

**Decision:** The document was **not pursued**.

**R4-2011902 CR to add PC3 Pi/2 BPSK DMRS for IE powerBoostPi2BPSK = 0**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0486 Cat: B (Rel-16)  
  
 Source: Qualcomm, T-Mobile, ATT, Verizon, KDDI, Nokia*

**Abstract:**

The WID request from RAN1 to RAN4 was “Identify impact on RF requirements for the reduced PAPR pi/2-BPSK DMRS for FR1 and, if needed, specify RF requirements”

Justification for new requirements:

Reduces MPRs with existing PC3 assumptions and within existing framework of pi/2\_BPSK spectral shaping

This can be an optional capability to respect UE vendors decision to implement

In RAN#95-e MPR enhancement for a new waveform configuration of pi/2 BPSK DMRS with pi/2 BPSK data (PBD) was presented R4-2006822.

In TS38.101-1 section 6.2.2 the MPR table 6.2.2-1 is modified to include the PBD waveform with its associated MPRs for PC3.

PBD waveforms MPR enhancement is achieved through PAPR reduction using FDSS filtering. Therefore, in section 6.4.2.4.1 a new IE, DMRSPi2BPSK, and a new UE capability, DMRS-pi2BPSK-supported, is introduced to enable all PBD waveforms to use the EVM equalizer coefficients for Pi/2 BPSK defined in table 6.4.2.4.1-1 and filtering described in section 6.4.2.4.1.

PAPR’s of PBD waveforms are either similar or lower than CZ DMRS/pi/2 BPSK data waveforms depending on its filtering characterisitcs. Therefore, sections 6.2.3 and 6.2A.2.4 states that the A-MPRs and intra-band MPR values defined for CZ DMRS with pi/2 BPSK data can be used for PBD waveforms as well.

**Discussion:**

The contribution was discussed during email thread [96e][112] NR\_eMIMO\_UE\_RF. The discussion was recorded in R4-2011852.

**Decision:** The document was **revised to R4-2011919**.

**R4-2011919 CR to add PC3 Pi/2 BPSK DMRS for IE powerBoostPi2BPSK = 0**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0486 rev 1 Cat: B (Rel-16)  
  
 Source: Qualcomm, T-Mobile, ATT, Verizon, KDDI, Nokia*

(Replaces R4-2011902)

**Abstract:**

The WID request from RAN1 to RAN4 was “Identify impact on RF requirements for the reduced PAPR pi/2-BPSK DMRS for FR1 and, if needed, specify RF requirements”

Justification for new requirements:

Reduces MPRs with existing PC3 assumptions and within existing framework of pi/2\_BPSK spectral shaping

This can be an optional capability to respect UE vendors decision to implement

In RAN#95-e MPR enhancement for a new waveform configuration of pi/2 BPSK DMRS with pi/2 BPSK data (PBD) was presented R4-2006822.

In TS38.101-1 section 6.2.2 the MPR table 6.2.2-1 is modified to include the PBD waveform with its associated MPRs for PC3.

PBD waveforms MPR enhancement is achieved through PAPR reduction using FDSS filtering. Therefore, in section 6.4.2.4.1 a new IE, DMRSPi2BPSK, and a new UE capability, DMRS-pi2BPSK-supported, is introduced to enable all PBD waveforms to use the EVM equalizer coefficients for Pi/2 BPSK defined in table 6.4.2.4.1-1 and filtering described in section 6.4.2.4.1.

PAPR’s of PBD waveforms are either similar or lower than CZ DMRS/pi/2 BPSK data waveforms depending on its filtering characterisitcs. Therefore, sections 6.2.3 and 6.2A.2.4 states that the A-MPRs and intra-band MPR values defined for CZ DMRS with pi/2 BPSK data can be used for PBD waveforms as well.

**Discussion:**

The contribution was discussed during email thread [96e][112] NR\_eMIMO\_UE\_RF. The discussion was recorded in R4-2011852.

**Decision:** The document was **revised to R4-2011942**.

**R4-2011942 CR to add PC3 Pi/2 BPSK DMRS for IE powerBoostPi2BPSK = 0**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0486 rev 2 Cat: B (Rel-16)  
  
 Source: Qualcomm, T-Mobile, AT&T, Verizon, KDDI, Nokia*

(Replaces R4-2011919)

**Abstract:**

The WID request from RAN1 to RAN4 was “Identify impact on RF requirements for the reduced PAPR pi/2-BPSK DMRS for FR1 and, if needed, specify RF requirements”

Justification for new requirements:

Reduces MPRs with existing PC3 assumptions and within existing framework of pi/2\_BPSK spectral shaping

This can be an optional capability to respect UE vendors decision to implement

In RAN#95-e MPR enhancement for a new waveform configuration of pi/2 BPSK DMRS with pi/2 BPSK data (PBD) was presented R4-2006822.

In TS38.101-1 section 6.2.2 the MPR table 6.2.2-1 is modified to include the PBD waveform with its associated MPRs for PC3.

PBD waveforms MPR enhancement is achieved through PAPR reduction using FDSS filtering. Therefore, in section 6.4.2.4.1 a new IE, DMRSPi2BPSK, and a new UE capability, DMRS-pi2BPSK-supported, is introduced to enable all PBD waveforms to use the EVM equalizer coefficients for Pi/2 BPSK defined in table 6.4.2.4.1-1 and filtering described in section 6.4.2.4.1.

PAPR’s of PBD waveforms are either similar or lower than CZ DMRS/pi/2 BPSK data waveforms depending on its filtering characterisitcs. Therefore, sections 6.2.3 and 6.2A.2.4 states that the A-MPRs and intra-band MPR values defined for CZ DMRS with pi/2 BPSK data can be used for PBD waveforms as well.

**Discussion:**

The contribution was discussed during email thread [96e][112] NR\_eMIMO\_UE\_RF. The discussion was recorded in R4-2011852.

**Decision:** The document was **agreed**.

**R4-2010813 On Pi/2 BPSK DMRS**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][112] NR\_eMIMO\_UE\_RF. The discussion was recorded in R4-2011852.

**Decision:** The document was **noted**.

##### 7.9.1.2 Uplink Tx Full Power transmission [NR\_eMIMO-Core]

**R4-2010096 On the Remaining Issues of Uplink Full Power Transmission (ULFPTx)**

*Type: discussion For: Approval  
 Source: Samsung*

**Discussion:**

The contribution was discussed during email thread [96e][112] NR\_eMIMO\_UE\_RF. The discussion was recorded in R4-2011852.

**Decision:** The document was **noted**.

**R4-2010097 CR to TS38.101-1 on introduction of Uplink Full Power Transmission**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0433 Cat: B (Rel-16)  
  
 Source: Samsung, Qualcomm*

**Abstract:**

In Rel-16 eMIMO work item, ULFPTx feature is introduced. Accordingly, the UE RF requirement shall be changed to add the UE RF requirement for ULFPTx feature to achieve Maximum output power and other RF requirements for NR FR1.

**Discussion:**

The contribution was discussed during email thread [96e][112] NR\_eMIMO\_UE\_RF. The discussion was recorded in R4-2011852.

**Decision:** The document was **revised to R4-2011762**.

**R4-2011762 CR to TS38.101-1 on introduction of Uplink Full Power Transmission**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0433 rev 1 Cat: B (Rel-16)  
  
 Source: Samsung, Qualcomm*

(Replaces R4-2010097)

**Abstract:**

In Rel-16 eMIMO work item, ULFPTx feature is introduced. Accordingly, the UE RF requirement shall be changed to add the UE RF requirement for ULFPTx feature to achieve Maximum output power and other RF requirements for NR FR1.

**Discussion:**

The contribution was discussed during email thread [96e][112] NR\_eMIMO\_UE\_RF. The discussion was recorded in R4-2011852.

The Chairmain commented that for PC2 and PC3, MPR issues related to 2TX, including UL-MIMO, uplink full power transmission, and TxD, will be further discussed in TEI16.

**Decision:** The document was **agreed**.

**R4-2010811 On NR eMIMO full power transmission**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][112] NR\_eMIMO\_UE\_RF. The discussion was recorded in R4-2011852.

**Decision:** The document was **noted**.

**R4-2010812 draft CR for TS 38.101-1: update of eMIMO requirements for ULFPTx**

*Type: draftCR For: Endorsement  
 38.101-1 v16.4.0  
 Source: Huawei, HiSilicon*

**Abstract:**

The draft CR is based on previously endorsed CR R4-2008463.

**Discussion:**

The contribution was discussed during email thread [96e][112] NR\_eMIMO\_UE\_RF. The discussion was recorded in R4-2011852.

**Decision:** The document was **revised to R4-2011763**.

**R4-2011763 draft CR for TS 38.101-1: update of eMIMO requirements for ULFPTx**

*Type: draftCR For: Endorsement  
 38.101-1 v16.4.0  
 Source: Huawei, HiSilicon*

(Replaces R4-2010812)

**Abstract:**

The draft CR is based on previously endorsed CR R4-2008463.

**Discussion:**

The contribution was discussed during email thread [96e][112] NR\_eMIMO\_UE\_RF. The discussion was recorded in R4-2011852.

**Decision:** The document was **not pursued**.

**R4-2011450 CR to TS38.101-2 on ULFPTx and UE SRS port configuration clarification**

*Type: CR For: Agreement  
 38.101-2 v16.4.0 CR-0249 Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

In Rel-16 eMIMO work item, ULFPTx feature is introduced. Accordingly, the UE RF requirement shall be changed to add UE RF requirement for ULFPTx feature to achieve maximum output power.

Organize FR2 UE RF UL requirements by parameter nrofSRS-Ports, consistent with FR1 Rel-16 understanding on tx diversity for D-suffix, seprate out A-suffix for consistency

**Discussion:**

The contribution was discussed during email thread [96e][112] NR\_eMIMO\_UE\_RF. The discussion was recorded in R4-2011852.

**Decision:** The document was **revised to R4-2011764**.

**R4-2011764 CR to TS38.101-2 on ULFPTx and UE SRS port configuration clarification**

*Type: CR For: Agreement  
 38.101-2 v16.4.0 CR-0249 rev 1 Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

(Replaces R4-2011450)

**Abstract:**

In Rel-16 eMIMO work item, ULFPTx feature is introduced. Accordingly, the UE RF requirement shall be changed to add UE RF requirement for ULFPTx feature to achieve maximum output power.

**Discussion:**

The contribution was discussed during email thread [96e][112] NR\_eMIMO\_UE\_RF. The discussion was recorded in R4-2011852.

**Decision:** The document was **revised to R4-2011920**.

**R4-2011920 CR to TS38.101-2 on ULFPTx and UE SRS port configuration clarification**

*Type: CR For: Agreement  
 38.101-2 v16.4.0 CR-0249 rev 2 Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

(Replaces R4-2011764)

**Abstract:**

In Rel-16 eMIMO work item, ULFPTx feature is introduced. Accordingly, the UE RF requirement shall be changed to add UE RF requirement for ULFPTx feature to achieve maximum output power.

**Discussion:**

The contribution was discussed during email thread [96e][112] NR\_eMIMO\_UE\_RF. The discussion was recorded in R4-2011852.

**Decision:** The document was **agreed**.

#### 7.9.2 RRM core requirements (38.133) [NR\_eMIMO-Core]

**R4-2012049 Email discussion summary for [96e][218] NR\_eMIMO\_RRM**

*Type: other For: discussion  
 Source: Moderator (Samsung)*

**Discussion:**

The contribution summarized email discussion thread [96e][218] NR\_eMIMO\_RRM. The topic areas for discussion were RRM Core requirements. The email thread was moderated by He Wang (Samsung). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2012218**.

**R4-2012218 Email discussion summary for [96e][218] NR\_eMIMO\_RRM**

*Type: other For: discussion  
 Source: Moderator (Samsung)*

(Replaces R4-2012049)

**Discussion:**

The contribution summarized email discussion thread [96e][218] NR\_eMIMO\_RRM. The topic areas for discussion were RRM Core requirements. The email thread was moderated by He Wang (Samsung). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **noted**.

*1st round email discussion conclusions*

**Topic #1: L1-SINR Measurement**

**Topic #2: DL/UL Beam Indication with Reduced Latency and Overhead**

Issue 2-1-1: The necessity of RRM requirement for MAC-CE based Pathloss RS activation procedure:

Agreement

* MAC-CE based pathloss RS activation procedure:
  + RAN4 specify known/unknown PL RS condition, and specify delay requirement when target PL RS is known.
* No performance test should be defined in Rel-16 to capture this requirement in 38.133 if RAN4 can’t confirm the testability of the pathloss RS activation procedure.

Issue 2-1-2: If RAN4 conclude “yes” to Issue 2-1-1, how to specify requirement:

Agreement

* Delay requirement for MAC-CE based Pathloss RS activation procedure:
  + For PL RS known case, n + +



Issue 2-1-3: If RAN4 conclude “yes” to Issue 2-1-1, expected UE behavior before Pathloss RS is applied:

Agreement

* No requirement should be defined during the transition period of the applicable timing, i.e., between 1 to 5 measurement samples, for activating/updating PL RS.
* RAN4 further study and conclude the timeline to apply old PL RS by RAN4#96:
  + FFS: UE shall apply old pathloss reference signals until the slotn + + , upon receiving PDSCH carrying MAC-CE activation in slot n.



**Topic #3: Multi-TxRP Transmission**

Issue 3-1-2: Whether or not to specify how UE determine the reference timing of which TRxP is used for defining MRTD/MTTD requirements in intra-band EN-DC/CA

Agreement

* For multi-TRxP transmissions, RAN4 shall not to specify how UE to determine the reference timing of which TRxP is used for defining MRTD/MTTD requirements in intra-band EN-DC/CA.

*GTW session (Aug 26th)*

**MAC-CE based Pathloss RS Activation Delay**

* For expected UE behavior before Pathloss RS is applied:
  + Option-1: UE shall apply old pathloss reference signals until the slot n + + , upon receiving PDSCH carrying MAC-CE activation in slot n.



* + Option-2: UE shall apply old pathloss reference signals until the slot n + + +Tfirst PL-RS, upon receiving PDSCH carrying MAC-CE activation in slot n.



* + Option-3: No requirement shall be defined for until when UE shall apply old pathloss reference signals.
  + Other view collection for R4-2012148 (revised from R4-2010218) CR on introduce MAC-CE based PL RS activation delay
* Discussion
  + Apple: the question is whether UE behavior is testable. If not, then we don’t need to define the requirements. Also depends on availability of PL RS which taken into account in Option 2.
  + QC: Option 1. To Apple – some UEs may have been configured with RS already and can use previous measurements. Option 2 prohibits Option 1. Option 1 does not preclude Option 2.
  + ZTE: Prefer Option 2 as baseline. The transition period shall be as short as possible. To QC, the mentioned scenario does not always apply and we should have generic requirements.
  + Nokia, MTK, Huawei: Agree with Option 1.
  + Samsung: for the testability – we raised similar issue in the beginning but we observed many companies prefer to specify this. We already agreed in the 1st round that no performance test case will be defined if testability is not confirmed.
* Agreement
  + UE shall apply old pathloss reference signals until the slot n + + , upon receiving PDSCH carrying MAC-CE activation in slot n.



**Multi-TRxP Transmission**

* Issue 3-1-1: Whether or not RRM requirement impact is needed for multi-TxRP transmission
  + Option 1 (Ericsson, Huawei, Qualcomm, Nokia): No impact.
  + Option 1a (Qualcomm, MediaTek, Nokia): No impact on RRM requirement, and a note is added saying that, “UE may assume that UE will receive all signals from multiple TRPs within CP in intra-band EN-DC/CA scenarios”.
  + Option 1b (MediaTek): No impact on RRM requirement, and only for FR1 intra-band contiguous CA in multiple TPxPs case, UE is required to receive the signals from multiple CCs within CP.
  + Option 2 (Apple): With multi-TRP deployment co-located deployment is still applicable if either TRP is co-located with PCell.
  + Option 3 (Samsung, MediaTek): RAN4 add the following text proposal to intra-band EN-DC MRTD/MTTD and intra-band CA MRTD requirement in TS38.133 to better explain “co-located deployment”:
    - “The requirement shall be applicable to the co-located deployment with multi-TRP transmission.”
  + Discussion
    - QC: there is no consensus on the last 2 sub-bullets
    - E///: Plenary had some response to ITU on co-located deployment definition. We use it as a reference. Existing spec works. Multiple TRxPs does not have definition.
    - Apple: we can de-couple intra-band contiguous and non-contiguous cases. For contiguous case we don’t have MRTD and need to keep co-located assumptions. For non-contiguous we are ok to remove co-located assumption.

**Agreement:**

* For Rel-16 eMIMO multi-TxRP transmission,
  + No RRM core requirement impact identified on MRTD/MTTD values specified in Rel-15;

**R4-2012146 WF on Completing Rel-16 eMIMO RRM Core Requirement**

*Type: other For: discussion  
 Source: Samsung*

**Discussion:**

The contribution was discussed during email thread [96e][218] NR\_eMIMO\_RRM. The discussion was recorded in R4-2012218.

Agreement: UE may assume that all signals from multi-TRxPs of the same serving cell will be received within CP in intra-band contiguous CA scenarios

**Decision:** The document was **approved**.

##### 7.9.2.1 DL/UL beam indication with reduced latency and overhead [NR\_eMIMO-Core]

**R4-2010100 Discussion on updating pathloss RS for PUSCH/SRS via MAC-CE**

*Type: discussion For: Approval  
 Source: Samsung*

**Discussion:**

The contribution was discussed during email thread [96e][218] NR\_eMIMO\_RRM. The discussion was recorded in R4-2012218.

**Decision:** The document was **noted**.

**R4-2010217 Discussion on PL RS activation requirement via MAC CE**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

The contribution was discussed during email thread [96e][218] NR\_eMIMO\_RRM. The discussion was recorded in R4-2012218.

**Decision:** The document was **noted**.

**R4-2010218 CR for introduction of pathloss reference signal switching delay**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0992 Cat: B (Rel-16)  
  
 Source: MediaTek inc.*

**Abstract:**

MAC-CE based pathloss RS switching is introduced in Rel-16 eMIMO WI. Accordingly, applicable timing requirement on MAC-CE based pathloss RS needs to be defined.

**Discussion:**

The contribution was discussed during email thread [96e][218] NR\_eMIMO\_RRM. The discussion was recorded in R4-2012218.

**Decision:** The document was **revised to R4-2012148**.

**R4-2012148 CR for introduction of pathloss reference signal switching delay**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0992 rev 1 Cat: B (Rel-16)  
  
 Source: MediaTek inc.*

(Replaces R4-2010218)

**Abstract:**

MAC-CE based pathloss RS switching is introduced in Rel-16 eMIMO WI. Accordingly, applicable timing requirement on MAC-CE based pathloss RS needs to be defined.

**Discussion:**

The contribution was discussed during email thread [96e][218] NR\_eMIMO\_RRM. The discussion was recorded in R4-2012218.

**Decision:** The document was **agreed**.

**R4-2010466 RRM requirements for MAC-CE based PL-RS activation**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the RRM requirements of MAC CE based pathloss RS activation/updates.

**Discussion:**

The contribution was discussed during email thread [96e][218] NR\_eMIMO\_RRM. The discussion was recorded in R4-2012218.

**Decision:** The document was **noted**.

**R4-2011059 Discussion on activation delay requirements for non-maintained PL-RS**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][218] NR\_eMIMO\_RRM. The discussion was recorded in R4-2012218.

**Decision:** The document was **noted**.

**R4-2011060 CR on activation delay requirements for non-maintained PL-RS**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1038 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

In R16 NR eMIMO, RAN1 only specify the UE behavior when the indicated pathloss RS is being maintained already. However, RAN1 does not plan on specifying UE behavior when the pathloss RS is not being maintained.

**Discussion:**

The contribution was discussed during email thread [96e][218] NR\_eMIMO\_RRM. The discussion was recorded in R4-2012218.

**Decision:** The document was **merged**.

**R4-2009982 RRM requirements for PL-RS update**

*Type: discussion For: (not specified)  
 Source: Qualcomm*

**Discussion:**

The contribution was discussed during email thread [96e][218] NR\_eMIMO\_RRM. The discussion was recorded in R4-2012218.

**Decision:** The document was **noted**.

##### 7.9.2.2 Multi-TRP transmission related requirements [NR\_eMIMO-Core]

**R4-2010098 Discussion on Multi-TRP Transmission**

*Type: discussion For: Approval  
 Source: Samsung*

**Discussion:**

The contribution was discussed during email thread [96e][218] NR\_eMIMO\_RRM. The discussion was recorded in R4-2012218.

**Decision:** The document was **noted**.

**R4-2010099 CR to TS38.133 on introduction of multi-TRP transmission (Section 7.5 and 7.6)**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0975 Cat: B (Rel-16)  
  
 Source: Samsung*

**Abstract:**

In Rel-16 eMIMO work item, multi-TRP transmission is introduced. The existing MRTD/MTTD requirement for intra-band EN-DC and FR1 intra-band CA for co-located deployment needs to be clarified.

**Discussion:**

The contribution was discussed during email thread [96e][218] NR\_eMIMO\_RRM. The discussion was recorded in R4-2012218.

**Decision:** The document was **not pursued**.

**R4-2012149 CR to TS38.133 on introduction of multi-TRP transmission (Section 7.5 and 7.6)**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0975 rev 1 Cat: B (Rel-16)  
  
 Source: Samsung*

(Replaces R4-2010099)

**Decision:** The document was **withdrawn**.

**R4-2010191 Discussion on RRM requirements for Multi-TRP**

*Type: discussion For: Discussion  
 Source: Apple*

**Discussion:**

The contribution was discussed during email thread [96e][218] NR\_eMIMO\_RRM. The discussion was recorded in R4-2012218.

**Decision:** The document was **noted**.

**R4-2010219 Discussion on MRTD for multiple TPxPs scenario**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

The contribution was discussed during email thread [96e][218] NR\_eMIMO\_RRM. The discussion was recorded in R4-2012218.

**Decision:** The document was **noted**.

**R4-2010467 MRTD/MTTD requirements for Multi-TRP deployment for MIMO+CA and MIMO+DC**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the MRTD/MTTD requirements for multi-TRP deployment.

**Discussion:**

The contribution was discussed during email thread [96e][218] NR\_eMIMO\_RRM. The discussion was recorded in R4-2012218.

**Decision:** The document was **noted**.

**R4-2011061 Discussion on MRTD requirements for multi-TRP transmissions**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][218] NR\_eMIMO\_RRM. The discussion was recorded in R4-2012218.

**Decision:** The document was **noted**.

**R4-2009609 Discussion on RRM requirements for Multi-TRP**

*Type: discussion For: Discussion  
 Source: Apple*

**Discussion:**

The contribution was discussed during email thread [96e][218] NR\_eMIMO\_RRM. The discussion was recorded in R4-2012218.

**Decision:** The document was **noted**.

**R4-2009981 Multi-TRP transmission related requirements**

*Type: discussion For: (not specified)  
 Source: Qualcomm*

**Discussion:**

The contribution was discussed during email thread [96e][218] NR\_eMIMO\_RRM. The discussion was recorded in R4-2012218.

**Decision:** The document was **noted**.

##### 7.9.2.3 Other requirements maintenance [NR\_eMIMO-Core]

**R4-2010220 CR for L1-SINR requirement**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0993 Cat: F (Rel-16)  
  
 Source: MediaTek inc.*

**Abstract:**

L1-SINR measurement is introduced in Rel-16 and it can be caluculated by channel measurement resource (CMR) and interference measurement resource (IMR). However, some scenarios are not clear while CSI-IM is configured as IMR.

**Decision:** The document was **revised to R4-2012147**.

**R4-2012147 CR for L1-SINR requirement**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0993 rev 1 Cat: F (Rel-16)  
  
 Source: MediaTek inc.*

(Replaces R4-2010220)

**Abstract:**

L1-SINR measurement is introduced in Rel-16 and it can be caluculated by channel measurement resource (CMR) and interference measurement resource (IMR). However, some scenarios are not clear while CSI-IM is configured as IMR. Furthermore, one type found in Section 9.8.4.3, which should be corrected.

**Decision:** The document was **agreed**.

**R4-2010465 Correction of L1-SINR reporting requirements**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1006 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Reference to the mapping table for L1-SINR measurement report is missing.

**Decision:** The document was **agreed**.

**R4-2011057 Discussion on L1-SINR measurement accuracy requirements**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Decision:** The document was **noted**.

**R4-2011058 CR on L1-SINR measurement accuracy requirements**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1037 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

In Rel-16, the L1-SINR accuracy requirements need to be introduced for NR eMIMO.

**Decision:** The document was **noted**.

**R4-2011337 Simulation results of L1-SINR measurement accuracy**

*Type: other For: Discussion  
 38.133 v..  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

The document has presented the simulation results of L1-SINR measurement accuracy for CMR-only, SSB+NZP-IMR, SSB+ZP-IMR, CSI-RS+NZP-IMR and CSI-RS+ZP-IMR.

**Decision:** The document was **noted**.

**R4-2009681 Discussion on applicable timing for the PL RS activated by MAC-CE**

*Type: discussion For: Discussion  
 Source: ZTE Corporation*

**Decision:** The document was **noted**.

**R4-2009682 [CR] Applicable timing for the PL RS activated by MAC-CE**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0923 Cat: B (Rel-16)  
  
 Source: ZTE Corporation*

**Abstract:**

Add core requirements for delay requirements for pathloss RS activation / update.

**Decision:** The document was **merged**.

**R4-2009983 Requirements for L1-SINR estimation accuracy**

*Type: discussion For: (not specified)  
 Source: Qualcomm*

**Decision:** The document was **noted**.

#### 7.9.3 Demodulation and CSI requirements (38.101-4) [NR\_eMIMO-Perf]

##### 7.9.3.1 General [NR\_eMIMO-Perf]

**R4-2012553 Email discussion summary for [96e][320] NR\_eMIMO\_Demod**

*Type: other For: discussion  
 Source: Moderator (Samsung)*

**Discussion:**

The contribution summarized email discussion thread [96e][320] NR\_eMIMO\_Demod. The topic areas for discussion were Rel-16 eMIMO demodulation and CSI. The email thread was moderated by Yunchuan Yang (Samsung). All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2012736**.

**R4-2012736 Email discussion summary for [96e][320] NR\_eMIMO\_Demod**

*Type: other For: discussion  
 Source: Moderator (Samsung)*

(Replaces R4-2012553)

**Discussion:**

The contribution summarized email discussion thread [96e][320] NR\_eMIMO\_Demod. The topic areas for discussion were Rel-16 eMIMO demodulation and CSI. The email thread was moderated by Yunchuan Yang (Samsung). All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **noted**.

**R4-2012662 WF for general and PDSCH requirements with Single-DCI SDM scheme and Multi-DCI transmission schemes (eMBB)**

*Type: other For: discussion  
 Source: Huawei*

**Discussion:**

The contribution was discussed during email thread [96e][320] NR\_eMIMO\_Demod. The discussion was recorded in R4-2012736. Agreement: The contents in R4-2012662 agreed with one typo in slide 5 corrected as following:

* Timing offset among multi-panel/TRP (FR1 only)
  + FR1 FDD with 15kHz
    - Positive timing offset: 2us
    - Negative timing offset: -0.5us
  + FR1 TDD with 30kHz
    - Positive timing offset: 1us

Negative timing offset: -0.25us

**Decision:** The document was **noted**.

**R4-2012663 WF for PDSCH requirements with Single-DCI based multi-TRP/Panel transmission schemes (URLLC)**

*Type: other For: discussion  
 Source: Intel*

**Discussion:**

The contribution was discussed during email thread [96e][320] NR\_eMIMO\_Demod. The discussion was recorded in R4-2012736. Agreements: The contents of R4-2012663 except slide 4 agreed with additional agreements as following:

* Define performance requirement for URLLC transmission schemes with test applicability rule
* Option 1: Only FDM  scheme A and inter-slot TDM scheme as baseline
* FDM scheme is skipped if UE passes the multi-DCI based multi-TRP Tx requirements and TDM scheme is skipped if UE passes URLLC slot aggregation requirements and anyone of the other multi-TRP Tx requirements
* Other options are not precluded

Interest companies are encouraged to provide the simulation results for URLLC transmission schemes in the next meeting at least for baseline transmission schemes (FDM scheme A and inter-slot TDM scheme) considering the PDSCH configuration in page 6 and test metric in page 7.

**Decision:** The document was **noted**.

**R4-2012664 Simulation assumption for PDSCH requirements with Single-DCI SDM scheme and Multi-DCI transmission schemes**

*Type: other For: discussion  
 Source: Ericsson*

**Discussion:**

The contribution was discussed during email thread [96e][320] NR\_eMIMO\_Demod. The discussion was recorded in R4-2012736.

**Decision:** The document was **approved**.

**R4-2012665 Way forward on PMI reporting requirement for NR eMIMO**

*Type: other For: discussion  
 Source: Qualcomm, Ericsson*

**Discussion:**

The contribution was discussed during email thread [96e][320] NR\_eMIMO\_Demod. The discussion was recorded in R4-2012736.

**Decision:** The document was **revised to R4-2012761**.

**R4-2012761 Way forward on PMI reporting requirement for NR eMIMO**

*Type: other For: discussion  
 Source: Qualcomm, Ericsson*

(Replaces R4-2012665)

**Discussion:**

The contribution was discussed during email thread [96e][320] NR\_eMIMO\_Demod. The discussion was recorded in R4-2012736.

**Decision:** The document was **approved**.

**R4-2011421 Views on test cases for eMIMO**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

The contribution was discussed during email thread [96e][320] NR\_eMIMO\_Demod. The discussion was recorded in R4-2012736.

**Decision:** The document was **noted**.

##### 7.9.3.2 Demodulation requirements [NR\_eMIMO-Perf]

**R4-2010068 Simulation results for PDSCH requirements with Multi-DCI**

*Type: discussion For: Discussion  
 Source: CMCC*

**Discussion:**

The contribution was discussed during email thread [96e][320] NR\_eMIMO\_Demod. The discussion was recorded in R4-2012736.

**Decision:** The document was **noted**.

**R4-2010140 Test case design for PDSCH requirements with Multi-TRP/Panel transmission**

*Type: discussion For: Approval  
 Source: Samsung*

**Discussion:**

The contribution was discussed during email thread [96e][320] NR\_eMIMO\_Demod. The discussion was recorded in R4-2012736.

**Decision:** The document was **noted**.

**R4-2010195 On PDSCH demodulation requirements for Multi TRP**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision:** The document was **withdrawn**.

**R4-2010481 PDSCH requirements for Multi-DCI/Single-DCI based transmission**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the PDSCH demodulation requirements for multi-TRP transmission.

**Discussion:**

The contribution was discussed during email thread [96e][320] NR\_eMIMO\_Demod. The discussion was recorded in R4-2012736.

**Decision:** The document was **noted**.

**R4-2010719 Discussion on PDSCH performance requirements for multi-DCI based multi-TRP transmission**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

The contribution was discussed during email thread [96e][320] NR\_eMIMO\_Demod. The discussion was recorded in R4-2012736.

**Decision:** The document was **noted**.

**R4-2011012 Discussion on open issues of PDSCH performance requirements of multi-TRP in eMIMO**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][320] NR\_eMIMO\_Demod. The discussion was recorded in R4-2012736.

**Decision:** The document was **noted**.

**R4-2011366 Evaluations of Rel-16 Type II PMI testing**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

in this paper we evaluate the novel MU-MIMO test setup for Rel-16 Type II PMI reporting requirements

**Discussion:**

The contribution was discussed during email thread [96e][320] NR\_eMIMO\_Demod. The discussion was recorded in R4-2012736.

**Decision:** The document was **noted**.

**R4-2009613 On PDSCH demodulation requirements for Multi TRP**

*Type: discussion For: Discussion  
 Source: Apple*

**Discussion:**

The contribution was discussed during email thread [96e][320] NR\_eMIMO\_Demod. The discussion was recorded in R4-2012736.

**Decision:** The document was **noted**.

**R4-2009738 Views on UE demodulation requirements for NR eMIMO**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][320] NR\_eMIMO\_Demod. The discussion was recorded in R4-2012736.

**Decision:** The document was **noted**.

##### 7.9.3.3 CSI requirements [NR\_eMIMO-Perf]

**R4-2010141 Test case design for PMI requirements with Rel-16 Type II codebook**

*Type: discussion For: Approval  
 Source: Samsung*

**Discussion:**

The contribution was discussed during email thread [96e][320] NR\_eMIMO\_Demod. The discussion was recorded in R4-2012736.

**Decision:** The document was **noted**.

**R4-2010196 On PMI reporting requirements with eType II codebook**

*Type: discussion For: Discussion  
 Source: Apple*

**Discussion:**

The contribution was discussed during email thread [96e][320] NR\_eMIMO\_Demod. The discussion was recorded in R4-2012736.

**Decision:** The document was **withdrawn**.

**R4-2010805 Discussion on SP Type II PMI reporting requirements**

*Type: discussion For: Approval  
 Source: Rohde & Schwarz*

**Discussion:**

The contribution was discussed during email thread [96e][320] NR\_eMIMO\_Demod. The discussion was recorded in R4-2012736.

**Decision:** The document was **noted**.

**R4-2011013 Discussion on test setup and parameter configuration for enhanced Type II codebook PMI reporting test**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][320] NR\_eMIMO\_Demod. The discussion was recorded in R4-2012736.

**Decision:** The document was **noted**.

**R4-2009614 On PMI reporting requirements with eType II codebook**

*Type: discussion For: Discussion  
 Source: Apple*

**Discussion:**

The contribution was discussed during email thread [96e][320] NR\_eMIMO\_Demod. The discussion was recorded in R4-2012736.

**Decision:** The document was **noted**.

**R4-2009858 On PMI reporting test case for eType II codebooks**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

In this contribution we discuss the technical reasons why only Option 2 can guarantee the PMI reporting requirements for eType II.

**Discussion:**

The contribution was discussed during email thread [96e][320] NR\_eMIMO\_Demod. The discussion was recorded in R4-2012736.

**Decision:** The document was **noted**.

### 7.10 Add support of NR DL 256QAM for FR2 [NR\_DL256QAM\_FR2]

#### 7.10.1 BS RF core requirements maintenance (38.104) [NR\_DL256QAM\_FR2]

#### 7.10.2 UE RF core requirements maintenance (38.101-2) [NR\_DL256QAM\_FR2]

#### 7.10.3 Demodulation and CSI requirements (38.101-4) [NR\_DL256QAM\_FR2-Perf]

**R4-2012554 Email discussion summary for [96e][321] NR\_DL256QAM\_FR2\_Demod**

*Type: other For: discussion  
 Source: Moderator (China Telecomm)*

**Discussion:**

The contribution summarized email discussion thread [96e][321] NR\_DL256QAM\_FR2\_Demod. The topic areas for discussion were Rel-16 FR2 DL 256QAM demodulation and CSI. The email thread was moderated by Jingzhou Wu (China Telecommunications). All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2012737**.

**R4-2012737 Email discussion summary for [96e][321] NR\_DL256QAM\_FR2\_Demod**

*Type: other For: discussion  
 Source: Moderator (China Telecomm)*

(Replaces R4-2012554)

**Discussion:**

The contribution summarized email discussion thread [96e][321] NR\_DL256QAM\_FR2\_Demod. The topic areas for discussion were Rel-16 FR2 DL 256QAM demodulation and CSI. The email thread was moderated by Jingzhou Wu (China Telecommunications). All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **noted**.

**R4-2012666 WF on UE demodulation and CSI reporting requirements for FR2 DL 256QAM**

*Type: other For: discussion  
 Source: China Telecomm*

**Discussion:**

The contribution was discussed during email thread [96e][321] NR\_DL256QAM\_FR2\_Demod. The discussion was recorded in R4-2012737.

**Decision:** The document was **approved**.

**R4-2012667 Updated work plan for FR2 DL 256QAM demodulation and CSI reporting requirements**

*Type: Work Plan For: discussion  
 Source: China Telecomm*

**Discussion:**

The contribution was discussed during email thread [96e][321] NR\_DL256QAM\_FR2\_Demod. The discussion was recorded in R4-2012737.

**Decision:** The document was **approved**.

**R4-2009584 UE demodulation and CSI reporting requirements for FR2 DL 256QAM**

*Type: discussion For: Discussion  
 Source: China Telecom*

**Discussion:**

The contribution was discussed during email thread [96e][321] NR\_DL256QAM\_FR2\_Demod. The discussion was recorded in R4-2012737.

**Decision:** The document was **noted**.

##### 7.10.3.1 UE Demodulation requirements [NR\_DL256QAM\_FR2-Perf]

**R4-2010996 Discussion on PDSCH requirements for NR DL 256QAM for FR2**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][321] NR\_DL256QAM\_FR2\_Demod. The discussion was recorded in R4-2012737.

**Decision:** The document was **noted**.

**R4-2011041 Views on 256QAM UE requirements for FR2**

*Type: discussion For: Discussion  
 Source: NTT DOCOMO, INC.*

**Discussion:**

The contribution was discussed during email thread [96e][321] NR\_DL256QAM\_FR2\_Demod. The discussion was recorded in R4-2012737.

**Decision:** The document was **noted**.

**R4-2011374 UE demodulation requirements for FR2 DL 256QAM**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this paper we provide our views on FR2 256QAM UE demodulation requirements

**Discussion:**

The contribution was discussed during email thread [96e][321] NR\_DL256QAM\_FR2\_Demod. The discussion was recorded in R4-2012737.

**Decision:** The document was **noted**.

**R4-2011424 Views on FR2 DL 256QAM UE Demodulation Tests**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

The contribution was discussed during email thread [96e][321] NR\_DL256QAM\_FR2\_Demod. The discussion was recorded in R4-2012737.

**Decision:** The document was **noted**.

**R4-2009728 Discussion on UE demodulation requirements for FR2 DL 256QAM**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][321] NR\_DL256QAM\_FR2\_Demod. The discussion was recorded in R4-2012737.

**Decision:** The document was **noted**.

##### 7.10.3.2 SDR requirements [NR\_DL256QAM\_FR2-Perf]

**R4-2010997 Discussion on SDR requirements for NR DL 256QAM for FR2**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][321] NR\_DL256QAM\_FR2\_Demod. The discussion was recorded in R4-2012737.

**Decision:** The document was **noted**.

**R4-2011042 Views on 256QAM SDR requirements for FR2**

*Type: discussion For: Discussion  
 Source: NTT DOCOMO, INC.*

**Discussion:**

The contribution was discussed during email thread [96e][321] NR\_DL256QAM\_FR2\_Demod. The discussion was recorded in R4-2012737.

**Decision:** The document was **noted**.

**R4-2011425 Views on FR2 DL 256QAM SDR Tests**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

The contribution was discussed during email thread [96e][321] NR\_DL256QAM\_FR2\_Demod. The discussion was recorded in R4-2012737.

**Decision:** The document was **noted**.

**R4-2009729 Discussion on SDR requirements for FR2 DL 256QAM**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][321] NR\_DL256QAM\_FR2\_Demod. The discussion was recorded in R4-2012737.

**Decision:** The document was **noted**.

##### 7.10.3.3 CSI requirements [NR\_DL256QAM\_FR2-Perf]

**R4-2010998 Discussion on CQI reporting requirements for NR DL 256QAM for FR2**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][321] NR\_DL256QAM\_FR2\_Demod. The discussion was recorded in R4-2012737.

**Decision:** The document was **noted**.

**R4-2011433 Views on FR2 DL 256QAM CSI Reporting Tests**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

The contribution was discussed during email thread [96e][321] NR\_DL256QAM\_FR2\_Demod. The discussion was recorded in R4-2012737.

**Decision:** The document was **noted**.

### 7.11 RF requirements for NR frequency range 1 (FR1) [NR\_RF\_FR1]

**R4-2012050 Email discussion summary for [96e][219] NR\_RF\_FR1\_RRM**

*Type: other For: discussion  
 Source: Moderator (Huawei)*

**Discussion:**

The contribution summarized email discussion thread [96e][219] NR\_RF\_FR1\_RRM. The topic areas for discussion were RRM requirements (Core maintenance and Perf). The email thread was moderated by Jing Han (Huawei). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2012219**.

**R4-2012219 Email discussion summary for [96e][219] NR\_RF\_FR1\_RRM**

*Type: other For: discussion  
 Source: Moderator (Huawei)*

(Replaces R4-2012050)

**Discussion:**

The contribution summarized email discussion thread [96e][219] NR\_RF\_FR1\_RRM. The topic areas for discussion were RRM requirements (Core maintenance and Perf). The email thread was moderated by Jing Han (Huawei). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **noted**.

#### 7.11.1 RF core requirements [NR\_RF\_FR1-Core ]

**R4-2011546 Email discussion summary for [96e][113] NR\_RF\_FR1\_Part\_1**

*Type: other For: discussion  
 Source: Moderator (Huawei)*

**Discussion:**

The contribution summarized email discussion thread [96e][113] NR\_RF\_FR1\_Part\_1. The subject for discussion was . The email thread was moderated by Qian Zhang (HiSilicon Technologies Co. Ltd) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **revised to R4-2011853**.

**R4-2011853 Email discussion summary for [96e][113] NR\_RF\_FR1\_Part\_1**

*Type: other For: discussion  
 Source: Moderator (Huawei)*

(Replaces R4-2011546)

**Discussion:**

The contribution summarized email discussion thread [96e][113] NR\_RF\_FR1\_Part\_1. The subject for discussion was . The email thread was moderated by Qian Zhang (HiSilicon Technologies Co. Ltd) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **noted**.

**R4-2011722 LS on additional DC location reporting for intra-band UL CA**

*Type: LS out For: Approval  
 to RAN1, RAN2  
 Source: Qualcomm*

**Discussion:**

The contribution was discussed during email thread [96e][113] NR\_RF\_FR1\_Part\_1. The discussion was recorded in R4-2011853.

**Decision:** The document was **revised to R4-2011906**.

**R4-2011906 LS on additional DC location reporting for intra-band UL CA**

*Type: LS out For: Approval  
 to RAN1, RAN2  
 Source: RAN4*

(Replaces R4-2011722)

**Discussion:**

The contribution was discussed during email thread [96e][113] NR\_RF\_FR1\_Part\_1. The discussion was recorded in R4-2011853.

**Decision:** The document was **approved**.

**R4-2011724 LS on FR1 intra-band UL CA UE capability**

*Type: LS out For: Approval  
 to RAN2  
 Source: RAN4*

**Discussion:**

The contribution was discussed during email thread [96e][113] NR\_RF\_FR1\_Part\_1. The discussion was recorded in R4-2011853.

**Decision:** The document was **approved**.

**R4-2011726 CR on CA\_NS\_04 and CA\_NS\_06 AMPR and ASE requirements**

*Type: other For: Agreement  
 Source: Skyworks*

**Discussion:**

The contribution was discussed during email thread [96e][113] NR\_RF\_FR1\_Part\_1. The discussion was recorded in R4-2011853.

**Decision:** The document was **withdrawn**.

##### 7.11.1.1 Intra-band contiguous DL CA for FR1 [NR\_RF\_FR1-Core]

##### 7.11.1.2 General for Intra-band UL CA [NR\_RF\_FR1-Core]

###### 7.11.1.2.1 DC location for Intra-band UL CA [NR\_RF\_FR1-Core]

**R4-2010049 LO location for intra-band UL CA**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Discussion:**

The contribution was discussed during email thread [96e][113] NR\_RF\_FR1\_Part\_1. The discussion was recorded in R4-2011853.

**Decision:** The document was **noted**.

**R4-2011472 on FR1 UL CA DC location**

*Type: other For: Approval  
 38.101-1 v..  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][113] NR\_RF\_FR1\_Part\_1. The discussion was recorded in R4-2011853.

**Decision:** The document was **noted**.

**R4-2011477 CR for intra-band UL contiguous CA DC location**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0470 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

The applicable frequencies for LO leakage and IQ image is decided by the DC location indicating for NR. For intra-band contiguous CA, DC location may be variable with CCs activating/deactivating for UE with single PA architecture, then DC location cannot be identified by TE or gNB.

**Discussion:**

The contribution was discussed during email thread [96e][113] NR\_RF\_FR1\_Part\_1. The discussion was recorded in R4-2011853.

**Decision:** The document was **revised to R4-2011723**.

**R4-2011723 CR for intra-band UL contiguous CA DC location**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0470 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2011477)

**Abstract:**

The applicable frequencies for LO leakage and IQ image is decided by the DC location indicating for NR. For intra-band contiguous CA, DC location may be variable with CCs activating/deactivating for UE with single PA architecture, then DC location cannot be identified by TE or gNB.

**Discussion:**

The contribution was discussed during email thread [96e][113] NR\_RF\_FR1\_Part\_1. The discussion was recorded in R4-2011853.

**Decision:** The document was **agreed**.

###### 7.11.1.2.2 UE capability for Intra-band UL CA [NR\_RF\_FR1-Core]

**R4-2010271 Future Proof UE Capability and Specification Applicability for NR UL CA**

*Type: discussion For: Approval  
 38.101-1 v..  
 Source: Skyworks Solutions Inc.*

**Abstract:**

In this contribution we report the already agreed architecture assumptions and the respective signaling elements proposed for the support of NR contiguous and non-contiguous intra-band UL CA.

**Discussion:**

The contribution was discussed during email thread [96e][113] NR\_RF\_FR1\_Part\_1. The discussion was recorded in R4-2011853.

**Decision:** The document was **noted**.

**R4-2011473 on FR1 UL CA UE capability**

*Type: other For: Approval  
 38.101-1 v..  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][113] NR\_RF\_FR1\_Part\_1. The discussion was recorded in R4-2011853.

**Decision:** The document was **noted**.

##### 7.11.1.3 Intra-band contiguous UL CA for FR1 power class 3 [NR\_RF\_FR1-Core]

**R4-2010228 A-MPR definition for CA\_n48B**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0438 Cat: B (Rel-16)  
  
 Source: Nokia*

**Discussion:**

The contribution was discussed during email thread [96e][113] NR\_RF\_FR1\_Part\_1. The discussion was recorded in R4-2011853.

**Decision:** The document was **revised to R4-2011727**.

**R4-2011727 A-MPR definition for CA\_n48B, CA\_n41B and CA\_n41C**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0438 rev 1 Cat: B (Rel-16)  
  
 Source: Nokia, Skyworks*

(Replaces R4-2010228)

**Abstract:**

A-MPR is missing from CA configurations CA\_n41B, CA\_n41C and CA\_n48B altough it is already in specification.

**Discussion:**

The contribution was discussed during email thread [96e][113] NR\_RF\_FR1\_Part\_1. The discussion was recorded in R4-2011853.

**Decision:** The document was **revised to R4-2011935**.

**R4-2011935 A-MPR definition for CA\_n48B, CA\_n41B and CA\_n41C**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0438 rev 2 Cat: B (Rel-16)  
  
 Source: Nokia, Skyworks*

(Replaces R4-2011727)

**Abstract:**

A-MPR is missing from CA configurations CA\_n41B, CA\_n41C and CA\_n48B altough it is already in specification.

**Discussion:**

The contribution was discussed during email thread [96e][113] NR\_RF\_FR1\_Part\_1. The discussion was recorded in R4-2011853.

**Decision:** The document was **agreed**.

**R4-2010229 A-MPR simulation results for CA\_n7B**

*Type: discussion For: Discussion  
 Source: Nokia*

**Discussion:**

The contribution was discussed during email thread [96e][113] NR\_RF\_FR1\_Part\_1. The discussion was recorded in R4-2011853.

**Decision:** The document was **noted**.

**R4-2011471 CR for intra-band UL CA non-contiguous CA requirement**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0468 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

For non-contiguous RB allocation of contiguous UL CA, note1 and note2 on outer1 and outer2 allocations MPR only take effect on Pi/2 BPSK and QPSK, the MPR for high order modulation has different limitation factor.

For congtiguous RB allocation, case for RBs only allocate on one CC is not included.

**Discussion:**

The contribution was discussed during email thread [96e][113] NR\_RF\_FR1\_Part\_1. The discussion was recorded in R4-2011853.

**Decision:** The document was **revised to R4-2011728**.

**R4-2011728 CR for intra-band UL CA non-contiguous CA requirement**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0468 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2011471)

**Abstract:**

For non-contiguous RB allocation of contiguous UL CA, note1 and note2 on outer1 and outer2 allocations MPR only take effect on Pi/2 BPSK and QPSK, the MPR for high order modulation has different limitation factor.

For congtiguous RB allocation, case for RBs only allocate on one CC is not included.

**Discussion:**

The contribution was discussed during email thread [96e][113] NR\_RF\_FR1\_Part\_1. The discussion was recorded in R4-2011853.

**Decision:** The document was **agreed**.

**R4-2011476 CR for correction on intra-band UL CA contiguous CA requirement**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0469 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

Corrections on intra-band UL CA contiguous CA requirement

**Discussion:**

The contribution was discussed during email thread [96e][113] NR\_RF\_FR1\_Part\_1. The discussion was recorded in R4-2011853.

**Decision:** The document was **revised to R4-2011918**.

**R4-2011918 CR for correction on intra-band UL CA contiguous CA requirement**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0469 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2011476)

**Abstract:**

Corrections on intra-band UL CA contiguous CA requirement

**Discussion:**

The contribution was discussed during email thread [96e][113] NR\_RF\_FR1\_Part\_1. The discussion was recorded in R4-2011853.

**Decision:** The document was **agreed**.

**R4-2011522 Class B and Class C NR CA Back-off Measurements for A-MPR**

*Type: discussion For: Approval  
 38.101-1 v..  
 Source: Skyworks Solutions Inc.*

**Discussion:**

The contribution was discussed during email thread [96e][113] NR\_RF\_FR1\_Part\_1. The discussion was recorded in R4-2011853.

**Decision:** The document was **noted**.

**R4-2009622 CR for Pcmax correction for FR1 intraband ULCA**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0412 Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

Missing statement for configuring CA output power and other corrections

**Discussion:**

The contribution was discussed during email thread [96e][113] NR\_RF\_FR1\_Part\_1. The discussion was recorded in R4-2011853.

**Decision:** The document was **not pursued**.

**R4-2009630 FR1 PC3 Intra-band Contiguous ULCA AMPR**

*Type: other For: Approval  
 38.101-1 v..  
 Source: Qualcomm Incorporated*

**Discussion:**

The contribution was discussed during email thread [96e][113] NR\_RF\_FR1\_Part\_1. The discussion was recorded in R4-2011853.

**Decision:** The document was **noted**.

**R4-2009588 Correction to FR1 UL contiguous CA MPR regions**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0407 Cat: F (Rel-16)  
  
 Source: Nokia Corporation*

**Abstract:**

Definition of contiguous RB allocation and inner RB allocation region in MPR definition for contiguous CA currently ignores RB allocations confined within a single CC.

**Discussion:**

The contribution was discussed during email thread [96e][113] NR\_RF\_FR1\_Part\_1. The discussion was recorded in R4-2011853.

**Decision:** The document was **revised to R4-2011729**.

**R4-2011729 Correction to FR1 UL contiguous CA MPR regions**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0407 rev 1 Cat: F (Rel-16)  
  
 Source: Nokia Corporation*

(Replaces R4-2009588)

**Abstract:**

Definition of contiguous RB allocation and inner RB allocation region in MPR definition for contiguous CA currently ignores RB allocations confined within a single CC.

**Discussion:**

The contribution was discussed during email thread [96e][113] NR\_RF\_FR1\_Part\_1. The discussion was recorded in R4-2011853.

**Decision:** The document was **agreed**.

##### 7.11.1.4 Intra-band non-contiguous UL CA for FR1 power class 3 [NR\_RF\_FR1-Core]

**R4-2011482 CR for intra-band UL CA non-contiguous CA requirement**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0471 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

This CR capture the agreement for intra-band UL non-contiguous CA in RAN4 #95e meeting.

Since intra-band UL non-contiguous CA is introduced in Rel-16, the UL RF requirement shall be added.

**Discussion:**

The contribution was discussed during email thread [96e][113] NR\_RF\_FR1\_Part\_1. The discussion was recorded in R4-2011853.

**Decision:** The document was **revised to R4-2011725**.

**R4-2011725 CR for intra-band UL CA non-contiguous CA requirement**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0471 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2011482)

**Abstract:**

This CR capture the agreement for intra-band UL non-contiguous CA in RAN4 #95e and 96-e meeting.

Since intra-band UL non-contiguous CA is introduced in Rel-16, the UL RF requirement shall be added.

**Discussion:**

The contribution was discussed during email thread [96e][113] NR\_RF\_FR1\_Part\_1. The discussion was recorded in R4-2011853.

**Decision:** The document was **agreed**.

###### 7.11.1.4.1 MPR/A-MPR [NR\_RF\_FR1-Core]

**R4-2010301 [FR1ULCA] UE TX measurements and requirements for non-contiguous ULCA**

*Type: discussion For: Approval  
 38.101-1 v..  
 Source: Skyworks Solutions Inc.*

**Abstract:**

In this contribution we provide our measurements results and proposals to finalize PC3 non-contiguous NR UL CA MPR and A-MPR.

**Discussion:**

The contribution was discussed during email thread [96e][113] NR\_RF\_FR1\_Part\_1. The discussion was recorded in R4-2011853.

**Decision:** The document was **noted**.

**R4-2011474 on FR1 UL non-contiguous CA MPR requirement Rel-16**

*Type: other For: Approval  
 38.101-1 v..  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][113] NR\_RF\_FR1\_Part\_1. The discussion was recorded in R4-2011853.

**Decision:** The document was **noted**.

**R4-2009631 FR1 Intra-band Non-contiguous ULCA MPR**

*Type: other For: Approval  
 38.101-1 v..  
 Source: Qualcomm Incorporated*

**Discussion:**

The contribution was discussed during email thread [96e][113] NR\_RF\_FR1\_Part\_1. The discussion was recorded in R4-2011853.

**Decision:** The document was **noted**.

###### 7.11.1.4.2 Other TX requirements [NR\_RF\_FR1-Core]

**R4-2011512 on FR1 intra-band NC CA Tx requirement**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][113] NR\_RF\_FR1\_Part\_1. The discussion was recorded in R4-2011853.

**Decision:** The document was **noted**.

##### 7.11.1.5 Switching period between case 1 and case 2 [NR\_RF\_FR1-Core]

**R4-2011547 Email discussion summary for [96e][114] NR\_RF\_FR1\_Part\_2**

*Type: other For: discussion  
 Source: Moderator (China Telecom)*

**Discussion:**

The contribution summarized email discussion thread [96e][114] NR\_RF\_FR1\_Part\_2. The subject for discussion was Switching period between case 1 and case 2. The email thread was moderated by Shan Yang (China Telecomunication Corp.) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **revised to R4-2011854**.

**R4-2011854 Email discussion summary for [96e][114] NR\_RF\_FR1\_Part\_2**

*Type: other For: discussion  
 Source: Moderator (China Telecom)*

(Replaces R4-2011547)

**Discussion:**

The contribution summarized email discussion thread [96e][114] NR\_RF\_FR1\_Part\_2. The subject for discussion was Switching period between case 1 and case 2. The email thread was moderated by Shan Yang (China Telecomunication Corp.) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **noted**.

**R4-2011731 WF on remaining issues for Tx switching between two uplink carriers**

*Type: other For: discussion  
 Source: China Telecom*

**Discussion:**

The contribution was discussed during email thread [96e][114] NR\_RF\_FR1\_Part\_2. The discussion was recorded in R4-2011854.

**Decision:** The document was **approved**.

**R4-2010018 Views on DL interruption due to UL Tx switching**

*Type: other For: Approval  
 Source: Xiaomi*

**Abstract:**

Proposal 1: the same DL interruption approach shall be used for both EN-DC case and UL CA case.

Proposal 2: the option that introducing UE capability indication for each band combination is preferable.

**Discussion:**

The contribution was discussed during email thread [96e][114] NR\_RF\_FR1\_Part\_2. The discussion was recorded in R4-2011854.

**Decision:** The document was **noted**.

**R4-2010105 Applicability of DL interruption for different band combinations**

*Type: discussion For: Discussion  
 Source: CMCC*

**Discussion:**

The contribution was discussed during email thread [96e][114] NR\_RF\_FR1\_Part\_2. The discussion was recorded in R4-2011854.

**Decision:** The document was **noted**.

**R4-2010348 Modifcation of Pcmax for UL CA with uplink Tx switching capability**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0445 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

For an inter-band UL CA configuration with the capability uplinkTxSwitchingPeriod is present (switching between carrier 1 and carrier 2), the maximum power on carrier 2 is boosted by 3 dB if the capability uplinkTxSwitchingPowerBoosting is present and powerboostingTxSwitching is set to 1. This is currently specified in clause 6.3A.3.3 on the transmit ON/OFF time mask for inter-band CA, but should be specified in the clause on configured power (Pcmax) for CA. However, the Pcmax for UL CA does not allow 3 dB power boosting for the BC, the total power is capped by the default CA power class (PC3); a modification is needed.

**Discussion:**

The contribution was discussed during email thread [96e][114] NR\_RF\_FR1\_Part\_2. The discussion was recorded in R4-2011854.

**Decision:** The document was **revised to R4-2011732**.

**R4-2011732 Modification of Pcmax for UL CA with uplink Tx switching capability**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0445 rev 1 Cat: F (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2010348)

**Abstract:**

For an inter-band UL CA configuration with the capability uplinkTxSwitchingPeriod is present (switching between carrier 1 and carrier 2), the maximum power on carrier 2 is boosted by 3 dB if the capability uplinkTxSwitchingPowerBoosting is present and powerboostingTxSwitching is set to 1. This is currently specified in clause 6.3A.3.3 on the transmit ON/OFF time mask for inter-band CA, but should be specified in the clause on configured power (Pcmax) for CA. However, the Pcmax for UL CA does not allow 3 dB power boosting for the BC, the total power is capped by the default CA power class (PC3); a modification is needed.

**Discussion:**

The contribution was discussed during email thread [96e][114] NR\_RF\_FR1\_Part\_2. The discussion was recorded in R4-2011854.

**Decision:** The document was **not pursued**.

**R4-2010835 Applicability of DL interruption for Tx switching**

*Type: other For: Approval  
 Source: Nokia Japan*

**Abstract:**

This paper discusses applicability of DL interruption for Tx switching.

**Discussion:**

The contribution was discussed during email thread [96e][114] NR\_RF\_FR1\_Part\_2. The discussion was recorded in R4-2011854.

**Decision:** The document was **noted**.

**R4-2009578 Applicability of DL interruption due to Tx switching**

*Type: discussion For: Discussion  
 Source: China Telecom*

**Discussion:**

The contribution was discussed during email thread [96e][114] NR\_RF\_FR1\_Part\_2. The discussion was recorded in R4-2011854.

**Decision:** The document was **noted**.

##### 7.11.1.6 Time masks for ULSUP-TDM in case of UL timing misalignment [NR\_RF\_FR1-Core]

**R4-2011468 Further discussion on update of ULSUP-TDM time mask requirements**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Abstract:**

In this contribution, we provide our view on the additional period value of X for update of time mask requirement for ULSUP-TDM.

**Discussion:**

The contribution was discussed during email thread [96e][114] NR\_RF\_FR1\_Part\_2. The discussion was recorded in R4-2011854.

**Decision:** The document was **noted**.

**R4-2011469 CR to 38.101-3 on time masks for ULSUP in R16**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0467 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

CR for ULSUP time mask requirements.

**Decision:** The document was **withdrawn**.

**R4-2011500 CR to 38.101-3 on time masks for ULSUP in R16**

*Type: CR For: Agreement  
 38.101-3 v16.4.0 CR-0350 Cat: B (Rel-16)  
  
 Source: Huawei Technologies France*

**Abstract:**

The existing timing mask requirement for ULSUP-TDM specified in Rel-15 applies for the case where there is no significant uplink timing difference between LTE and NR. According to the updated WID on RF requirements for NR frequency range 1 (FR1), the new timing mask requirement for ULSUP-TDM needs be specified.

The uplink timing difference can be used as the condition for time mask. But it should be less than the downlink timing difference between LTE and NR to ensure the uplink performance.

The figures in clause 6.3B.1 blurs.

**Discussion:**

The contribution was discussed during email thread [96e][114] NR\_RF\_FR1\_Part\_2. The discussion was recorded in R4-2011854.

**Decision:** The document was **revised to R4-2011730**.

**R4-2011730 CR to 38.101-3 on time masks for ULSUP in R16**

*Type: CR For: Agreement  
 38.101-3 v16.4.0 CR-0350 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei Technologies France*

(Replaces R4-2011500)

**Abstract:**

The existing timing mask requirement for ULSUP-TDM specified in Rel-15 applies for the case where there is no significant uplink timing difference between LTE and NR. According to the updated WID on RF requirements for NR frequency range 1 (FR1), the new timing mask requirement for ULSUP-TDM needs be specified.

The uplink timing difference can be used as the condition for time mask. But it should be less than the downlink timing difference between LTE and NR to ensure the uplink performance.

The figures in clause 6.3B.1 blurs.

**Discussion:**

The contribution was discussed during email thread [96e][114] NR\_RF\_FR1\_Part\_2. The discussion was recorded in R4-2011854.

**Decision:** The document was **agreed**.

#### 7.11.2 RRM core requirements maintenance (38.133) [NR\_RF\_FR1-Core]

#### 7.11.3 RRM perf. requirements (38.133) [NR\_RF\_FR1-Perf]

**R4-2012150 WF on test case for DL interruption due to Tx switching between two uplink carriers**

*Type: other For: discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][219] NR\_RF\_FR1\_RRM. The discussion was recorded in R4-2012219.

**Decision:** The document was **approved**.

##### 7.11.3.1 General [NR\_RF\_FR1-Perf]

##### 7.11.3.2 Test cases [NR\_RF\_FR1-Perf]

**R4-2011114 Test case list for Tx switching between two uplink carriers**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Discussion:**

The contribution was discussed during email thread [96e][219] NR\_RF\_FR1\_RRM. The discussion was recorded in R4-2012219.

**Decision:** The document was **noted**.

### 7.12 NR RF requirement enhancements for frequency range 2 (FR2) [NR\_RF\_FR2\_req\_enh]

**R4-2010226 TR v0.2.0**

*Type: draft TR For: Agreement  
 38.831 v0.2.0  
 Source: Nokia, Nokia Shanghai Bell*

**Decision:** The document was **agreed**.

#### 7.12.1 RF core requirements [NR\_RF\_FR2\_req\_enh-Core]

**R4-2009600 Pcmax defined reporting ranges accuracy issue in 38.133 for FR2**

*Type: other For: Approval  
 Source: InterDigital, Inc.*

**Abstract:**

Pcmax defined reporting ranges accuracy issue in 38.133 for FR2

**Decision:** The document was **withdrawn**.

##### 7.12.1.1 FR2 MPE [NR\_RF\_FR2\_req\_enh-Core]

**R4-2011548 Email discussion summary for [96e][115] NR\_RF\_FR2\_req\_enh\_Part\_1**

*Type: other For: discussion  
 Source: Moderator (OPPO)*

**Discussion:**

The contribution summarized email discussion thread [96e][115] NR\_RF\_FR2\_req\_enh\_Part\_1. The subject for discussion was FR2 MPE . The email thread was moderated by Jinqiang Xing (Guangdong OPPO Mobile Telecom) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **revised to R4-2011855**.

**R4-2011855 Email discussion summary for [96e][115] NR\_RF\_FR2\_req\_enh\_Part\_1**

*Type: other For: discussion  
 Source: Moderator (OPPO)*

(Replaces R4-2011548)

**Discussion:**

The contribution summarized email discussion thread [96e][115] NR\_RF\_FR2\_req\_enh\_Part\_1. The subject for discussion was FR2 MPE . The email thread was moderated by Jinqiang Xing (Guangdong OPPO Mobile Telecom) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **noted**.

**R4-2011734 WF on MPE enhancements**

*Type: other For: discussion  
 Source: OPPO*

**Discussion:**

The contribution was discussed during email thread [96e][115] NR\_RF\_FR2\_req\_enh\_Part\_1. The discussion was recorded in R4-2011855.

**Decision:** The document was **approved**.

**R4-2010019 Views on P-MPR reporting for FR2 MPE.**

*Type: other For: Approval  
 Source: Xiaomi*

**Abstract:**

Proposal: option A is preferable.

**Discussion:**

The contribution was discussed during email thread [96e][115] NR\_RF\_FR2\_req\_enh\_Part\_1. The discussion was recorded in R4-2011855.

**Decision:** The document was **noted**.

**R4-2010237 LS on MPE enhancements**

*Type: LS out For: Approval  
 to RAN2  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

The contribution was discussed during email thread [96e][115] NR\_RF\_FR2\_req\_enh\_Part\_1. The discussion was recorded in R4-2011855.

**Decision:** The document was **revised to R4-2011733**.

**R4-2011733 LS on MPE enhancements**

*Type: LS out For: Approval  
 to RAN2  
 Source: RAN4*

(Replaces R4-2010237)

**Discussion:**

The contribution was discussed during email thread [96e][115] NR\_RF\_FR2\_req\_enh\_Part\_1. The discussion was recorded in R4-2011855.

**Decision:** The document was **approved**.

**R4-2010238 UE FR2 MPE enhancements and solutions**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

The contribution was discussed during email thread [96e][115] NR\_RF\_FR2\_req\_enh\_Part\_1. The discussion was recorded in R4-2011855.

**Decision:** The document was **noted**.

**R4-2010619 Enhancement on FR2 MPE mitigation**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][115] NR\_RF\_FR2\_req\_enh\_Part\_1. The discussion was recorded in R4-2011855.

**Decision:** The document was **noted**.

**R4-2010770 Discussion on MPE remaining issues**

*Type: discussion For: Approval  
 Source: OPPO*

**Discussion:**

The contribution was discussed during email thread [96e][115] NR\_RF\_FR2\_req\_enh\_Part\_1. The discussion was recorded in R4-2011855.

**Decision:** The document was **noted**.

**R4-2010854 Discussion on remaining FR2 MPE issues**

*Type: discussion For: Discussion  
 Source: vivo*

**Discussion:**

The contribution was discussed during email thread [96e][115] NR\_RF\_FR2\_req\_enh\_Part\_1. The discussion was recorded in R4-2011855.

**Decision:** The document was **noted**.

**R4-2011441 P-MPR consideration**

*Type: discussion For: Approval  
 Source: FUTUREWEI*

**Discussion:**

The contribution was discussed during email thread [96e][115] NR\_RF\_FR2\_req\_enh\_Part\_1. The discussion was recorded in R4-2011855.

**Decision:** The document was **noted**.

**R4-2009555 Remaining issues on P-MPR reporting**

*Type: other For: Discussion  
 Source: Sony, Ericsson*

**Discussion:**

The contribution was discussed during email thread [96e][115] NR\_RF\_FR2\_req\_enh\_Part\_1. The discussion was recorded in R4-2011855.

**Decision:** The document was **noted**.

**R4-2009597 Options for P-MPR reporting**

*Type: other For: Approval  
 Source: InterDigital, Inc.*

**Abstract:**

Options for P-MPR reporting.

**Discussion:**

The contribution was discussed during email thread [96e][115] NR\_RF\_FR2\_req\_enh\_Part\_1. The discussion was recorded in R4-2011855.

**Decision:** The document was **noted**.

**R4-2009598 Introduction of the P-MPR 3 bits report mapping in 38.133**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0914 Cat: B (Rel-16)  
  
 Source: InterDigital, Inc.*

**Abstract:**

The P-MPR ranges mapping must be introduced in 38.133.

**Discussion:**

The contribution was discussed during email thread [96e][115] NR\_RF\_FR2\_req\_enh\_Part\_1. The discussion was recorded in R4-2011855.

**Decision:** The document was **revised to R4-2011736**.

**R4-2011736 Introduction of the P-MPR 2 bits report mapping in 38.133**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0914 rev 1 Cat: B (Rel-16)  
  
 Source: InterDigital, Inc.*

(Replaces R4-2009598)

**Abstract:**

The P-MPR ranges mapping must be introduced in 38.133.

**Discussion:**

The contribution was discussed during email thread [96e][115] NR\_RF\_FR2\_req\_enh\_Part\_1 and in RRM session. The discussion was recorded in R4-2011855.

**Decision:** The document was **agreed**.

**R4-2009599 Clarifications for P-MPR operation in sub-clause 6.2.4 according to the P-MPR reporting agreements.**

*Type: CR For: Agreement  
 38.101-2 v16.4.0 CR-0216 Cat: B (Rel-16)  
  
 Source: InterDigital, Inc.*

**Abstract:**

Clarifications for P-MPR operation in sub-clause 6.2.4 according to the P-MPR reporting agreements.

**Discussion:**

The contribution was discussed during email thread [96e][115] NR\_RF\_FR2\_req\_enh\_Part\_1. The discussion was recorded in R4-2011855.

**Decision:** The document was **revised to R4-2011735**.

**R4-2011735 Introduction of MPE related P-MPR operation in sub-clause 6.2.4**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0914 rev 2 Cat: B (Rel-16)  
  
 Source: InterDigital, Inc.*

(Replaces R4-2011736)

**Abstract:**

Introduction of MPE P-MPR operation in sub-clause 6.2.4 as NOTE 3.

**Discussion:**

The contribution was discussed during email thread [96e][115] NR\_RF\_FR2\_req\_enh\_Part\_1. The discussion was recorded in R4-2011855.

**Decision:** The document was **agreed**.

**R4-2009932 Further considerations on the uplink duty cycle enhancements for the MPE scenario**

*Type: discussion For: Decision  
 Source: Apple Inc.*

**Discussion:**

The contribution was discussed during email thread [96e][115] NR\_RF\_FR2\_req\_enh\_Part\_1. The discussion was recorded in R4-2011855.

**Decision:** The document was **noted**.

##### 7.12.1.2 Beam Correspondence based on configured DL RS (SSB or CSI-RS) [NR\_RF\_FR2\_req\_enh-Core]

**R4-2011549 Email discussion summary for [96e][116] NR\_RF\_FR2\_req\_enh\_Part\_2**

*Type: other For: discussion  
 Source: Moderator (Apple)*

**Discussion:**

The contribution summarized email discussion thread [96e][116] NR\_RF\_FR2\_req\_enh\_Part\_2. The subject for discussion was Beam Correspondence based on configured DL RS (SSB or CSI-RS). The email thread was moderated by Toliy Ioffe (Apple Italia S.R.L.) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **revised to R4-2011856**.

**R4-2011856 Email discussion summary for [96e][116] NR\_RF\_FR2\_req\_enh\_Part\_2**

*Type: other For: discussion  
 Source: Moderator (Apple)*

(Replaces R4-2011549)

**Discussion:**

The contribution summarized email discussion thread [96e][116] NR\_RF\_FR2\_req\_enh\_Part\_2. The subject for discussion was Beam Correspondence based on configured DL RS (SSB or CSI-RS). The email thread was moderated by Toliy Ioffe (Apple Italia S.R.L.) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **noted**.

**R4-2011678 WF on FR2 Beam Correspondence**

*Type: other For: discussion  
 Source: Apple*

**Discussion:**

The contribution was discussed during email thread [96e][116] NR\_RF\_FR2\_req\_enh\_Part\_2. The discussion was recorded in R4-2011856.

**Decision:** The document was **approved**.

**R4-2011737 TP to TR38.831: beam correspondence enhancement**

*Type: pCR For: Approval  
 38.831 v0.1.0  
 Source: Apple*

**Discussion:**

The contribution was discussed during email thread [96e][116] NR\_RF\_FR2\_req\_enh\_Part\_2. The discussion was recorded in R4-2011856.

**Decision:** The document was **approved**.

**R4-2010119 FR2 Beam Correspondence**

*Type: discussion For: Discussion  
 38.101-2 v..  
 Source: Qualcomm Incorporated*

**Discussion:**

The contribution was discussed during email thread [96e][116] NR\_RF\_FR2\_req\_enh\_Part\_2. The discussion was recorded in R4-2011856.

**Decision:** The document was **noted**.

**R4-2010134 Discussion on enhancement of BC in Rel-16 at FR2**

*Type: other For: Approval  
 Source: LG Electronics France*

**Discussion:**

The contribution was discussed during email thread [96e][116] NR\_RF\_FR2\_req\_enh\_Part\_2. The discussion was recorded in R4-2011856.

**Decision:** The document was **noted**.

**R4-2010198 Discussion on beam correspondence remaining issues**

*Type: discussion For: Discussion  
 Source: Samsung*

**Discussion:**

The contribution was discussed during email thread [96e][116] NR\_RF\_FR2\_req\_enh\_Part\_2. The discussion was recorded in R4-2011856.

**Decision:** The document was **noted**.

**R4-2010199 CR to TS38.101-2 on beam correspondence enhancement**

*Type: CR For: Agreement  
 38.101-2 v16.4.0 CR-0228 Cat: B (Rel-16)  
  
 Source: Samsung*

**Abstract:**

Introduction of beam correspondence enhancement outcome of FR2 UE RF WI into core specification

beam correspondence based on SSB and beam correspondence based on CSI-RS are both agreed as feasible in Rel-16, the requirements and side conditions need to be specified

Applicability rule among beam correspondence based on SSB and CSI-RS, beam correspondence based on SSB and beam correspondence CSI-RS are introduced to mimimize test cases and test time compared with Rel-15 as agreed in R4-2005735

**Discussion:**

The contribution was discussed during email thread [96e][116] NR\_RF\_FR2\_req\_enh\_Part\_2. The discussion was recorded in R4-2011856.

**Decision:** The document was **not pursued**.

**R4-2010239 Beam correspondence enhancement**

*Type: CR For: Agreement  
 38.101-2 v16.4.0 CR-0231 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Enhanced Beam Correspondence requirements, which introduce separate SSB based and CSI-RS based BC requirements, are not included to TS38.101-2.

**Discussion:**

The contribution was discussed during email thread [96e][116] NR\_RF\_FR2\_req\_enh\_Part\_2. The discussion was recorded in R4-2011856.

**Decision:** The document was **revised to R4-2011738**.

**R4-2011738 Beam correspondence enhancement**

*Type: CR For: Agreement  
 38.101-2 v16.4.0 CR-0231 rev 1 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2010239)

**Abstract:**

Enhanced Beam Correspondence requirements, which introduce separate SSB based and CSI-RS based BC requirements, are not included to TS38.101-2.

**Discussion:**

The contribution was discussed during email thread [96e][116] NR\_RF\_FR2\_req\_enh\_Part\_2. The discussion was recorded in R4-2011856.

**Decision:** The document was **revised to R4-2011928**.

**R4-2011928 Beam correspondence enhancement**

*Type: CR For: Agreement  
 38.101-2 v16.4.0 CR-0231 rev 2 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2011738)

**Abstract:**

Enhanced Beam Correspondence requirements, which introduce separate SSB based and CSI-RS based BC requirements, are not included to TS38.101-2.

**Discussion:**

The contribution was discussed during email thread [96e][116] NR\_RF\_FR2\_req\_enh\_Part\_2. The discussion was recorded in R4-2011856.

**Decision:** The document was **agreed**.

**R4-2010240 FR2 eBC requirements**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

The contribution was discussed during email thread [96e][116] NR\_RF\_FR2\_req\_enh\_Part\_2. The discussion was recorded in R4-2011856.

**Decision:** The document was **noted**.

**R4-2010771 Discussion on SSB based BC**

*Type: discussion For: Approval  
 Source: OPPO*

**Discussion:**

The contribution was discussed during email thread [96e][116] NR\_RF\_FR2\_req\_enh\_Part\_2. The discussion was recorded in R4-2011856.

**Decision:** The document was **noted**.

**R4-2011479 On beam correspondence enhancement**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][116] NR\_RF\_FR2\_req\_enh\_Part\_2. The discussion was recorded in R4-2011856.

**Decision:** The document was **noted**.

**R4-2009556 Remaining issues in beam correspondence**

*Type: other For: Discussion  
 Source: Sony, Ericsson*

**Discussion:**

The contribution was discussed during email thread [96e][116] NR\_RF\_FR2\_req\_enh\_Part\_2. The discussion was recorded in R4-2011856.

**Decision:** The document was **noted**.

**R4-2009956 Remaining issues with beam correspondence enhncements**

*Type: discussion For: Discussion  
 Source: Apple Inc.*

**Discussion:**

The contribution was discussed during email thread [96e][116] NR\_RF\_FR2\_req\_enh\_Part\_2. The discussion was recorded in R4-2011856.

**Decision:** The document was **noted**.

##### 7.12.1.3 Intra-band non-contiguous DL CA for aggregated BW larger than 1400 MHz [NR\_RF\_FR2\_req\_enh-Core]

**R4-2011550 Email discussion summary for [96e][117] NR\_RF\_FR2\_req\_enh\_Part\_3**

*Type: other For: discussion  
 Source: Moderator (Qualcomm)*

**Discussion:**

The contribution summarized email discussion thread [96e][117] NR\_RF\_FR2\_req\_enh\_Part\_3. The subject for discussion was Intra-band non-cont DL CA for aggregated BW larger than 1400 MHz

Inter-band DL CA . The email thread was moderated by Sumant Iyer (Qualcomm) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **revised to R4-2011857**.

**R4-2011857 Email discussion summary for [96e][117] NR\_RF\_FR2\_req\_enh\_Part\_3**

*Type: other For: discussion  
 Source: Moderator (Qualcomm)*

(Replaces R4-2011550)

**Discussion:**

The contribution summarized email discussion thread [96e][117] NR\_RF\_FR2\_req\_enh\_Part\_3. The subject for discussion was Intra-band non-cont DL CA for aggregated BW larger than 1400 MHz

Inter-band DL CA . The email thread was moderated by Sumant Iyer (Qualcomm) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **noted**.

**R4-2011741 LS on UE capability for FR2 inter-band CA**

*Type: LS out For: Approval  
 to RAN2  
 Source: RAN4*

**Discussion:**

The contribution was discussed during email thread [96e][117] NR\_RF\_FR2\_req\_enh\_Part\_3. The discussion was recorded in R4-2011857.

**Decision:** The document was **approved**.

**R4-2011451 CR to 38.101-2: DL CA BW Enhancement and CA REFSENS**

*Type: CR For: Agreement  
 38.101-2 v16.4.0 CR-0250 Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

Capture impact of DL CA BW Enhancement on CA REFSENS requirement

**Discussion:**

The contribution was discussed during email thread [96e][117] NR\_RF\_FR2\_req\_enh\_Part\_3. The discussion was recorded in R4-2011857.

**Decision:** The document was **revised to R4-2011740**.

**R4-2011740 CR to 38.101-2: DL CA BW Enhancement and CA REFSENS**

*Type: CR For: Agreement  
 38.101-2 v16.4.0 CR-0250 rev 1 Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

(Replaces R4-2011451)

**Abstract:**

Capture impact of DL CA BW Enhancement on CA REFSENS requirement

**Discussion:**

The contribution was discussed during email thread [96e][117] NR\_RF\_FR2\_req\_enh\_Part\_3. The discussion was recorded in R4-2011857.

**Decision:** The document was **agreed**.

**R4-2009753 CC allocation in intra-band non-cont. DL CA**

*Type: discussion For: Approval  
 Source: Intel Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][117] NR\_RF\_FR2\_req\_enh\_Part\_3. The discussion was recorded in R4-2011857.

**Decision:** The document was **noted**.

**R4-2009754 CR to 38.101-2 (Rel-16) intra-band non-cont. DL CA**

*Type: CR For: Agreement  
 38.101-2 v16.4.0 CR-0221 Cat: B (Rel-16)  
  
 Source: Intel Corporation*

**Abstract:**

For non-cont. DL CA with DL only spectrum configured, wheather the DL CC can be allocated across the boundary of DL only spectrum and bi-directional spectrum is not clear.

**Discussion:**

The contribution was discussed during email thread [96e][117] NR\_RF\_FR2\_req\_enh\_Part\_3. The discussion was recorded in R4-2011857.

**Decision:** The document was **revised to R4-2011739**.

**R4-2011739 CR to 38.101-2 (Rel-16) intra-band non-cont. DL CA**

*Type: CR For: Agreement  
 38.101-2 v16.4.0 CR-0221 rev 1 Cat: B (Rel-16)  
  
 Source: Intel Corporation*

(Replaces R4-2009754)

**Abstract:**

For non-cont. DL CA with DL only spectrum configured, wheather the DL CC can be allocated across the boundary of DL only spectrum and bi-directional spectrum is not clear.

**Discussion:**

The contribution was discussed during email thread [96e][117] NR\_RF\_FR2\_req\_enh\_Part\_3. The discussion was recorded in R4-2011857.

**Decision:** The document was **agreed**.

##### 7.12.1.4 Intra-band non-contiguous UL CA [NR\_RF\_FR2\_req\_enh-Core]

**R4-2011551 Email discussion summary for [96e][118] NR\_RF\_FR2\_req\_enh\_Part\_4**

*Type: other For: discussion  
 Source: Moderator (Nokia)*

**Discussion:**

The contribution summarized email discussion thread [96e][118] NR\_RF\_FR2\_req\_enh\_Part\_4. The subject for discussion was Intra-band non-contiguous UL CA

Improvement of UE MPR

Multiband relaxation framework enhancement

. The email thread was moderated by Petri Vasenkari (Nokia) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **revised to R4-2011858**.

**R4-2011858 Email discussion summary for [96e][118] NR\_RF\_FR2\_req\_enh\_Part\_4**

*Type: other For: discussion  
 Source: Moderator (Nokia)*

(Replaces R4-2011551)

**Discussion:**

The contribution summarized email discussion thread [96e][118] NR\_RF\_FR2\_req\_enh\_Part\_4. The subject for discussion was Intra-band non-contiguous UL CA

Improvement of UE MPR

Multiband relaxation framework enhancement

. The email thread was moderated by Petri Vasenkari (Nokia) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **noted**.

**R4-2011454 FR2 intra-band non-contiguous UL CA feature**

*Type: CR For: Agreement  
 38.101-2 v16.4.0 CR-0252 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

Introduction FR2 intra-band non-contiguous UL CA feature

**Discussion:**

The contribution was discussed during email thread [96e][118] NR\_RF\_FR2\_req\_enh\_Part\_4. The discussion was recorded in R4-2011858.

**Decision:** The document was **revised to R4-2011744**.

**R4-2011744 FR2 intra-band non-contiguous UL CA feature**

*Type: CR For: Agreement  
 38.101-2 v16.4.0 CR-0252 rev 1 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated*

(Replaces R4-2011454)

**Abstract:**

Introduction FR2 intra-band non-contiguous UL CA feature

**Discussion:**

The contribution was discussed during email thread [96e][118] NR\_RF\_FR2\_req\_enh\_Part\_4. The discussion was recorded in R4-2011858.

**Decision:** The document was **agreed**.

**R4-2011478 On intra-band NC UL CA\_FR2**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][118] NR\_RF\_FR2\_req\_enh\_Part\_4. The discussion was recorded in R4-2011858.

**Decision:** The document was **noted**.

**R4-2011511 Discussion on FR2 NC UL CA requirements**

*Type: other For: Agreement  
 Source: Qualcomm India Pvt Ltd*

**Discussion:**

The contribution was discussed during email thread [96e][118] NR\_RF\_FR2\_req\_enh\_Part\_4. The discussion was recorded in R4-2011858.

**Decision:** The document was **noted**.

##### 7.12.1.5 Inter-band DL CA [NR\_RF\_FR2\_req\_enh-Core]

**R4-2010200 Discussion on FR2 inter-band DL CA**

*Type: discussion For: Discussion  
 Source: Samsung*

**Discussion:**

The contribution was discussed during email thread [96e][117] NR\_RF\_FR2\_req\_enh\_Part\_3. The discussion was recorded in R4-2011857.

**Decision:** The document was **noted**.

**R4-2010537 Scope and TP of FR2 Inter-band DL CA in Rel-16**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

TP to complete n260+n261 CA is propsoed.

**Discussion:**

The contribution was discussed during email thread [96e][117] NR\_RF\_FR2\_req\_enh\_Part\_3. The discussion was recorded in R4-2011857.

**Decision:** The document was **revised to R4-2011742**.

**R4-2011742 Scope and TP of FR2 Inter-band DL CA in Rel-16**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2010537)

**Discussion:**

The contribution was discussed during email thread [96e][117] NR\_RF\_FR2\_req\_enh\_Part\_3. The discussion was recorded in R4-2011857.

**Decision:** The document was **noted**.

**R4-2010538 Introduction of FR2 inter-band DL CA**

*Type: CR For: Agreement  
 38.101-2 v16.4.0 CR-0237 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Introduce FR2 inter-band DL CA

**Discussion:**

The contribution was discussed during email thread [96e][117] NR\_RF\_FR2\_req\_enh\_Part\_3. The discussion was recorded in R4-2011857.

**Decision:** The document was **revised to R4-2011743**.

**R4-2011743 Introduction of FR2 inter-band DL CA**

*Type: CR For: Agreement  
 38.101-2 v16.4.0 CR-0237 rev 1 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2010538)

**Abstract:**

Introduce FR2 inter-band DL CA

**Discussion:**

The contribution was discussed during email thread [96e][117] NR\_RF\_FR2\_req\_enh\_Part\_3. The discussion was recorded in R4-2011857.

**Decision:** The document was **revised to R4-2011914**.

**R4-2011914 Introduction of FR2 inter-band DL CA**

*Type: CR For: Agreement  
 38.101-2 v16.4.0 CR-0237 rev 2 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2011743)

**Abstract:**

Introduce FR2 inter-band DL CA

**Discussion:**

The contribution was discussed during email thread [96e][117] NR\_RF\_FR2\_req\_enh\_Part\_3. The discussion was recorded in R4-2011857.

**Decision:** The document was **agreed**.

**R4-2011390 Inter-band CA UE requirement fragmentation**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Discussion:**

The contribution was discussed during email thread [96e][117] NR\_RF\_FR2\_req\_enh\_Part\_3. The discussion was recorded in R4-2011857.

**Decision:** The document was **noted**.

**R4-2011420 Inter-band DL CA in FR2: CBM/IBM capability and associated spherical coverage EIS tests**

*Type: other For: Approval  
 Source: Sony, Ericsson*

**Discussion:**

The contribution was discussed during email thread [96e][117] NR\_RF\_FR2\_req\_enh\_Part\_3. The discussion was recorded in R4-2011857.

**Decision:** The document was **noted**.

**R4-2011448 Remaining Details on FR2 Inter-band DL CA**

*Type: discussion For: (not specified)  
 Source: Futurewei Technologies*

**Discussion:**

The contribution was discussed during email thread [96e][117] NR\_RF\_FR2\_req\_enh\_Part\_3. The discussion was recorded in R4-2011857.

**Decision:** The document was **noted**.

**R4-2011483 On inter band DL CA\_FR2**

*Type: other For: Approval  
 38.101-2 v..  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][117] NR\_RF\_FR2\_req\_enh\_Part\_3. The discussion was recorded in R4-2011857.

**Decision:** The document was **noted**.

**R4-2011510 PSD for FR2 inter-band CA with IBM**

*Type: other For: Approval  
 38.101-2 v..  
 Source: NTT DOCOMO INC.*

**Discussion:**

The contribution was discussed during email thread [96e][117] NR\_RF\_FR2\_req\_enh\_Part\_3. The discussion was recorded in R4-2011857.

**Decision:** The document was **noted**.

**R4-2009557 Inter-band DL CA in FR2: CBM/IBM capability and associated spherical coverage EIS tests**

*Type: other For: Discussion  
 Source: Sony, Ericsson*

**Discussion:**

The contribution was discussed during email thread [96e][117] NR\_RF\_FR2\_req\_enh\_Part\_3. The discussion was recorded in R4-2011857.

**Decision:** The document was **withdrawn**.

**R4-2009755 FR2 inter-band DL CA**

*Type: discussion For: Approval  
 Source: Intel Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][117] NR\_RF\_FR2\_req\_enh\_Part\_3. The discussion was recorded in R4-2011857.

**Decision:** The document was **noted**.

**R4-2009963 Beam Management assumptions for inter-band CA**

*Type: discussion For: Approval  
 Source: Apple Inc., Qualcomm Incorporated*

**Discussion:**

The contribution was discussed during email thread [96e][117] NR\_RF\_FR2\_req\_enh\_Part\_3. The discussion was recorded in R4-2011857.

**Decision:** The document was **noted**.

##### 7.12.1.6 Improvement of UE MPR [NR\_RF\_FR2\_req\_enh-Core]

**R4-2011452 LS on UL power boost mode and IBE relaxation**

*Type: LS out For: Approval  
 to RAN2  
 Source: Qualcomm Incorporated*

**Discussion:**

The contribution was discussed during email thread [96e][117] NR\_RF\_FR2\_req\_enh\_Part\_3. The discussion was recorded in R4-2011857.

**Decision:** The document was **revised to R4-2011745**.

**R4-2011745 LS on UL power boost mode and IBE relaxation**

*Type: LS out For: Approval  
 to RAN2  
 Source: RAN4*

(Replaces R4-2011452)

**Discussion:**

The contribution was discussed during email thread [96e][118] NR\_RF\_FR2\_req\_enh\_Part\_4. The discussion was recorded in R4-2011858.

**Decision:** The document was **approved**.

**R4-2011453 CR to 38.101-2: FR2 UE EIRP increase with IBE relaxation**

*Type: CR For: Agreement  
 38.101-2 v16.4.0 CR-0251 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

Based on agreements in WF R4-1912975, the UE capability and network configuration parameter are introduced to enable UL power boosting in exchange for suspended IBE requirements

**Discussion:**

The contribution was discussed during email thread [96e][118] NR\_RF\_FR2\_req\_enh\_Part\_4. The discussion was recorded in R4-2011858.

**Decision:** The document was **revised to R4-2011905**.

**R4-2011905 CR to 38.101-2: FR2 UE EIRP increase with IBE relaxation**

*Type: CR For: Agreement  
 38.101-2 v16.4.0 CR-0251 rev 1 Cat: B (Rel-16)  
  
 Source: Qualcomm Incorporated*

(Replaces R4-2011453)

**Abstract:**

Based on agreements in WF R4-1912975, the UE capability and network configuration parameter are introduced to enable UL power boosting in exchange for suspended IBE requirements

**Discussion:**

The contribution was discussed during email thread [96e][118] NR\_RF\_FR2\_req\_enh\_Part\_4. The discussion was recorded in R4-2011858.

**Decision:** The document was **agreed**.

##### 7.12.1.7 Multiband relaxation framework enhancement [NR\_RF\_FR2\_req\_enh-Core]

##### 7.12.1.8 FR2 Beam Squint [NR\_RF\_FR2\_req\_enh-Core]

**R4-2011442 Beam squint considerations**

*Type: discussion For: Agreement  
 Source: FUTUREWEI*

**Discussion:**

The contribution was discussed during email thread [96e][117] NR\_RF\_FR2\_req\_enh\_Part\_3. The discussion was recorded in R4-2011857.

**Decision:** The document was **noted**.

#### 7.12.2 RRM core requirements (38.133) [NR\_RF\_FR2\_req\_enh-Core]

**R4-2012051 Email discussion summary for [96e][220] NR\_RF\_FR2\_req\_enh\_RRM**

*Type: other For: discussion  
 Source: Moderator (Apple)*

**Discussion:**

The contribution summarized email discussion thread [96e][220] NR\_RF\_FR2\_req\_enh\_RRM. The topic areas for discussion were RRM Core requirements. The email thread was moderated by Yang Tang (Apple). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2012220**.

**R4-2012220 Email discussion summary for [96e][220] NR\_RF\_FR2\_req\_enh\_RRM**

*Type: other For: discussion  
 Source: Moderator (Apple)*

(Replaces R4-2012051)

**Discussion:**

The contribution summarized email discussion thread [96e][220] NR\_RF\_FR2\_req\_enh\_RRM. The topic areas for discussion were RRM Core requirements. The email thread was moderated by Yang Tang (Apple). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **noted**.

*GTW session (Aug 18th)*

Agreement in RAN4#95e: If no consensus can be made to define MRTD value for CBM and the study on the feasibility to support up to 3us MRTD by RAN4#96e, no CBM RRM requirements in Rel-16 are defined

Sub-topic 1-1: MRTD with CBM in Rel-16

* Option 1: 260ns (Apple, Mediatek, Qualcomm, Xiaomi, OPPO, Intel)
* Option 2: 3us (Ericsson, NTT DCM, KDDI, NEC, Huawei, Samsung, ZTE)
* Option 3: No CBM related RRM requirements are specified in Rel-16 (Nokia, Samsung, ZTE, Ericsson, Huawei)
* Option 3a: No CBM-specific RRM requirements are specified in Rel-16 (Nokia, Samsung, ZTE, Ericsson, Huawei)

Discussion:

Samsung: Support Option 2, 3.

ZTE: Support Option 2. Option 3 is also ok based on Apple’s revision

Intel: ok with Option 3 in case no compromise can be made

MediaTek: can accept Option 3 as a compromise

QC: 3us can work in case we adopt scheduling restrictions and mitigation techniques. Prefer Option 1 and can compromise to Option 3.

Nokia: RF session does not have progress on the CBM. Prefer to treat CBM in Rel-17.

E///: Option 3 is acceptable

Apple: Can accept Option 3. NW will not know when UE makes RX beam sweeping and this is the reason we think it should be transparent and proposed Option 1.

Nokia: suggest to focus on co-located IBM only in Rel-16 and leave other scenarios to Rel-17 (for both RF and RRM)

Huawei: we already agreed to consider co-located and non-co-located IBM in Rel-16

Nokia: our proposal is based on RF session progress

Apple: this is also a part of the RRM Enhancements email thread

E///: both co-located and non-co-located are feasible and shall be considered

Samsung: do not see reasons to restrict deployments

QC: for IBM we assume 8us MRTD. Would it already apply for non-co-located case?

Nokia: 8us could apply for MRTD but our intention is to align with RF session.

Apple: if we focus on co-located case then we’ll need to revise MRTD to avoid UE overdesign

Samsung: in RF session they have an assumption of 1 AoA for IBM but it does not restrict non-co-located deployments

Huawei: Option 3 is acceptable

KDDI: Option 1 is too strict for NW deployment. Ok with Option 3.

Agreement: No CBM-specific RRM requirements are specified in Rel-16

Sub-topic 1-3. Applicability of existing MRTD in R15 and R16 on common beam management

* Option 1: Clarify that MRTD of 8us for FR2 inter-band CA specified in Table 7.6.4-2 of TS38.133 is defined for IBM only. (Apple, OPPO)
* Option 2: no

Discussion:

Nokia: no impact on R15.

E///: Current table is fine as it is since we have only IBM in Rel-16

QC: At least for Rel-16 it should be clarified that this applies for IBM only

Huawei: we can have a note to clarify that 8us is under assumption of IBM

Apple: Option 1

Ericsson: prefer to introduce clarification when CBM is introduced. So far IBM is the only option

Nokia: suggest to wait conclusions from RF session. We are generally fine with Option 1.

ZTE: technically IBM and CBM will have different MRTD. There may be confusion for Rel-17. No need to clarify.

4. MTTD with IBM

* Option 1: 8.5us (Qualcomm, OPPO)

Agreement: MTTD with IBM is 8.5us

*1st round email discussion conclusions*

Chair: further discuss Sub-topic 1-3. Conclusions will be captured in R4-2012151. Remaining CRs will be noted.

##### 7.12.2.1 Inter-band DL CA MRTD [NR\_RF\_FR2\_req\_enh-Core]

**R4-2010051 On MRTD for inter-band CA**

*Type: discussion For: Approval  
 38.133 v..  
 Source: Apple*

**Discussion:**

The contribution was discussed during email thread [96e][220] NR\_RF\_FR2\_req\_enh\_RRM. The discussion was recorded in R4-2012220.

**Decision:** The document was **noted**.

**R4-2010056 CR on MRTD for FR2 inter-band CA**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0969 Cat: F (Rel-16)  
  
 Source: Apple*

**Abstract:**

Clarify that the existing MRTD for FR2 inter-band CA applies to independent beam management.

**Discussion:**

The contribution was discussed during email thread [96e][220] NR\_RF\_FR2\_req\_enh\_RRM. The discussion was recorded in R4-2012220.

**Decision:** The document was **revised to R4-2012151**.

**R4-2012151 CR on MRTD and MTTD for FR2 inter-band CA**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0969 rev 1 Cat: F (Rel-16)  
  
 Source: Apple*

(Replaces R4-2010056)

**Abstract:**

Clarify that the existing MRTD and MTTD for FR2 inter-band CA applies to independent beam management.

**Discussion:**

The contribution was discussed during email thread [96e][220] NR\_RF\_FR2\_req\_enh\_RRM. The discussion was recorded in R4-2012220.

**Decision:** The document was **agreed**.

**R4-2010311 MRTD requirements for FR2 inter-band DL CA**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

The contribution was discussed during email thread [96e][220] NR\_RF\_FR2\_req\_enh\_RRM. The discussion was recorded in R4-2012220.

**Decision:** The document was **noted**.

**R4-2010616 Further study feasibility to support up to 3 us MRTD**

*Type: other For: Approval  
 Source: Ericsson, KDDI Corporation, NTT DOCOMO INC*

**Abstract:**

In this contribution, we present further study feasibility to support up to 3us MRTD.

**Discussion:**

The contribution was discussed during email thread [96e][220] NR\_RF\_FR2\_req\_enh\_RRM. The discussion was recorded in R4-2012220.

**Decision:** The document was **noted**.

**R4-2010617 Updates on MRTD and MTTD requirements for FR2 inter-band DL CA**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1014 Cat: B (Rel-16)  
  
 Source: Ericsson, KDDI Corporation, NTT DOCOMO INC*

**Abstract:**

There is a proposal to update the MRTD and MTTD for inter-band FR2 NR CA wrt UE implemntation. We propsoe this CR to facilitate the commomn beam management based UE implementation.

**Discussion:**

The contribution was discussed during email thread [96e][220] NR\_RF\_FR2\_req\_enh\_RRM. The discussion was recorded in R4-2012220.

**Decision:** The document was **postponed**.

**R4-2010710 On MRTD requirement for FR2 DL inter-band CA**

*Type: discussion For: Approval  
 Source: OPPO*

**Discussion:**

The contribution was discussed during email thread [96e][220] NR\_RF\_FR2\_req\_enh\_RRM. The discussion was recorded in R4-2012220.

**Decision:** The document was **noted**.

**R4-2010757 Discussion on MRTD requirement for FR2 inter-band DL CA**

*Type: discussion For: Approval  
 Source: NEC*

**Abstract:**

MRTD values for CBM and IBM for FR2 inter-band DL CA is discussed

**Discussion:**

The contribution was discussed during email thread [96e][220] NR\_RF\_FR2\_req\_enh\_RRM. The discussion was recorded in R4-2012220.

**Decision:** The document was **noted**.

**R4-2010758 CR to TS 38.133 on MRTD values for FR2 inter-band CA**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1021 Cat: F (Rel-16)  
  
 Source: NEC*

**Abstract:**

MRTD value in the table 7.6.4-2 of TS 38.133 and its applicablity to CBM and IBM is not clear for FR2 inter-band CA

**Discussion:**

The contribution was discussed during email thread [96e][220] NR\_RF\_FR2\_req\_enh\_RRM. The discussion was recorded in R4-2012220.

**Decision:** The document was **postponed**.

**R4-2011062 Discussion on MRTD requirements for FR2 inter-band DL CA**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][220] NR\_RF\_FR2\_req\_enh\_RRM. The discussion was recorded in R4-2012220.

**Decision:** The document was **noted**.

**R4-2011429 MRTD for FR2 inter-band DL CA**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

discussion on MRTD requirement for FR2 inter-band DL CA

**Discussion:**

The contribution was discussed during email thread [96e][220] NR\_RF\_FR2\_req\_enh\_RRM. The discussion was recorded in R4-2012220.

**Decision:** The document was **noted**.

**R4-2011430 38133 CR on inter-band FR2 CA MRTD**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1109 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Update the MRTD and MTTD requirements for inter-band FR2 CA

**Discussion:**

The contribution was discussed during email thread [96e][220] NR\_RF\_FR2\_req\_enh\_RRM. The discussion was recorded in R4-2012220.

**Decision:** The document was **postponed**.

**R4-2009766 Discussion on the remaining issues on MRTD requirement for FR2 inter-band CA**

*Type: discussion For: Discussion  
 Source: Xiaomi*

**Discussion:**

The contribution was discussed during email thread [96e][220] NR\_RF\_FR2\_req\_enh\_RRM. The discussion was recorded in R4-2012220.

**Decision:** The document was **noted**.

**R4-2009767 CR on MRTD requirement for FR2 inter-band CA**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0930 Cat: F (Rel-16)  
  
 Source: Xiaomi*

**Abstract:**

The MRTD requirement for FR2 inter-band CA need to be revised.

**Discussion:**

The contribution was discussed during email thread [96e][220] NR\_RF\_FR2\_req\_enh\_RRM. The discussion was recorded in R4-2012220.

**Decision:** The document was **postponed**.

**R4-2009984 MRTD/MTTD requirements in FR2 inter-band CA**

*Type: discussion For: (not specified)  
 Source: Qualcomm*

**Discussion:**

The contribution was discussed during email thread [96e][220] NR\_RF\_FR2\_req\_enh\_RRM. The discussion was recorded in R4-2012220.

**Decision:** The document was **noted**.

**R4-2011322 MRTD requirements for CBM in FR2 inter-band CA**

*Type: discussion For: Approval  
 38.133 v..  
 Source: Intel Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][220] NR\_RF\_FR2\_req\_enh\_RRM. The discussion was recorded in R4-2012220.

**Decision:** The document was **noted**.

### 7.13 NR RRM requirement enhancement [NR\_RRM\_Enh\_Core]

**R4-2012052 Email discussion summary for [96e][221] NR\_RRM\_Enh\_RRM\_1**

*Type: other For: discussion  
 Source: Moderator (Intel)*

**Discussion:**

The contribution summarized email discussion thread [96e][221] NR\_RRM\_Enh\_RRM\_1. The topic areas for discussion were RRM Core requirements: General, BWP switching, Spatial relation switch for UL. The email thread was moderated by Qiming Li (Intel). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2012063**.

**R4-2012063 Email discussion summary for [96e][221] NR\_RRM\_Enh\_RRM\_1**

*Type: other For: discussion  
 Source: Moderator (Intel)*

(Replaces R4-2012052)

**Discussion:**

The contribution summarized email discussion thread [96e][221] NR\_RRM\_Enh\_RRM\_1. The topic areas for discussion were RRM Core requirements: General, BWP switching, Spatial relation switch for UL. The email thread was moderated by Qiming Li (Intel). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2012221**.

**R4-2012221 Email discussion summary for [96e][221] NR\_RRM\_Enh\_RRM\_1**

*Type: other For: discussion  
 Source: Moderator (Intel)*

(Replaces R4-2012063)

**Discussion:**

The contribution summarized email discussion thread [96e][221] NR\_RRM\_Enh\_RRM\_1. The topic areas for discussion were RRM Core requirements: General, BWP switching, Spatial relation switch for UL. The email thread was moderated by Qiming Li (Intel). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **noted**.

*1st round email discussion conclusions*

**Topic #1: BWP Switching on multiple CCs**

TBWPSwitchDelay based on the smallest SCS

Agreement: TBWPswitchDelay shall also be based on the smallest SCS among all SCS values of all involved CCs regardless of SCS changes.

Condition when define requirement for timer based partial overlap BWP switch

Agreement: Timer-based partial overlapping BWP switch requirements are defined when BWP switch does not involve SCS changing.

**Topic #2: UL Spatial Relation Info Switching**

*GTW session (Aug 24th)*

**Topic #1: BWP Switching on multiple CCs**

Sub-topic 1-1: Simultaneous BWP switch on multiple CCs

Issue 1-1-1: Delay requirements for DCI/timer based BWP switch



N: Number of CCs with simultaneous BWP switch;

D is incremental delay for BWP switch processing on additional CCs;

FFS on definition of N.

* Option 1(Apple):
  + N is the number of CCs with simultaneous BWP switch.
* Option 2 (Xiaomi, Ericsson, OPPO, NEC, MediaTek, Vivo, Nokia, ZTE, Intel, Huawei):
  + For UE which is capable of per-FR gap, and no BWP switch involves SCS change, N is the number of simultaneous BWP switching on CCs within the same frequency range; For UE which is not capable of per-FR gap, or the BWP switches on multiple CCs involves SCS changing, N is the number of simultaneous BWP switching on both FR.
* Option 3(Qualcomm):
  + Introduce a new UE feature (mentioned as 9-12 in RAN4 UE feature list parameter set).
  + For UEs that support this capability and no BWP involves SCS change, N is the number of simultaneous BWP switching on CCs within the same frequency range; For UEs that do not support this feature, or the BWP switches on multiple CCs involves SCS changing, N is the number of simultaneous BWP switching on both FR.

Discussion:

QC: per-FR gap feature was not intended for BWP switching. UE may perform separate measurements but not able to do simultaneous switching.

Apple: similar concern as QC.

MTK: we already have relevant agreements for the partial overlap case where the processing depends on per-FR gap capability.

ZTE: per-FR gap was used for many features like interruption in Rel-15. It characterizes whether UE can do independent processing in FR1 and in FR2 in both RF and BB.

Huawei: Same view as MTK and ZTE. There is no difference vs Rel-15. Same principles can apply.

Apple: In partial overlap case we use per-FR gap the main reason is that we don’t have SCS change and assume that UE can receive DCI in another CC without any interruption.

MTK: It is still not clear why we need additional time.

Apple: object to Option 2.

Huawei: Definition of N is needed for the LS to RAN2? Agree with MTK that we already have requirements for partial overlap case and we don’t extend the requirement and FR1/FR2 can be done in parallel.

Apple: this case is different. The question is whether we need further extend the processing time. Option 3 can be a good approach to accommodate different implementation.

Intel: it seems that the concern is that UE may need additional time. In partial overlap we did not allow additional time. Option 1 does not mean that we need to update partial overlap case.

Apple: any concern on adding new capabilities

E///: it will become complicated

Intel: capability may be fine but then the requirements will not be consistent with partial overlap switching.

Conclusion: Continue discussion

Issue 1-1-2: Delay requirements for RRC based BWP switch

; Where DRRC is FFS



extended delay for RRC based BWP switching on multiple CCs is needed.

* Where DRRC is FFS.
  + Option 1 (NEC, Nokia): DRRC = 0ms
  + Option 2 (Apple, Xiaomi, Qualcomm, Vivo, OPPO, Ericsson, Intel, MediaTek): DRRC = D
  + Option 3 (Intel, Ericsson, NEC, ZTE): if N<=3, re-use the existing requirement. if N>3, DRRC =D. where N is the total number of CCs.
  + Option 4 (Vivo): An upper bound Nbound on N could be defined and the total switch delay will not further increase when N is larger than Nbound
  + Option 5 (Huawei): For type 1 UE, DRRC = 0ms; For type 2 UE, DRRC = D

Discussion:

Huawei: Can compromise to Option 5.

Intel/Nokia: ok to compromise to Option 5.

Apple: how is DRRC = 0 justified?

Huawei: D is introduced for DCI and timer based cases. Many companies observed that delay is too big for RRC based case.

Agreement: For type 1 UE, DRRC = 0ms; For type 2 UE, DRRC = D

Sub-topic 1-2: Partial overlap BWP switch on multiple CCs

Issue 1-2-2: Delay requirements for Timer based BWP switch

**Sub1:** if UE is capable of per-FR gap and the timer based BWP switch happens in two frequency range, whether UE handled timer-based BWP switch in parallel or sequentially

* Option 1(Huawei, Intel, ZTE):
  + If UE is capable of per-FR gap, the timer based BWP switch happens in two frequency range are performed in parallel if the BWP switch doesn’t involve SCS change.
* Option 2(Apple, Xiaomi, MediaTek, Vivo, Ericsson, OPPO, NEC, Qualcomm):
  + Sequentially

Discussion:

Huawei: Option 2 contradicts to RAN1.

MTK: Option 2 is aligned with RAN1 design.

Agreement: if UE is capable of per-FR gap and the timer based BWP switch happens in two frequency range, UE handles timer-based BWP switch sequentially

**Sub2:** Delay requirement for timer based BWP switch

* Option 1(Vivo, Apple, Xiaomi, NEC, Qualcomm, MediaTek, OPPO): Don’t differentiate UE capability of per-FR gap

TBWPSwitchDelayPartialOverlapTimer = TDelayTimer + TBWPSwitchDelayTimer

* Option 1a (Ericsson):

TMultipleBWPSwitchDelayTimer = (1+M)\*TBWPSwitchDelayTimer

where:

* M=0 when the timer-based BWP switch is triggered on CC1, no timer-based BWP switch is ongoing on any other CC.
* M> 0 if the timer-based BWP switch is triggered on CC1 and a timer-based BWP switch is ongoing on another CC (CC2).

(M-1) is the number of CCs on which the timer-based BWP switch is triggered before the triggering of the timer-based BWP switch on CC1 but while the timer-based BWP is ongoing on CC2.

* Option 2 (Intel, Huawei, ZTE): Dependent on the UE capability of per-FR gap
* For UE capable of per-FR gap:
  + Option 2a (Huawei): TMultipleBWPswitchDelayTotal = TDelay + TMultipleBWPswitchDelay, where TDelay is the time delayed by ongoing BWP switching within the same frequency range. TMultipleBWPswitchDelay is the timer-based BWP switch delay on current single CC or simultaneously triggered on multiple CCs.
* For UE not capable of per-FR gap:
  + Option 2a (Huawei): TMultipleBWPswitchDelayTotal = TDelay + TMultipleBWPswitchDelay*,* where *TDelay*is the time delayed by ongoing timer-based BWP switching with in the same frequency range; TMultipleBWPswitchDelayis TBWPSwitchDelay*+* D(N-1), N is the number of timer-based BWP switch on CCs in the other FR of which the time periods of BWP switching delay are overlapped with TMultipleBWPswitchDelay, and D is the incremental delay, which is same as that of simultaneous BWP switch on multiple CCs

Discussion

E///: Option 1 is ok but need to discuss equation

Agreement: Don’t differentiate UE capability of per-FR gap

Option A: TMultipleBWPswitchDelayTotal = TDelay + TMultipleBWPswitchDelay, where TDelay is the time delayed by ongoing BWP switching.

Option B: TMultipleBWPSwitchDelayTimer = (1+M)\*TBWPSwitchDelayTimer

where:

* M=0 when the timer-based BWP switch is triggered on CC1, no timer-based BWP switch is ongoing on any other CC.
* M> 0 if the timer-based BWP switch is triggered on CC1 and a timer-based BWP switch is ongoing on another CC (CC2).
* (M-1) is the number of CCs on which the timer-based BWP switch is triggered before the triggering of the timer-based BWP switch on CC1 but while the timer-based BWP is ongoing on CC2.

**Topic #2: UL Spatial Relation Info Switching**

Sub-topic 2-1: General

Issue 2-1-1: When the UL signal has spatial relation to an unknown DL RS

* Option 1 (Ericsson, NTT DOCOMO): UE transmits using previous TX beam
* Option 2 (NTT DOCOMO, Nokia, Ericsson): Drop UL transmission until spatial relation info is known
* Option 3 (Intel, Qualcomm, Vivo, MediaTek, OPPO, NTT DOCOMO, Huawei, Samsung): Up to UE implementation and no requirement is needed to be specified
* Recommended WF:
  + Due to limited time, suggest companies to compromise to option 3.
* Discussion
  + Nokia: prefer to specify UE behavior. At least preclude Option 1.
  + Huawei: this is quite similar to DL TCI state switching. Leave it up to UE implementation.
  + Apple: this is not a switching issues. UE does not know which beam to use. It is up to UE whether to transmit or drop.
  + QC: Agree with Huawei. Similar to DL. New requirements may conflict with RAN1 spec.
  + MTK: would like to further check why the NW configures UL signal with spatial relation to an unknown DL RS
  + ZTE: it is not clear. UE may need to do time tracking first. Prefer Option 1.
  + Chair: is this a typical scenario?
    - ZTE: active TCI state list can be small and this can be quite typical scenario
  + Nokia: 2 different sub-topics 1) what happens within 3ms after TCI state switch; 2) what happens after 3ms if UE does not have RS
* Agreement
  + Option 1:
    - Do not define requirements or UE behavior for the case when the UL signal has spatial relation to an unknown DL RS
  + Option 2:
    - Do not define UE behavior during the transition period
    - UE transmits using newly configured UL spatial relationship after the transition period

*GTW session (Aug 27th)*

**Topic #1: BWP Switching on multiple CCs**

Issue 1-2-3: Delay requirements for simultaneous DCI/timer based BWP switch

*;* D is incremental delay for BWP switch processing on additional CCs



* D:
* Definition of N:
  + Option 1 (Xiaomi, Ericsson, OPPO, NEC, MediaTek, Vivo, Nokia, ZTE, Intel, Huawei):
    - For UE which is capable of per-FR gap, and no BWP switch involves SCS change, N is the number of simultaneous BWP switching on CCs within the same frequency range; For UE which is not capable of per-FR gap, or the BWP switches on multiple CCs involves SCS changing, N is the number of simultaneous BWP switching on both FR.
  + Option 2 (Qualcomm, Apple):
    - Introduce a new UE feature (mentioned as 9-12 in RAN4 UE feature list parameter set).
    - For UEs that support this capability and no BWP involves SCS change, N is the number of simultaneous BWP switching on CCs within the same frequency range; For UEs that do not support this feature, or the BWP switches on multiple CCs involves SCS changing, N is the number of simultaneous BWP switching on both FR.

Discussion:

Apple: Object to Option 1.

MTK, E///: Object to Option 2.

Apple, QC: Can compromise. We have concerns on using per-FR gap capability.

Agreement: For UE which is capable of per-FR gap, and no BWP switch involves SCS change, N is the number of simultaneous BWP switching on CCs within the same frequency range; For UE which is not capable of per-FR gap, or the BWP switches on multiple CCs involves SCS changing, N is the number of simultaneous BWP switching on both FR.

Issue 1-2-3: Delay requirement for Partial Overlap RRC based BWP switch

* Additional waiting time for RRC based BWP switch
  + Option 1 (Apple, Intel, Xiaomi, MediaTek, Vivo, Ericsson, Qualcomm, OPPO): upper bounded by the multiple BWP switch time in CG1
  + Option 2 (Nokia, NEC, Huawei, ZTE): upper bounded by the RRC processing time in the 1st CG.

Agreement:

Additional waiting time for RRC based BWP switch is upper bounded by the multiple BWP switch time in CG1.

Note: UE is not precluded to process the 2nd RRC message before the first RRC based BWP switch completes and this is up to UE implementation (no spec impact)

LS on multiple BWP switch impact on HARQ design in dormancy SCell

**Topic #2: UL Spatial Relation Info Switching**

Issue 2-1-1: When the UL signal has spatial relation to an unknown DL RS

Conclusion: No consensus to define requirements for UL signal that has spatial relation to an unknown DL RS. Companies can further bring contributions as a part of maintenance.

Sub1. Whether to consider timing tracking when associated DL-RS is known but QCLed with a different qcl-Type1 RS?

Agreement: Do not consider timing tracking when associated DL-RS is known but QCLed with a different qcl-Type1 RS

Issue 2-2-1: Delay requirement for MAC CE based spatial relation info switching associated with DL-RS for PUCCH

* For known spatial relation but the DL RS is not in the active TCI list
  + Option 1:
    - (THARQ +3ms)/NR slot length
  + Option 2:
    - If the spatial relation associated downlink RS is in the active TCI state list, UE shall be able to transmit a PUCCH with target spatial relation at slot n+ (THARQ +3ms)/NR slot length
    - If the spatial relation associated downlink RS is not in the active TCI state list, no requirement is defined.
* For unknown spatial relation
  + Option 1: THARQ + 3ms+ TL1-RSRP
  + Option 2: THARQ + 3ms+ TL1-RSRP + time for time tracking if applicable
  + Option 3: No requirements will be defined

Issue 2-3-1: Delay requirement for RRC based spatial relation info switching associated with DL-RS for P-SRS

* For known spatial relation but the DL RS is not in the active TCI list
  + Option 1:
    - TRRCprocessing
  + Option 2:
    - The RRC based spatial relation info switching associated with DL-RS for P-SRS is TRRCprocessing when the target spatial relation associated to DL RS is known and the DL RS is in the active TCI list
    - If the spatial relation associated downlink RS is not in the active TCI state list, no requirement is defined.
* For unknown spatial relation
  + Option 1: TRRCprocessing + TL1-RSRP
  + Option 2:TRRCprocessing + TL1-RSRP + time for time tracking if applicable
  + Option 3: No requirements will be defined

**R4-2012053 Email discussion summary for [96e][222] NR\_RRM\_Enh\_RRM\_2**

*Type: other For: discussion  
 Source: Moderator (ZTE)*

**Discussion:**

The contribution summarized email discussion thread [96e][222] NR\_RRM\_Enh\_RRM\_2. The topic areas for discussion were RRM Core requirements: SRS carrier switching, CGI reading, Mandatory MG patterns. The email thread was moderated by Qian Yang (ZTE). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2012222**.

**R4-2012222 Email discussion summary for [96e][222] NR\_RRM\_Enh\_RRM\_2**

*Type: other For: discussion  
 Source: Moderator (ZTE)*

(Replaces R4-2012053)

**Discussion:**

The contribution summarized email discussion thread [96e][222] NR\_RRM\_Enh\_RRM\_2. The topic areas for discussion were RRM Core requirements: SRS carrier switching, CGI reading, Mandatory MG patterns. The email thread was moderated by Qian Yang (ZTE). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **noted**.

*1st round email discussion conclusions*

**Topic #1: SRS carrier switching requirements**

**Topic #2: CGI reading requirements with autonomous gap**

Sub-topic #1-1 Remaining issues

Agreements

* MIB decoding delay in FR2:
  + 3 \* N \* TSMTC, where N = 8 and TSMTC is SMTC periodicity of target cell
* SIB1 decoding delay and side condition
  + 6 samples and -3 dB SNR
* Value of timer T321 for FR2
  + 5 seconds

*GTW session (Aug 25th)*

**Topic #1: SRS carrier switching requirements**

Issue 1-1a: Interruptions requirements for Case 1a: Co-located intra-band CA with same TA

* Proposals
  + Option 1: The same interruption requirements as for async cases in the spec shall apply
  + Option 2: One slot shorter interruption requirements than for async cases in the spec shall be specified
* Discussion
  + Nokia: We can have 1 slot shorter interruption than in async. We consider only co-located case.
  + QC: The issue is that there may be async UE UL and DL in different CC and hence one additional slot interruption needed. Option 1 is the only valid option.
  + MTK: Same view with QC. Can we confirm with Nokia that UL can affect 2 slots DL?
    - Nokia: In co-located case all CCs are aligned.
  + QC: what Nokia described is from BS perspective. But the issue is from UE perspective.
  + ZTE: if everything is perfectly aligned (SCS, DL:UL) then shorter interruption may be possible. For other cases it is unlikely.
  + Nokia: in some cases we can save one slot interruption.
* Agreements:
  + The same interruption requirements as for async cases in the spec shall apply

**Topic #2: CGI reading requirements with autonomous gap**

* Background
  + Two cases are identified in the 1st round discussion to FFS impact to L1 RRM measurement requirements due to CGI reading in FR2
    - Case 1A:
      * when intra-frequency CGI reading is performed on FR2
        + if all of the reference signals configured for RLM, BFD, CBD or L1-RSRP for beam reporting on any FR2 serving frequency in the same band outside measurement gap **are not fully overlapped** by intra-frequency SMTC occasions.
    - Case 1B:
      * when intra-frequency CGI reading is performed on FR2
        + if all of the reference signals configured for RLM, BFD, CBD or L1-RSRP for beam reporting on any FR2 serving frequency in the same band outside measurement gap **are fully non-overlapped** by intra-frequency SMTC occasions.
* Issue 2-2-1a: Impact to L1 RRM measurement requirements due to CGI reading in FR2
  + Whether UE should meet L1 measurement requirements for Case 1A or Case 1B during MIB decoding?
    - If yes, then how to handle different UE implementations, i.e. MIB decoding with Rx beam sweeping and without Rxbeam sweeping?
  + Whether UE should meet L1 measurement requirements for Case 1A or Case 1B during SIB1 decoding?
* Discussion:
  + ZTE: Previous agreement is that UE is not required to meet L1 measurement requirements for both FR1 and FR2. E/// suggested to revisit the FR2 case.
  + QC: prefer to keep the previous agreement.
  + E///: our previous assumption was that UE is not doing Rx beam sweeping.
  + Apple: understand motivation but prefer Option 1.
* Conclusion
  + Continue discussion in the 2nd round (focus on Case 1B, serving cell measurements and L1-RSRP)
  + In case no consensus reached previous agreements will be kept

**R4-2012054 Email discussion summary for [96e][223] NR\_RRM\_Enh\_RRM\_3**

*Type: other For: discussion  
 Source: Moderator (Apple)*

**Discussion:**

The contribution summarized email discussion thread [96e][223] NR\_RRM\_Enh\_RRM\_3. The topic areas for discussion were RRM Core requirements: Multiple Scell activation/deactivation, Inter-frequency measurements, UE-specific BW change, inter-band CA. The email thread was moderated by Jerry Cui (Apple). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2012160**.

**R4-2012160 Email discussion summary for [96e][223] NR\_RRM\_Enh\_RRM\_3**

*Type: other For: discussion  
 Source: Moderator (Apple)*

(Replaces R4-2012054)

**Discussion:**

The contribution summarized email discussion thread [96e][223] NR\_RRM\_Enh\_RRM\_3. The topic areas for discussion were RRM Core requirements: Multiple Scell activation/deactivation, Inter-frequency measurements, UE-specific BW change, inter-band CA. The email thread was moderated by Jerry Cui (Apple). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2012223**.

**R4-2012223 Email discussion summary for [96e][223] NR\_RRM\_Enh\_RRM\_3**

*Type: other For: discussion  
 Source: Moderator (Apple)*

(Replaces R4-2012160)

**Discussion:**

The contribution summarized email discussion thread [96e][223] NR\_RRM\_Enh\_RRM\_3. The topic areas for discussion were RRM Core requirements: Multiple Scell activation/deactivation, Inter-frequency measurements, UE-specific BW change, inter-band CA. The email thread was moderated by Jerry Cui (Apple). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **noted**.

*1st round email discussion conclusions*

**Topic #1: Inter-band CA requirement for FR2 UE measurement capability of independent Rx beam and/or common beam (7.13.1.5)**

Agreement: No need to discuss and no CBM-specific RRM requirements are specified in Rel-16.

**Topic #2: Multiple SCell activation/deactivation maintenance (7.13.1.6)**

**Topic #3: Inter-frequency measurements without MG maintenance (7.13.1.6)**

**Topic #4: UE-specific CBW change maintenance (7.13.1.6)**

*GTW session (Aug 25th)*

**Topic #1: Inter-band CA requirement for FR2 UE measurement capability of independent Rx beam and/or common beam (7.13.1.5) (Core requirement related)**

Issue 1-1-2: Assumption for IBM UE in Rel-16

* Option 1 (Nokia): RAN4 will define RRM requirements for IBM capable UE assuming collocated deployments using an L+H FR2 inter-band CA combo for Rel-16.
* Option 2 (Apple, MTK, Ericsson, vivo, Intel, Qualcomm, OPPO, Huawei, NTT DOCOMO, ZTE): Assumption of deployment and band pair for IBM UE should follow the RF session conclusions, and no restriction on deployment and band pair shall be assumed in RRM requirement right now unless RF session concluded on those restrictions.
* Agreements:
  + Assumption of deployment and band pair for IBM UE should follow the RF session conclusions, and no restriction on deployment and band pair shall be assumed in RRM requirement right now unless RF session concluded on those restrictions.

Issue 1-3-2: BM requirements for IBM UE

* Option 1 (Nokia):
  + RAN4 does not define Beam management requirements for IBM UEs in non-collocated deployments in Rel-16.
  + UE need to perform BFD in at least 1 cell per band when UE is configured with FR2 inter-band CA.
* Option 2 (Apple, MTK, Ericsson, vivo, Intel, QC, OPPO, NTT DOCOMO, ZTE):
  + UE need to perform BFD in at least 1 cell per band when UE is configured with FR2 inter-band CA.
* Option 3 (Huawei):
  + To follow the agreements in NR eMIMO on how to perform BFD/CBD measurements.
* Discussion
  + Nokia: ok with Option 2
  + Huawei: Option 2 is not aligned with conclusions in eMIMO case which are already present in the spec. i.e. UE is not required to perform BFD on deactivated SCell
  + QC: we support Option 2. Meantime Huawei comments are correct. Option 3 is ok. For inter-band CA with IBM – there are already agreements in eMIMO
  + Apple: For Option 3, do we have independent BFD for IBM for different bands? Not sure if same deployment as for eMIMO will always apply.
  + Samsung: in eMIMO we consider BFD/CBD on SCell. Both schemes are considered. For the restriction, we already have some for SCell and they should be followed.
  + Apple: In inter-band CA do we always have multiple TRPs for all bands and do we have multiple BFD/CBD in one band?
  + Samsung: sharing factor is proportional to number of cells and for each band we support one cell
* Agreements:
  + follow the agreements in NR eMIMO on how to perform BFD/CBD measurements.

Issue 1-4-1: necessity of clarification on “there is no scheduling restriction if UE uses independent beam”

* Option 1 (Ericsson): The IBM scheduling availability requirements for FR2 inter-band CA scenario do not need to be introduced as there is no scheduling restriction if UE uses independent beam. Only cases where there are scheduling restrictions need to be explicitly mentioned in the spec.
* Option 2 (Apple, MTK, Intel, QC, OPPO, Huawei, NTT DOCOMO, ZTE): The scheduling availability requirements for FR2 inter-band CA scenario shall be introduced to clarify there is no scheduling restriction if UE uses independent beam
* Agreement:
  + The scheduling availability requirements for FR2 inter-band CA scenario shall be introduced to clarify there is no scheduling restriction if UE uses independent beam

Issue 1-4-2: Scheduling restrictions requirements for IBM UE in cases 1~3

* Option 1 (NTT DOCOMO, Ericsson, OPPO, Huawei, Apple, Nokia): No requirements are needed for the case that there are contradictions between NW configuration and UE capability, i.e., case 1~3.
* Option 2 (Intel):
  + Do not define the scheduling restrictions for the case1 and case 2.
  + For IBM UEs do not define the scheduling restrictions for the case when network configures mixed numerology between SSB and data on two FR2 bands but keeps the same numerology withing each band.
  + For IBM UEs the scheduling restriction applies on one CC due to SS-RSRP/SS-RSRQ/SS-SINR measurements and SSB based RLM/BFD/CBD/L1-RSRP measurement being performed on another CC of the same FR2 band.
* Option 3 (MediaTek, QC):
  + The scheduling availability shall not apply for the case1 and case 2.
  + The scheduling availability shall not apply for the case 3a in which network configures mixed numerology between SSB and data on any one CC on two FR2 bands if the UE does not have the capability of *simultaneousRxDataSSB-DiffNumerology* in FR2.
* Option 4 (Nokia):
  + The requirements applicable for UE capable of IBM, apply when the IBM capable UE is operating in collocated deployments
  + Remove the scheduling availability requirements text of case 1~3 from the requirement section.
* Option 5 (Apple, vivo, OPPO, Huawei, ZTE):
  + Scheduling availability requirement shall not apply for the case1 and case 2
    - Note: to be clear, it means how to handle those cases is purely up to UE implementation without any specified requirement.
  + FFS on case 3 and other issues in 2nd round.
* Option 6 (added by moderator):
  + Scheduling availability requirement shall not apply for the case1 and case 2
    - Note: to be clear, it means how to handle those cases is purely up to UE implementation without any specified requirement.
  + There is no scheduling restriction allowed for IBM UE when network configures mixed numerology between SSB and data on two FR2 bands on which UE is using IBM.
* Discussion
  + Intel: prefer not to list Case 1 and Case into the spec
  + Nokia: we also share view. Case 1 and case 2 are network configuration errors
  + MTK: we already do it in Rel-15 and if we don’t do it in Rel-16 then it may cause confusion
  + Apple: same view as MTK. It is already in Rel-15 spec and prefer to follow in Rel-16 spec.
  + Nokia: Another option is to remove it from Rel-15. We may need to have spec clean up.
  + Intel: For Rel-15 it is more related to Case 3 rather than case 1 or case 2.
* Agreement
  + Scheduling availability requirement shall not apply for the Case 1 and Case 2
    - Case 1 and Case 2 are network configuration errors
    - How to handle those cases is up to UE implementation without any specified requirement.
  + There is no scheduling restriction allowed for IBM capable UE when network configures mixed numerology between SSB on one FR2 band and data on the other FR2 band and UE is configured for IBM operation for the band pair

Chair: further discuss whether and how to capture Case 1 and 2 in CRs.

Issue 1-5-1: Measurement restrictions requirements for IBM UE in cases 1 and 2

* Option 1 (NTT DOCOMO, Ericsson, Nokia, OPPO, Huawei, Apple): No requirements are needed for the case that there are contradictions between NW configuration and UE capability, i.e., case 1 and 2.
* Option 2 (Intel):
  + Do not define the scheduling restrictions for the case1.
  + For IBM UEs do not define the measurement restrictions for the case when network configures mixed numerology between SSB and CSI-RS on two FR2 bands but keeps the same numerology withing each band.
  + For IBM UEs the measurement restriction applies when the SSB for RLM, BFD, CBD or L1- RSRP measurement on one CC is in the same OFDM symbol as the CSI-RS for RLM, BFD, CBD or L1- RSRP measurement on another CC of the same FR2 band.
* Option 3 (MediaTek, QC):
  + No measurement requirements for the case1.
  + No measurement requirements for the case 2a in which network configures mixed numerology between SSB and data on any one CC on two FR2 bands if the UE does not have the capability of *simultaneousRxDataSSB-DiffNumerology* in FR2.
* Option 4 (Apple, vivo, OPPO, Huawei, ZTE):
  + Measurement restrictions requirement shall not apply for the case1.
    - Note: to be clear, it means how to handle those cases is purely up to UE implementation without any specified requirement.
  + FFS on case 2 and other issues in 2nd round.
* Option 5 (added by moderator):
  + Measurement restriction requirement shall not apply for the case1
    - Note: to be clear, it means how to handle those cases is purely up to UE implementation without any specified requirement.
  + There is no measurement restriction allowed for IBM UE when network configures mixed numerology between SSB and CSI-RS on two FR2 bands on which UE is using IBM.
* Agreement
  + Measurement requirement shall not apply for the Case1
    - Case 1 is network configuration error
    - How to handle this case is up to UE implementation without any specified requirement.
  + There is no measurement restriction allowed for IBM UE when network configures mixed numerology between SSB on one FR2 band and CSI-RS on the other FR2 band and UE is configured for IBM operation for the band pair

Issue 1-6-2: SCell activation delay requirements for IBM UE

* Option 1 (Nokia, MTK, Intel, OPPO): Specifically define the requirements for ‘SCell being activated belongs to FR2 and there is an active serving cell on that FR2 band and the PCell or PSCell is in FR2 and the PCell or PSCell and SCell being activated are in a band pair with independent beam management’.
* Option 2 (Apple, vivo, QC, Huawei, NTT DOCOMO, ZTE, MTK, Intel): not necessary to specify the requirements for ‘SCell being activated belongs to FR2 and there is an active serving cell on that FR2 band and the PCell or PSCell is in FR2 and the PCell or PSCell and SCell being activated are in a band pair with independent beam management’
* Discussion
  + MTK: we are ok with Option 2.
  + Nokia: It would be good to clarify which requirement we are going to apply.
  + Intel: ok with Option 2.
  + Apple: the system will not be broken. It is ok to further discuss in the maintenance part.
  + Nokia: we have a CR
* Conclusion: further check Nokia CR. In case of no consensus, no requirements will be introduced for ‘*SCell being activated belongs to FR2 and there is an active serving cell on that FR2 band and the PCell or PSCell is in FR2 and the PCell or PSCell and SCell being activated are in a band pair with independent beam management*’

**Topic #2: Multiple SCell activation/deactivation maintenance (7.13.1.6)**

Issue 2-1: Tx beam assumption of FR1 intra-band contiguous CA

* Option 1 (Qualcomm, Nokia): RAN4 to send an LS to RAN1 to ask
  + if UE is allowed to establish an assumption that configured cells in intra-band contiguous CA exploit a common Tx beam across CCs based on RAN4 side condition in section 8.3.7
  + if the condition made by RAN4 conflicts with RAN1 spec
  + if there are any adverse impacts that RAN1 can anticipate
* Option 2 (Apple, MTK, Huawei): RAN4 not send an LS to RAN1 for issue 2-1.
* Discussion
  + Apple: this is a RAN4 assumption and not related to RAN1 specs.
  + MTK: Agree with QC motivation to clarify UE behavior but don’t think sending LS to RAN1 is useful. Suggest to clarify that UE shall not assume common TX beam in FR1 for intra-band contiguous CA
  + E///: in this case do we need to define the requirements?
  + Huawei: current requirements are clear and have a different understanding from MTK on current requirements. UE shall not perform cell detection for intra-band CA and hence can assume the common beam. We already agreed that in case the conditions do not hold, then we don’t specify any requirements.
* Conclusion: Continue email discussion. No impact on Core part completion. Do not send LS to RAN1 in this meeting.

**R4-2012152 WF on NR RRM requirements enhancements - BWP switching on multiple CCs**

*Type: other For: discussion  
 Source: Intel Corporation*

**Decision:** The document was **revised to R4-2012271**.

**R4-2012271 WF on NR RRM requirements enhancements - BWP switching on multiple CCs**

*Type: other For: discussion  
 Source: Intel Corporation*

(Replaces R4-2012152)

**Decision:** The document was **approved**.

**R4-2012233 LS on multiple BWP switch impact on HARQ design in dormancy SCell**

*Type: LS out For: Approval  
 to RAN1  
 Source: MediaTek*

**Decision:** The document was **revised to R4-2012269**.

**R4-2012269 LS on multiple BWP switch impact on HARQ design in dormancy SCell**

*Type: LS out For: Approval  
 to RAN1  
 Source: RAN4*

(Replaces R4-2012233)

**Decision:** The document was **approved**.

**R4-2012154 WF on NR RRM requirements enhancements - UL spatial relation info switch**

*Type: other For: discussion  
 Source: MediaTek*

**Decision:** The document was **revised to R4-2012258**.

**R4-2012258 WF on NR RRM requirements enhancements - UL spatial relation info switch**

*Type: other For: discussion  
 Source: MediaTek*

(Replaces R4-2012154)

**Decision:** The document was **approved**.

**R4-2012155 WF on NR RRM requirements enhancements - SRS carrier based switching**

*Type: other For: discussion  
 Source: ZTE*

**Decision:** The document was **approved**.

**R4-2012156 Reply LS on CGI reading with autonomous gaps**

*Type: LS out For: Approval  
 to RAN2  
 Source: RAN4*

**Decision:** The document was **approved**.

**R4-2012161 WF on NR RRM requirements enhancements - inter-band FR2 CA RRM**

*Type: other For: discussion  
 Source: Huawei*

**Decision:** The document was **approved**.

**R4-2012164 WF on NR RRM requirements enhancements**

*Type: other For: discussion  
 Source: Apple*

**Decision:** The document was **approved**.

#### 7.13.1 RRM core requirements (38.133) [NR\_RRM\_Enh\_Core]

##### 7.13.1.1 SRS carrier switching requirements [NR\_RRM\_Enh\_Core]

**R4-2010040 Remaining issues on Interruption at SRS carrier switch**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Decision:** The document was **noted**.

**R4-2011121 Discussion on SRS carrier switching interruption**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Decision:** The document was **noted**.

**R4-2011122 Correction on the interruption requirements due to SRS carrier switching**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1066 Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

1.For UE supporting per-FR gap, E-UTRAN SRS carrier switching impacts serving cells in FR1.

2.Reference table is not correct.

**Decision:** The document was **revised to R4-2012238**.

**R4-2012238 Correction on the interruption requirements due to SRS carrier switching**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1066 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

(Replaces R4-2011122)

**Abstract:**

1.For UE supporting per-FR gap, E-UTRAN SRS carrier switching impacts serving cells in FR1.

2.Reference table is not correct.

**Decision:** The document was **agreed**.

**R4-2011313 Remaining open issues on NR SRS carrier switching RRM requirements**

*Type: discussion For: Discussion  
 Source: ZTE*

**Decision:** The document was **noted**.

**R4-2011385 CGI reading core requirement discussion**

*Type: discussion For: Discussion  
 Source: Qualcomm, Inc.*

**Decision:** The document was **noted**.

##### 7.13.1.2 CGI reading requirements with autonomous gap [NR\_RRM\_Enh\_Core]

**R4-2010041 Remaining issues on CGI reading requirement**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Decision:** The document was **noted**.

**R4-2010376 Discussion on remaining issues for NR CGI reading**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Provides views on the remaining issues for NR CGI reading including additional aspects for RLM and BM of serving cell

**Decision:** The document was **noted**.

**R4-2010377 Impact of CGI reading on RLM**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6925 Cat: B (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

For NR CGI decoding, the UE cannot be assumed to perfom LTE RLM measurement in autonomous gaps. In these cases CGI decoding requirements should be met which means the LTE RLM measurement evaluation period may be extended.

**Decision:** The document was **agreed**.

**R4-2010378 Impact of CGI reading on RLM and BM**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0999 Cat: B (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

For CGI decoding, the UE cannot be assumed to perfom beam management or RLM measurement in autonomous gaps. In these cases CGI decoding requirements should be met which means the L1 measurement evaluation period may be extended.

**Decision:** The document was **revised to R4-2012158**.

**R4-2012158 Impact of CGI reading on L1 and L3 measurement**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0999 rev 1 Cat: B (Rel-16)  
  
 Source: ZTE*

(Replaces R4-2010378)

**Abstract:**

For CGI decoding, following agreements are made.

UE is not required to meet L3 RRM measurement requirements during CGI reading

UE is not required to meet L1 measurement requirements during CGI reading in FR1

When intra-frequency CGI reading is performed on FR2 carrier, longer measurement delay is expected for RLM, BFD, CBD or L1-RSRP for beam reporting on any FR2 serving frequency.

**Decision:** The document was **agreed**.

**R4-2011169 Discussion on NR CGI reading requirements**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Decision:** The document was **noted**.

**R4-2011170 CR to 36.133 for CGI reading**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6948 Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

In RAN4#95-e, CGI reading delay for LTE cells for UE in EN-DC is introduced in 36.133. As RAN2 has supported LTE CGI reading in NE-DC, the CGI reading delay for LTE cells for UE in NE-DC should be also defined.

Requirements for interruption to LTE serving cells have been endorsed in R4-2008991 for the following cases:

UE in EN-DC, NR GCI reading configured by LTE PCell or NR PSCell

UE in LTE SA, NR CGI reading configured by LTE PCell

These changes are re-submitted with corrected section reference.

In addiiton, requirements for interruption to LTE serving cells should also be defined for the following cases:

UE in NE-DC, LTE CGI reading configured by NR PCell

UE in NE-DC, NR CGI reading configured by NR PCell

**Decision:** The document was **revised to R4-2012159**.

**R4-2012159 CR to 36.133 for CGI reading**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6948 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

(Replaces R4-2011170)

**Abstract:**

Requirements for interruption to LTE serving cells have been endorsed in R4-2008991 for the following cases:

UE in EN-DC, NR GCI reading configured by LTE PCell or NR PSCell

UE in LTE SA, NR CGI reading configured by LTE PCell

These changes are re-submitted with corrected section reference.

In addiiton, requirements for interruption to LTE serving cells should also be defined for the following cases:

UE in NE-DC, LTE CGI reading configured by NR PCell

UE in NE-DC, NR CGI reading configured by NR PCell

**Decision:** The document was **agreed**.

**R4-2011310 Remaining open issues on NR CGI reading with autonomous gaps**

*Type: discussion For: Discussion  
 Source: ZTE*

**Decision:** The document was **noted**.

**R4-2011311 CR to 38.133 on CGI reading of NR cell**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1100 Cat: B (Rel-16)  
  
 Source: ZTE*

**Abstract:**

Per WID RP-191601, CGI reading requirements with autonomous gap for NR capable UE should be specified for various scenarios.

CGI reading for NR cell (NR capable UE in LTE SA, NR SA UE, EN-DC UE, NE-DC UE, and NR-DC)

**Decision:** The document was **agreed**.

**R4-2011312 CR to 36.133 on CGI reading of E-UTRA cell in NE-DC**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6959 Cat: B (Rel-16)  
  
 Source: ZTE*

**Abstract:**

It is agreed CGI reading of an E-UTRA cell is introduced for EN-DC, NE-DC, NR SA and NE-DC operation. The requirements for NE-DC are missing in the current spec.

**Decision:** The document was **agreed**.

**R4-2011386 SCS carrier switching core requirement discussion**

*Type: discussion For: Discussion  
 Source: Qualcomm, Inc.*

**Decision:** The document was **noted**.

**R4-2011426 discussion on CGI reading with autonomous gap**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

discussion on CGI reading with autonomous gap

**Decision:** The document was **noted**.

**R4-2011427 Response LS on CGI reading with autonomous gaps**

*Type: LS out For: Approval  
 to RAN2  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Response LS on T321 timer value for CGI reading with autonomous gaps

**Decision:** The document was **noted**.

**R4-2009596 NR CGI measurements with autonomous gaps for 36.133**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6917 Cat: B (Rel-16)  
  
 Source: Ericsson Limited, Nokia, Nokia Shanghai Bell*

**Abstract:**

Requirements are added for the delay and also the interruption caused to LTE when a UE reads the CGI of an NR target cell with autonomous gaps

**Decision:** The document was **revised to R4-2012157**.

**R4-2012157 NR CGI measurements with autonomous gaps for 36.133**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6917 rev 1 Cat: B (Rel-16)  
  
 Source: Ericsson Limited, Nokia, Nokia Shanghai Bell*

(Replaces R4-2009596)

**Abstract:**

Requirements are added for the delay and also the interruption caused to LTE when a UE reads the CGI of an NR target cell with autonomous gaps

**Decision:** The document was **agreed**.

##### 7.13.1.3 BWP switching on multiple CCs [NR\_RRM\_Enh\_Core]

**R4-2010042 Discussion on BWP switch on multiple CCs**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

The contribution was discussed during email thread [96e][221] NR\_RRM\_Enh\_RRM\_1. The discussion was recorded in R4-2012221.

**Decision:** The document was **noted**.

**R4-2010189 Requirements for BWP switching on multiple CCs**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision:** The document was **withdrawn**.

**R4-2010197 CR on BWP switch on multiple CCs**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0984 Cat: F (Rel-16)  
  
 Source: Apple*

**Abstract:**

For DCI based BWP switch on multiple CCs delay ‘N’ and ‘D’ are interchanged. D is the incremental delay N the number of CCs. Incremental delay should be scaled by number of addiitonal CCs.

**Discussion:**

The contribution was discussed during email thread [96e][221] NR\_RRM\_Enh\_RRM\_1. The discussion was recorded in R4-2012221.

**Decision:** The document was **agreed**.

**R4-2010361 Consideration on remaining issues for BWP switching over multiple CCs**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: vivo*

**Discussion:**

The contribution was discussed during email thread [96e][221] NR\_RRM\_Enh\_RRM\_1. The discussion was recorded in R4-2012221.

**Decision:** The document was **noted**.

**R4-2010362 CR for RRC based simultaneously BWP switch over multiple CCs**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0998 Cat: B (Rel-16)  
  
 Source: vivo*

**Abstract:**

Add performance requirement for RRC based simultaneously BWP switch over multiple CCs

**Discussion:**

The contribution was discussed during email thread [96e][221] NR\_RRM\_Enh\_RRM\_1. The discussion was recorded in R4-2012221.

**Decision:** The document was **merged**.

**R4-2010668 On BWP switching on multiple CCs**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

The discussion on delay requirements for BWP switching of multiple component carriers continued at RAN4#95-e, with a few unresolved issues collected in a Way Forward document.

In this contribution we are providing our input on those issues.

**Discussion:**

The contribution was discussed during email thread [96e][221] NR\_RRM\_Enh\_RRM\_1. The discussion was recorded in R4-2012221.

**Decision:** The document was **noted**.

**R4-2010711 On RRM requirements for BWP switching on multiple CCs**

*Type: discussion For: Approval  
 Source: OPPO*

**Discussion:**

The contribution was discussed during email thread [96e][221] NR\_RRM\_Enh\_RRM\_1. The discussion was recorded in R4-2012221.

**Decision:** The document was **noted**.

**R4-2010759 Discussion on requirements for BWP switch delay on multiple CC**

*Type: discussion For: Approval  
 Source: NEC*

**Abstract:**

We provided our views on delay requirements for BWP switching on multiple CC.

**Discussion:**

The contribution was discussed during email thread [96e][221] NR\_RRM\_Enh\_RRM\_1. The discussion was recorded in R4-2012221.

**Decision:** The document was **noted**.

**R4-2011069 CR on BWP switching delay on mulitple CCs**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1041 Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

The equation in 8.6.2A.1 is wrong.

TBWPswitchDelay shall also be based on the smallest SCS among all SCS values of all involved CCs regardless of SCS changes.

Delay requirements for non-simultaneous timer-based BWP switching on multiple CCs is missing.

Delay requirements for RRC-based BWP switching on multiple CCs is missing.

The cross carrier DCI scheduling for simultaneous BWP switch on multiple CC is missing.

**Discussion:**

The contribution was discussed during email thread [96e][221] NR\_RRM\_Enh\_RRM\_1. The discussion was recorded in R4-2012221.

**Decision:** The document was **revised to R4-2012153**.

**R4-2012153 CR on BWP switching delay on mulitple CCs**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1041 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

(Replaces R4-2011069)

**Discussion:**

The contribution was discussed during email thread [96e][221] NR\_RRM\_Enh\_RRM\_1. The discussion was recorded in R4-2012221.

**Decision:** The document was **revised to R4-2012266**.

**R4-2012266 CR on BWP switching delay on mulitple CCs**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1041 rev 2 Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

(Replaces R4-2012153)

**Discussion:**

The contribution was discussed during email thread [96e][221] NR\_RRM\_Enh\_RRM\_1. The discussion was recorded in R4-2012221.

**Decision:** The document was **revised to R4-2012300**.

**R4-2012300 CR on BWP switching delay on mulitple CCs**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1041 rev 3 Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

(Replaces R4-2012266)

**Discussion:**

The contribution was discussed during email thread [96e][221] NR\_RRM\_Enh\_RRM\_1. The discussion was recorded in R4-2012221.

**Decision:** The document was **agreed**.

**R4-2011070 Discussion on BWP switching on multiple CCs**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Discussion:**

The contribution was discussed during email thread [96e][221] NR\_RRM\_Enh\_RRM\_1. The discussion was recorded in R4-2012221.

**Decision:** The document was **noted**.

**R4-2011248 Partial overlap timer-based and RRC-based BWP switching delay on multiple CCs**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1091 Cat: B (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

To specify delay requirement for partial overlap timer-based and RRC-based BWP switching delay on multiple CCs.

**Discussion:**

The contribution was discussed during email thread [96e][221] NR\_RRM\_Enh\_RRM\_1. The discussion was recorded in R4-2012221.

**Decision:** The document was **merged**.

**R4-2011428 discussion on BWP switch on multiple CCs**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Discussion on delay requirements for BWP switch considering multiple CCs.

**Discussion:**

The contribution was discussed during email thread [96e][221] NR\_RRM\_Enh\_RRM\_1. The discussion was recorded in R4-2012221.

**Decision:** The document was **noted**.

**R4-2009607 Requirements for BWP switching on multiple CCs**

*Type: discussion For: Discussion  
 Source: Apple*

**Discussion:**

The contribution was discussed during email thread [96e][221] NR\_RRM\_Enh\_RRM\_1. The discussion was recorded in R4-2012221.

**Decision:** The document was **noted**.

**R4-2009745 Discussion of RRM requirements for BWP switching on multiple CCs**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][221] NR\_RRM\_Enh\_RRM\_1. The discussion was recorded in R4-2012221.

**Decision:** The document was **noted**.

**R4-2009769 Discussion on the remaining issues for BWP switching on multiple CCs**

*Type: discussion For: Discussion  
 Source: Xiaomi Technology*

**Discussion:**

The contribution was discussed during email thread [96e][221] NR\_RRM\_Enh\_RRM\_1. The discussion was recorded in R4-2012221.

**Decision:** The document was **noted**.

**R4-2009864 CR on RRM requirements for BWP switching delay on multiple CCs**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0938 Cat: B (Rel-16)  
  
 Source: Intel Corporation*

**Abstract:**

Delay requirements for BWP switching on multiple CCs is missing.

**Discussion:**

The contribution was discussed during email thread [96e][221] NR\_RRM\_Enh\_RRM\_1. The discussion was recorded in R4-2012221.

**Decision:** The document was **merged**.

**R4-2009980 Delay requirement for switching of multiple BWPs**

*Type: discussion For: (not specified)  
 Source: Qualcomm*

**Discussion:**

The contribution was discussed during email thread [96e][221] NR\_RRM\_Enh\_RRM\_1. The discussion was recorded in R4-2012221.

**Decision:** The document was **noted**.

##### 7.13.1.4 Spatial relation switch for uplink [NR\_RRM\_Enh\_Core]

**R4-2010043 Remaining issues on active spatial relation switch**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

The contribution was discussed during email thread [96e][221] NR\_RRM\_Enh\_RRM\_1. The discussion was recorded in R4-2012221.

**Decision:** The document was **noted**.

**R4-2010190 Requirements for UL spatial relation info switch**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision:** The document was **withdrawn**.

**R4-2010364 On remaining issues for UL Spatial Relation Info Switching**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: vivo*

**Discussion:**

The contribution was discussed during email thread [96e][221] NR\_RRM\_Enh\_RRM\_1. The discussion was recorded in R4-2012221.

**Decision:** The document was **noted**.

**R4-2010573 Discussion on UL spatial relation switch**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

The contribution was discussed during email thread [96e][221] NR\_RRM\_Enh\_RRM\_1. The discussion was recorded in R4-2012221.

**Decision:** The document was **noted**.

**R4-2010666 On Spatial Relation Switching Delay Requirements**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Discussions on delay requirements for spatial relation change of PUCCH, PUSCH and SRS continued during RAN4#95-e, with a few unresolved issues being captured in a way forward document. In this contribution we are providing our input on those issues.

**Discussion:**

The contribution was discussed during email thread [96e][221] NR\_RRM\_Enh\_RRM\_1. The discussion was recorded in R4-2012221.

**Decision:** The document was **noted**.

**R4-2011126 Discussion on spatial relation switch for uplink channels and SRS**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Discussion:**

The contribution was discussed during email thread [96e][221] NR\_RRM\_Enh\_RRM\_1. The discussion was recorded in R4-2012221.

**Decision:** The document was **noted**.

**R4-2009608 Requirements for UL spatial relation info switch**

*Type: discussion For: Discussion  
 Source: Apple*

**Discussion:**

The contribution was discussed during email thread [96e][221] NR\_RRM\_Enh\_RRM\_1. The discussion was recorded in R4-2012221.

**Decision:** The document was **noted**.

**R4-2009708 Discussion on spatial relation switch for uplink**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: NTT DOCOMO, INC.*

**Discussion:**

The contribution was discussed during email thread [96e][221] NR\_RRM\_Enh\_RRM\_1. The discussion was recorded in R4-2012221.

**Decision:** The document was **noted**.

**R4-2009752 Discussion on requirements for spatial relation info switch**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][221] NR\_RRM\_Enh\_RRM\_1. The discussion was recorded in R4-2012221.

**Decision:** The document was **noted**.

**R4-2009865 CR on uplink spatial relation switch delay (section 8.12)**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0939 Cat: B (Rel-16)  
  
 Source: Intel Corporation*

**Abstract:**

Uplink spatial relation switch delay section is in-complete.

**Discussion:**

The contribution was discussed during email thread [96e][221] NR\_RRM\_Enh\_RRM\_1. The discussion was recorded in R4-2012221.

**Decision:** The document was **revised to R4-2012272**.

**R4-2012272 CR on uplink spatial relation switch delay (section 8.12)**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0939 rev 1 Cat: B (Rel-16)  
  
 Source: Intel Corporation*

(Replaces R4-2009865)

**Abstract:**

Uplink spatial relation switch delay section is in-complete.

**Discussion:**

The contribution was discussed during email thread [96e][221] NR\_RRM\_Enh\_RRM\_1. The discussion was recorded in R4-2012221.

**Decision:** The document was **agreed**.

**R4-2009987 Spatial relation switch for uplink**

*Type: discussion For: (not specified)  
 Source: Qualcomm*

**Discussion:**

The contribution was discussed during email thread [96e][221] NR\_RRM\_Enh\_RRM\_1. The discussion was recorded in R4-2012221.

**Decision:** The document was **noted**.

##### 7.13.1.5 Inter-band CA requirement for FR2 UE measurement capability of independent Rx beam and/or common beam [NR\_RRM\_Enh\_Core]

**R4-2010221 Discussion on Inter-band CA requirement for FR2**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

The contribution was discussed during email thread [96e][223] NR\_RRM\_Enh\_RRM\_3. The discussion was recorded in R4-2012223.

**Decision:** The document was **noted**.

**R4-2010363 Further considerations on FR2 inter CA requirements.**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: vivo*

**Discussion:**

The contribution was discussed during email thread [96e][223] NR\_RRM\_Enh\_RRM\_3. The discussion was recorded in R4-2012223.

**Decision:** The document was **noted**.

**R4-2010375 Further considerations on RRM requirements for interband CA on FR2**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Discussion on based on the agreed WF R4-2008998 “WF on NR RRM enhancements – FR2 inter-band CA RRM

**Discussion:**

The contribution was discussed during email thread [96e][223] NR\_RRM\_Enh\_RRM\_3. The discussion was recorded in R4-2012223.

**Decision:** The document was **noted**.

**R4-2010571 FR2 inter-band CA requirements**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

The contribution was discussed during email thread [96e][223] NR\_RRM\_Enh\_RRM\_3. The discussion was recorded in R4-2012223.

**Decision:** The document was **noted**.

**R4-2010572 CR for FR2 inter-band CA requirements**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1010 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Corrections to agreements captured during RAN4#95e.

**Discussion:**

The contribution was discussed during email thread [96e][223] NR\_RRM\_Enh\_RRM\_3. The discussion was recorded in R4-2012223.

**Decision:** The document was **revised to R4-2012162**.

**R4-2012162 CR for FR2 inter-band CA requirements**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1010 rev 1 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2010572)

**Abstract:**

Corrections to agreements captured during RAN4#95e.

**Discussion:**

The contribution was discussed during email thread [96e][223] NR\_RRM\_Enh\_RRM\_3. The discussion was recorded in R4-2012223.

**Decision:** The document was **revised to R4-2012273**.

**R4-2012273 CR for FR2 inter-band CA requirements**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1010 rev 2 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2012162)

**Abstract:**

Corrections to agreements captured during RAN4#95e.

**Discussion:**

The contribution was discussed during email thread [96e][223] NR\_RRM\_Enh\_RRM\_3. The discussion was recorded in R4-2012223.

**Decision:** The document was **agreed**.

**R4-2010712 On FR2 inter-band CA RRM requirement for CBM and/or IBM UE**

*Type: discussion For: Approval  
 Source: OPPO*

**Discussion:**

The contribution was discussed during email thread [96e][223] NR\_RRM\_Enh\_RRM\_3. The discussion was recorded in R4-2012223.

**Decision:** The document was **noted**.

**R4-2011063 Discussion on RRM remaining issues for FR2 inter-band CA**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][223] NR\_RRM\_Enh\_RRM\_3. The discussion was recorded in R4-2012223.

**Decision:** The document was **noted**.

**R4-2011064 CR on maintaining measurement restriction requirements for NR CA**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1039 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

In Rel-16, the condition for measurement restriction requirements need to be introduced for NR CA.

**Discussion:**

The contribution was discussed during email thread [96e][223] NR\_RRM\_Enh\_RRM\_3. The discussion was recorded in R4-2012223.

**Decision:** The document was **revised to R4-2012163**.

**R4-2012163 CR on maintaining measurement restriction requirements for NR CA**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1039 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2011064)

**Abstract:**

In Rel-16, the condition for measurement restriction requirements need to be introduced for NR CA.

**Discussion:**

The contribution was discussed during email thread [96e][223] NR\_RRM\_Enh\_RRM\_3. The discussion was recorded in R4-2012223.

**Decision:** The document was **agreed**.

**R4-2009709 Discussion on inter-band CA requirement for FR2**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: NTT DOCOMO, INC.*

**Discussion:**

The contribution was discussed during email thread [96e][223] NR\_RRM\_Enh\_RRM\_3. The discussion was recorded in R4-2012223.

**Decision:** The document was **noted**.

**R4-2009863 RRM requirements for inter-band CA in FR2**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][223] NR\_RRM\_Enh\_RRM\_3. The discussion was recorded in R4-2012223.

**Decision:** The document was **noted**.

**R4-2009986 RRM requirements with CBM and IBM in FR2 inter band CA**

*Type: discussion For: (not specified)  
 Source: Qualcomm*

**Discussion:**

The contribution was discussed during email thread [96e][223] NR\_RRM\_Enh\_RRM\_3. The discussion was recorded in R4-2012223.

**Decision:** The document was **noted**.

##### 7.13.1.6 Other requirements maintenance [NR\_RRM\_Enh\_Core]

**R4-2010044 CR on multiple SCells activation (section 8.3.7)**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0968 Cat: F (Rel-16)  
  
 Source: MediaTek inc.*

**Abstract:**

In SCell activation, Tuncertainty\_MAC, Tuncertainty\_SP, Tuncertainty\_RRC had been defined to differentiate the known and unknown conditions. However, in multiple SCells activation, the spec. shall clarify the definitions based on the victim unknown SCell in FR2. Current definition in FR2 single SCell activation cannot be directly applied for multiple SCells because the unknow SCell can leaverage the information from known SCell to-be-activated in the same FR2 band.

**Discussion:**

The contribution was discussed during email threads [96e][221] NR\_RRM\_Enh\_RRM\_1 and [96e][223] NR\_RRM\_Enh\_RRM\_3. The discussion was recorded in R4-2012221 and R4-2012223.

**Decision:** The document was **revised to R4-2012165**.

**R4-2012165 CR on multiple SCells activation (section 8.3.7)**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0968 rev 1 Cat: F (Rel-16)  
  
 Source: MediaTek inc.*

(Replaces R4-2010044)

**Abstract:**

There are some issues in the newly introduced multiple SCell activation requirements.

Tuncertainty\_MAC, Tuncertainty\_SP, Tuncertainty\_RRC had been defined to differentiate the known and unknown conditions. However, in multiple SCells activation, the spec. shall clarify the definitions based on the victim unknown SCell in FR2. Current definition in FR2 single SCell activation cannot be directly applied for multiple SCells because the unknow SCell can leaverage the information from known SCell to-be-activated in the same FR2 band.

The applicability in terms of number of SCells is already defined in clause 3.6.2 of 38.133, and it does not need to be repeated specifically for multiple SCell activation, which will be difficult for future maintenance.

For FR1 known SCell with measurement cycle <=160ms, the activation time should be based on first common SSB for all SCells to-be activated in the same band, which is TFirstSSB\_MAX\_multiple\_scells.

For FR1 unknown SCell, if the SCell is contiguous to an intra-band active or known SCell and other conditions are met, cell detection can be skipped. This is not reflected in current requriements.

N2 is not used anywhere in the requirements, so it should be removed.

**Discussion:**

The contribution was discussed during email threads [96e][221] NR\_RRM\_Enh\_RRM\_1 and [96e][223] NR\_RRM\_Enh\_RRM\_3. The discussion was recorded in R4-2012221 and R4-2012223.

**Decision:** The document was **agreed**.

**R4-2010107 CR on definition of inter-frequency measurements without measurement gap (9.3.1)**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0976 Cat: F (Rel-16)  
  
 Source: CMCC*

**Abstract:**

Inter-frequency measurements without measurement gap is introduced in Rel-16. Meanwhile, RAN2 agreed to introduce NeedForGap for inter-frequency measurement. The definition of inter-frequency measurements without measurement gap is incomplete.

**Discussion:**

The contribution was discussed during email threads [96e][221] NR\_RRM\_Enh\_RRM\_1 and [96e][223] NR\_RRM\_Enh\_RRM\_3. The discussion was recorded in R4-2012221 and R4-2012223.

**Decision:** The document was **revised to R4-2012166**.

**R4-2012166 CR on definition of inter-frequency measurements without measurement gap (9.3.1)**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0976 rev 1 Cat: F (Rel-16)  
  
 Source: CMCC*

(Replaces R4-2010107)

**Abstract:**

Inter-frequency measurements without measurement gap is introduced in Rel-16. Meanwhile, RAN2 agreed to introduce NeedForGap for inter-frequency measurement. The definition of inter-frequency measurements without measurement gap is incomplete.

**Discussion:**

The contribution was discussed during email threads [96e][221] NR\_RRM\_Enh\_RRM\_1 and [96e][223] NR\_RRM\_Enh\_RRM\_3. The discussion was recorded in R4-2012221 and R4-2012223.

**Decision:** The document was **agreed**.

**R4-2010120 Multiple SCell activation in NR**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: Qualcomm Incorporated*

**Discussion:**

The contribution was discussed during email threads [96e][221] NR\_RRM\_Enh\_RRM\_1 and [96e][223] NR\_RRM\_Enh\_RRM\_3. The discussion was recorded in R4-2012221 and R4-2012223.

**Decision:** The document was **noted**.

**R4-2011123 Discussion on CSSF for inter-frequency measurement without gap in FR2 inter-band CA sceneario**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Discussion:**

The contribution was discussed during email threads [96e][221] NR\_RRM\_Enh\_RRM\_1 and [96e][223] NR\_RRM\_Enh\_RRM\_3. The discussion was recorded in R4-2012221 and R4-2012223.

**Decision:** The document was **noted**.

**R4-2011124 CSSF for inter-frequency measurement without gap in FR2 inter-band CA sceneario**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1067 Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

Correction on inter-frequency measurement without gaps.

**Discussion:**

The contribution was discussed during email threads [96e][221] NR\_RRM\_Enh\_RRM\_1 and [96e][223] NR\_RRM\_Enh\_RRM\_3. The discussion was recorded in R4-2012221 and R4-2012223.

**Decision:** The document was **revised to R4-2012167**.

**R4-2012167 CSSF for inter-frequency measurement without gap in FR2 inter-band CA sceneario**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1067 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

(Replaces R4-2011124)

**Abstract:**

Correction on inter-frequency measurement without gaps.

**Discussion:**

The contribution was discussed during email threads [96e][221] NR\_RRM\_Enh\_RRM\_1 and [96e][223] NR\_RRM\_Enh\_RRM\_3. The discussion was recorded in R4-2012221 and R4-2012223.

**Decision:** The document was **agreed**.

**R4-2011125 Correction on inter-frequency without gap measurement requirements**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1068 Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

Correction on inter-frequency measurement without gaps.

**Discussion:**

The contribution was discussed during email threads [96e][221] NR\_RRM\_Enh\_RRM\_1 and [96e][223] NR\_RRM\_Enh\_RRM\_3. The discussion was recorded in R4-2012221 and R4-2012223.

**Decision:** The document was **not pursued**.

**R4-2011171 CR on multiple SCell activation requirements**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1086 Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

There are some issues in the newly introduced multiple SCell activation requirements.

The applicability in terms of number of SCells is already defined in clause 3.6.2 of 38.133, and it does not need to be repeated specifically for multiple SCell activation, which will be difficult for future maintenance.

For FR1 known SCell with measurement cycle <=160ms, the activation time should be based on first common SSB for all SCells to-be activated in the same band, which is TFirstSSB\_MAX\_multiple\_scells.

For FR1 unknown SCell, if the SCell is contiguous to an intra-band active or known SCell and other conditions are met, cell detection can be skipped. This is not reflected in current requriements.

N2 is not used anywhere in the requirements, so it should be removed.

**Discussion:**

The contribution was discussed during email threads [96e][221] NR\_RRM\_Enh\_RRM\_1 and [96e][223] NR\_RRM\_Enh\_RRM\_3. The discussion was recorded in R4-2012221 and R4-2012223.

**Decision:** The document was **merged**.

**R4-2009899 CR on TS38.133 for inter-frequency measurement requirement without gap (Section 9.1.5, 9.3.1)**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0951 Cat: F (Rel-16)  
  
 Source: MediaTek inc.*

**Abstract:**

UE only has to conduct the inter-frequency measurements without gap if UE supports interFrequencyMeas-NoGap-r16 and the flag interFrequencyConfig-NoGap-r16 is also configured by Network

**Discussion:**

The contribution was discussed during email threads [96e][221] NR\_RRM\_Enh\_RRM\_1 and [96e][223] NR\_RRM\_Enh\_RRM\_3. The discussion was recorded in R4-2012221 and R4-2012223.

**Decision:** The document was **not pursued**.

**R4-2009907 Draft CR on UE behavior for UE specific CBW change**

*Type: draftCR For: Endorsement  
 38.133 v16.4.0  
 Source: Apple*

**Abstract:**

The UE behavior for Tx/Rx during CBW change delay is missing.

**Discussion:**

The contribution was discussed during email threads [96e][221] NR\_RRM\_Enh\_RRM\_1 and [96e][223] NR\_RRM\_Enh\_RRM\_3. The discussion was recorded in R4-2012221 and R4-2012223.

**Decision:** The document was **not pursued**.

**R4-2009915 Test case list for multiple SCell activation for R16 eRRM**

*Type: discussion For: Approval  
 38.133 v..  
 Source: Apple*

**Discussion:**

The contribution was discussed during email threads [96e][221] NR\_RRM\_Enh\_RRM\_1 and [96e][223] NR\_RRM\_Enh\_RRM\_3. The discussion was recorded in R4-2012221 and R4-2012223.

**Decision:** The document was **noted**.

### 7.14 NR RRM requirements for CSI-RS based L3 measurement [NR\_CSIRS\_L3meas]

**R4-2012055 Email discussion summary for [96e][224] NR\_CSIRS\_L3meas\_RRM\_1**

*Type: other For: discussion  
 Source: Moderator (CATT)*

**Discussion:**

The contribution summarized email discussion thread [96e][224] NR\_CSIRS\_L3meas\_RRM\_1. The topic areas for discussion were RRM Core requirements: CSI-RS measurement bandwidth; CSI-RS intra/inter-frequency measurement definition; Others. The email thread was moderated by Qiuge Guo (CATT). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2012081**.

**R4-2012081 Email discussion summary for [96e][224] NR\_CSIRS\_L3meas\_RRM\_1**

*Type: other For: discussion  
 Source: Moderator (CATT)*

(Replaces R4-2012055)

**Discussion:**

The contribution summarized email discussion thread [96e][224] NR\_CSIRS\_L3meas\_RRM\_1. The topic areas for discussion were RRM Core requirements: CSI-RS measurement bandwidth; CSI-RS intra/inter-frequency measurement definition; Others. The email thread was moderated by Qiuge Guo (CATT). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2012224**.

**R4-2012224 Email discussion summary for [96e][224] NR\_CSIRS\_L3meas\_RRM\_1**

*Type: other For: discussion  
 Source: Moderator (CATT)*

(Replaces R4-2012081)

**Discussion:**

The contribution summarized email discussion thread [96e][224] NR\_CSIRS\_L3meas\_RRM\_1. The topic areas for discussion were RRM Core requirements: CSI-RS measurement bandwidth; CSI-RS intra/inter-frequency measurement definition; Others. The email thread was moderated by Qiuge Guo (CATT). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **noted**.

*GTW session (Aug 18th)*

**Issue 2-1: Synchronization assumption for CSI-RS based measurement**

* Proposals
  + Option 1: (Intel, MTK)
    - RAN4 to address the issue of timing difference between the arrival of the CSI-RS and UE’s FFT timing in the performance part.
  + Option 2: (Apple, CMCC, vivo, Docomo, HUAWEI, ZTE, OPPO)
    - the corresponding timing of CSI-RS resources should be assume the same as the timing of the cell given by the cellId of the CSI-RS resource configuration.
  + Option 3: (CMCC, Nokia, HUAWEI)
    - introduce the UE capability to differentiate the following 2 types of UEs.
      * Type 1: UE supporting using only single timing for CSI-RS measurement per frequency layer
        + Type1.1: UE supporting using only single timing for CSI-RS measurement per frequency layer based on the serving cell timing
        + Type1.2: UE supporting using only single timing for CSI-RS measurement per frequency layer based on ONE of the associated neighbor cell SSBs
      * Type 2: UE supporting using timing of associated SSB for respective CSI-RS measurement
  + Option 4: (NEC)
    - RAN4 to introduce scheduling restriction such that gNB may schedule neighbour cells CSI-RS resources, whose timing is within the same Timing Advance Group (TAG)
    - RAN4 to further study this problem in Rel-17 for single FFT UE implementation
  + Option 5: (Qualcomm)
    - RAN4 shall consider requirements only defined if the timing difference between serving and neighbor cell including cell phase synchronization is guaranteed to be less than half CP length.
    - A baseline WID compliant UE features single FFT based on the same timing and/or same Rx beam for the serving cell. Such a baseline UE shall be assumed for defining the minimal requirements and test cases by RAN4.
* Recommended WF
  + Option 2 is recommended.

Discussion:

Chair: what is the impact on Core part?

Apple: Time tracking assumptions may have impact

MTK: we think no impact on Core part and impacts accuracy only for Option 1 and Option 2. Option 3 has impact on Core part. Option 2 may require 2 FFT timings which contradicts to plenary agreement (i.e. UE can use single FFT)

vivo: the impact on Core part is whether async deployment needs to be specified. Interpretation of single FFT needs to be clarified. For SSB measurements single FFT was not assumed.

ZTE: time tracking will not be impacted by synch assumptions. Time tracking is based on SSB beam. Single FFT may not work for signals from different cells.

QC: share same view with MTK that only Single FFT is in the scope. May be impact on the scheduling restriction in case UE follows other cells timing. We think that UE can follow either serving or neighbouring cell timing and both implementations shall be allowed.

Nokia: should follow single FFT assumption. We are also fine to define different capabilities.

OPPO: Can support Option 2. Timing tracking can be based on serving cell SSB.

CMCC: Option 3.

CATT: Single FFT assumption is not reasonable and can be revised in case of majority view. Option 1 is too restrictive.

Intel: FFT window can be up to UE implementation. Requirements shall be defined based on Single FFT. If UE can support multiple FFTs then it can pass the requirements as well.

Apple: we don’t think Single FFT is possible. We never assumed single FFT in LTE or in NR. We should put this assumption aside.

NTT DOCOMO: Prefer Option 2. Option 1 is also ok.

Huawei: Option 3.

QC: Cannot agree with Option 2. We would like to add a clarification that UE needs to follow a single timing.

MTK: Same view as QC. Clear agreement in the plenary to have a single FFT.

ZTE: is Single FFT measurement assumed for SSB-based measurements? Do not agree to have multiple capabilities.

Chair: is there any consensus to consider multiple FFTs?

vivo: probably we can discuss in the Performance part.

QC: do not agree with multiple FFTs

MTK: single FFT is only in the scope. In the most practical cases single FFT is sufficient (e.g. on cell edge). For cell-center UEs the accuracy does not matter that much.

Nokia: we should stick to previous agreements.

CMCC: can we consider combination of Option 1 and Option 3.

Apple: under which assumption can we use single FFT?

MTK: there is no intention to tighten NW synchronization. In case of big timing offset then we assume there will be performance degradation.

Huawei: Our suggestion is to have both single FFT and multi-FFT implementations.

QC: for Option 3 we cannot agree with Type 2.

Agreement:

Rel-16 CSI-RS based measurement requirements are based on Single FFT implementation

Chair: Further discuss

* Impacts on the Core part requirements
* UE time tracking assumptions for CSI-RS measurements
  + Option 1: UE follows serving cell timing
  + Option 2: UE follows associated neighbor cell SSBs

*GTW session (Aug 26th)*

**Issue 2-1: Synchronization assumption for CSI-RS based measurement**

* Agreements
* UE supports using the serving cell timing for CSI-RS based L3 measurement for intra-frequency measurements in Rel-16
  + Note: the measurement degradation can be expected for the case when timing difference is larger than CP and it can be discussed in the performance part

**R4-2012056 Email discussion summary for [96e][225] NR\_CSIRS\_L3meas\_RRM\_2**

*Type: other For: discussion  
 Source: Moderator (OPPO)*

**Discussion:**

The contribution summarized email discussion thread [96e][225] NR\_CSIRS\_L3meas\_RRM\_2. The topic areas for discussion were RRM Core requirements: Measurement capability; Intra/Inter-frequency measurement requirements. The email thread was moderated by Roy Hu (OPPO). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2012225**.

**R4-2012225 Email discussion summary for [96e][225] NR\_CSIRS\_L3meas\_RRM\_2**

*Type: other For: discussion  
 Source: Moderator (OPPO)*

(Replaces R4-2012056)

**Discussion:**

The contribution summarized email discussion thread [96e][225] NR\_CSIRS\_L3meas\_RRM\_2. The topic areas for discussion were RRM Core requirements: Measurement capability; Intra/Inter-frequency measurement requirements. The email thread was moderated by Roy Hu (OPPO). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **noted**.

*GTW session (Aug 18th)*

**Sub-topic 1-1: Frequency layer**

Issue 1-1-1: Whether CSI-RS and SSB for mobility configured in the same MO are counted as 2 layers

* Proposals
  + Option 1: SSB and CSI-RS for mobility configured in the same MO should be considered as 2 layers.
  + Option 2: SSB and CSI-RS for mobility configured in the same MO is merged into one single frequency layer (MTK)
* Recommended WF
  + Option 1 as majority view is recommended

Discussion

MTK: Option 1 is not correct. RAN2 has “PCI confusion” issue. In case UE detects same PCI on different layers then UE shall not treat them as same cell. So, we cannot reuse freq/timing.

vivo: support Option 2.

Apple: UE behavior for Option 2 is unclear for intra- and inter-frequency measurements. UE may always need to do parallel SSB and CSI-RS measurements.

ZTE: In RAN4 we use frequency layers to specify measurement capabilities and restrictions. Frequency layer shall not be linked to PCI confusion issue.

Huawei: we are not sure if this is an issue. UE detects PCI based on SSB only and not CSI-RS. Option 1 is preferred.

Nokia: Option 1. Same view as HW.

CATT: Share same view as HW and Nokia.

MTK: Our fundamental issue is not resolved.

Tentative agreement:

SSB and CSI-RS for mobility configured in the same MO should be considered as 2 layers.

UE can use timing and frequency measurements obtained on SSB frequency layer for CSI-RS frequency layer

Issue 1-1-2: Whether multiple MOs can be counted as one frequency layer

* Proposals
  + Option 1: YES
    - Option 1a: Multiple MOs are counted as one frequency layer as long as CSI-RS center frequencies are the same. (ZTE, Nokia)
    - Option 1b: CSI-RS resources configured in multiple MOs can be counted as one frequency layer with the following 2 conditions: (Apple)
      * different MOs share the same center frequency and the same SCS for CSI-RS resources
      * the total number of CSI-RS resources associated with the same PCI should be no more than maxNrofCSI-RS-ResourcesRRM
  + Option 2: NO
    - Option 2a: Only one MO corresponding to one frequency layer is considered in R16 and further enhancement is considered in R17 (Intel, QC, CATT, MTK)
    - Option 2b: RAN4 kindly asks RAN1 and RAN2 to increase the number of configurable CSI-RS resources per MO from 96 to 288 (Huawei with LS in R4-2011172 )
* Recommended WF
  + Option 2a is recommended.

Discussion

ZTE: Option 1a. 2b is also ok.

Apple: can compromise to Option 2a

Nokia: multiple MOs are allowed in RAN2 specs. We can compromise to Option 2a but clarify that multiple MO configuration is not precluded. No need to send LS and we can address in Rel-17

Huawei: agree with ZTE comment that 1 MO with 96 resources will put constraints

CATT/MTK/CMCC/vivo: Option 2a.

Apple: do not see the need for LS to RAN1/2. Not sure >96 resources is reasonable. Keep this feature as simple as possible. Cannot accept to increase the number of resources.

QC: same view as Apple.

Tentative agreement

Option 1 (Apple, QC, vivo, Intel, CATT, MTK, CMCC, Nokia, DCM, OPPO):

Only one MO corresponding to one frequency layer is considered in R16 for requirements definition

Note: multiple MO configuration is not precluded

Option 2 (ZTE, Huawei, NEC, CATT, MTK, CMCC, Nokia, DCM, OPPO):

Only one MO corresponding to one frequency layer is considered in R16 for requirements definition

Note: multiple MO configuration is not precluded

Send LS to RAN1 and RAN2 and ask to increase the number of configurable CSI-RS resources per MO from 96 to 288

Chair:

Can Option 1 be agreed. Objected by ZTE.

Can Option 2 be agreed. Objected by Apple. QC need further discussion in email thread.

*1st round email discussion conclusions*

**Topic #1: Measurement capability**

Sub-topic#1-1: Some concerns were raised in email reflector on tentative agreements. Continue discussion in the second round.

Issue 1-2-1: number of cells to be monitored per layer

Agreements:

* The cells to be monitored based on CSI-RS can be the same set or a subset of the cells monitored based on SSB.

Issue 1-3-1: number of CSI-RS resource/beams to be monitored

Agreements:

The number of CSI-RS resource/beams to be monitored can be at least

* + For intra-frequency measurement for FR1: 32
  + For intra-frequency measurement for FR2: 32
  + FFS for inter-frequency measurement for FR1:
    - Option 2: 24(Huawei, CMCC, CATT, ZTE, Xiaomi)
    - Option 3: 14(vivo, CMCC, OPPO, Qualcomm, Apple)
  + For inter-frequency measurement for FR2: 24

Issue 1-3-2: Neighbor cell CSI-RS resource measurement in FR2

Agreements: For each FR2 band, UE is required to measure neighbour cell CSI-RS on one CSI-RS layer, whose associated SSB should be on the same SSB layer as the one where UE is required to measure neighbour cell SSB

**Topic #2: Measurement requirements for CSI-RS intra-frequency and inter-frequency measurements**

Issue 2-1-1: How to define requirements for with index and without index

Agreement:

Keep agreements in last meeting and clarify whether SBI acquisition can be skipped, which depends on whether *deriveSSB-IndexFromCell* is configured.

* + Option 1:
    - T CSI-RS\_identify\_intra = (TPSS/SSS\_sync + T CSI-RS\_measurement\_period\_intra + TSSB\_time\_index) ms
    - T CSI-RS\_identify\_inter = (TPSS/SSS\_sync + T CSI-RS\_measurement\_period\_inter + TSSB\_time\_index) ms

If *deriveSSB-IndexFromCell* is indicated, UE can skip PBCH decoding, i.e., TSSB\_time\_index = 0.

If UE has already detected the SSB of the target cell, UE can skip cell detection, i.e., TPSS/SSS\_sync = 0.

Issue 2-2-1: Whether to introduce a longer tuning time for CSI-RS based measurement

Agreement: *The tuning time for CSI-RS based measurement is equal to the gap switch time for measuring the inter-frequency SSBs.*

Issue 2-3-3: Frequency domain restriction on CSI-RS resources configuration

Agreement: do not introduce frequency domain restriction, e.g. CSI-RS BW should always cover the SSB configured in the same MO

Issue 2-4-1: Whether UE is required to perform RX beam sweeping when CSI-RS is QCL-ed to the associated SSB for FR2

Agreement: Option 2: UE is required to perform Rx beam sweeping for CSI-RS based L3 measurement in FR2, in the case that CSI-RS resources in the same OFMD symbol are QCL-ed with different associated SSB

Issue 2-6-1: Searcher assumption for CSI-RS based measurement

Agreement: At least no additional searcher for CSI-RS based L3 measurement (for PSS/SSS detection).

Issue 2-7-4: Whether to specify scheduling restriction for associated SSB

Agreement: The scheduling restriction for associated SSB should also be specified, and the existing SSB requirements can be re-used.

Issue 2-8-1: Collision between CSI-RS L3 measurement of neighbor cell and serving cell measurement for RLM/BFD or other CSI-RS L1 measurements

Agreement: Do not define CSI-RS measurement requirements for such collision case in Rel-16.

*GTW session (Aug 26th)*

**Issue 1-1-2: Whether multiple MOs can be counted as one frequency layer**

Agreement

* Only one MO corresponding to one frequency layer is considered in R16 for requirements definition
  + Note: multiple MO configuration is not precluded
  + Send LS to RAN1 and RAN2 and ask to increase the number of configurable CSI-RS resources per MO from 96 to 192

**Issue 2-3-1: Time-domain restriction (measurement window) on CSI-RS resources configuration**

Agreement:

* Do not associate CSI-RS location with SMTC
* CSI-RS resources per frequency layers are configured within 5 ms window at any location
* CSI-RS periodicities for L3 measurement: 10, 20, 40 ms
* Up to 1 CSI-RS periodicity can be configured per CSI-RS intra-frequency layer
* Up to 1 CSI-RS periodicity can be configured per CSI-RS inter-frequency layer
* The exact relative location between CSI-RS and SMTC can be decided by NW to make sure a single MG pattern can cover both CSI-RS and SMTC for inter-frequency layer.
* Note: the restrictions above are the conditions to apply the requirements for both Core and Performance part

**Issue 2-6-1: Searcher assumption for CSI-RS based measurement**

Agreement:

* Synchronization and measurement for CSI-RS based measurement can use the same searcher for SSB based measurement

**Issue 2-5-1: New UE capability on the simultaneous reception of CSI-RS and SSB/Data**

Agreement:

* Simultaneous reception of CSI-RS and SSB (from the serving or neighbor cells)
  + Do not introduce new UE capability on the simultaneous reception of CSI-RS and SSB
  + UE is not required to support simultaneous reception of CSI-RS and SSB

**Sub-topic 2-7: Scheduling Restriction**

Agreement:

Issue 2-7-3: When UE performs Rx beam sweeping in FR2 band:

Scheduling restriction apply for data OFDM symbols overlapped by to-be-measured CSI-RS resources only.

**R4-2012168 WF on CSI-RS configuration and synchronization assumption for CSI-RS based L3 measurement**

*Type: other For: discussion  
 Source: CATT*

**Decision:** The document was **approved**.

**R4-2012177 WF on CSI-RS L3 measurement capability**

*Type: other For: discussion  
 Source: Apple*

**Decision:** The document was **revised to R4-2012290**.

**R4-2012290 WF on CSI-RS L3 measurement capability**

*Type: other For: discussion  
 Source: Apple*

(Replaces R4-2012177)

**Decision:** The document was **approved**.

**R4-2012178 WF on CSI-RS L3 measurement requirements**

*Type: other For: discussion  
 Source: OPPO*

**Decision:** The document was **approved**.

**R4-2012179 LS on number of configurable CSI-RS resources per MO**

*Type: other For: discussion  
 Source: Huawei*

**Decision:** The document was **revised to R4-2012291**.

**R4-2012291 LS on number of configurable CSI-RS resources per MO**

*Type: other For: discussion  
 Source: Huawei*

(Replaces R4-2012179)

**Decision:** The document was **approved**.

#### 7.14.1 RRM core requirements (38.133) [NR\_CSIRS\_L3meas-Core]

**R4-2011338 Remaining issues in the core requirements of CSI-RS L3 measurements and draft LS to RAN2 on new UE capability**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: Qualcomm CDMA Technologies*

**Abstract:**

Further discussions on open tasks identified by RAN plenary for CSI-RS based measurement for RRM

Draft LS for new UE capability for minimum separation between two CSI-RS L3 slots.

**Decision:** The document was **noted**.

**R4-2011416 CR on scheduling restriction for CSI-RS based intra-frequency measurement**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1108 Cat: B (Rel-16)  
  
 Source: Qualcomm CDMA Technologies*

**Abstract:**

CSI-RS L3 measurement was introduced to RAN4 in Rel-16. The CR aims to add restrictions in the scheduling availability for UE during CSI-RS L3 intra-frequency measurements. The section number follows the structure of R4-2009007, which has been technically endorsed to have CSI-RS related requirements in a separate section.

**Decision:** The document was **revised to R4-2012174**.

**R4-2012174 CR on scheduling restriction for CSI-RS based intra-frequency measurement**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1108 rev 1 Cat: B (Rel-16)  
  
 Source: Qualcomm CDMA Technologies*

(Replaces R4-2011416)

**Abstract:**

CSI-RS L3 measurement was introduced to RAN4 in Rel-16. The CR aims to add restrictions in the scheduling availability during CSI-RS L3 intra-frequency measurements. The CR is revised from R4-2011416.

**Decision:** The document was **agreed**.

**R4-2009843 UE feature on support of RRM requirements for CSI-RS based L3 measurement**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision:** The document was **noted**.

##### 7.14.1.1 CSI-RS measurement bandwidth [NR\_CSIRS\_L3meas-Core]

**R4-2010052 On measurement bandwidth of CSI-RS based L3 measurement**

*Type: discussion For: Approval  
 38.133 v..  
 Source: Apple*

**Discussion:**

The contribution was discussed during email thread [96e][224] NR\_CSIRS\_L3meas\_RRM\_1. The discussion was recorded in R4-2012224.

**Decision:** The document was **noted**.

**R4-2010385 Discussion on CSI-RS measurement bandwidth**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

The contribution was discussed during email thread [96e][224] NR\_CSIRS\_L3meas\_RRM\_1. The discussion was recorded in R4-2012224.

**Decision:** The document was **noted**.

**R4-2010576 Discussion on CSI-RS based L3 measurement bandwidth**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: NTT DOCOMO, INC.*

**Discussion:**

The contribution was discussed during email thread [96e][224] NR\_CSIRS\_L3meas\_RRM\_1. The discussion was recorded in R4-2012224.

**Decision:** The document was **noted**.

**R4-2010760 Discussion on CSI-RS measurement Bandwidth**

*Type: discussion For: Approval  
 Source: NEC*

**Abstract:**

In this contribution, we provide our views on defining requirements for CSI-RS configuration of {D=1 with PRB=96

**Discussion:**

The contribution was discussed during email thread [96e][224] NR\_CSIRS\_L3meas\_RRM\_1. The discussion was recorded in R4-2012224.

**Decision:** The document was **noted**.

**R4-2011065 Discussion on CSI-RS based L3 measurement requirements**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][224] NR\_CSIRS\_L3meas\_RRM\_1. The discussion was recorded in R4-2012224.

**Decision:** The document was **noted**.

**R4-2011314 Remaining open issue on configuration of CSI-RS based L3 measurement**

*Type: discussion For: Discussion  
 Source: ZTE*

**Discussion:**

The contribution was discussed during email thread [96e][224] NR\_CSIRS\_L3meas\_RRM\_1. The discussion was recorded in R4-2012224.

**Decision:** The document was **noted**.

**R4-2009747 Discussion about CSI-RS L3 measurement bandwidth and synchronization**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][224] NR\_CSIRS\_L3meas\_RRM\_1. The discussion was recorded in R4-2012224.

**Decision:** The document was **noted**.

**R4-2009760 Discussion on the remaining issues on CSI-RS measurement configuration**

*Type: discussion For: Discussion  
 Source: Xiaomi*

**Discussion:**

The contribution was discussed during email thread [96e][224] NR\_CSIRS\_L3meas\_RRM\_1. The discussion was recorded in R4-2012224.

**Decision:** The document was **noted**.

**R4-2009839 Discussion on CSI-RS based measurement bandwidth**

*Type: discussion For: Discussion  
 Source: CATT*

**Discussion:**

The contribution was discussed during email thread [96e][224] NR\_CSIRS\_L3meas\_RRM\_1. The discussion was recorded in R4-2012224.

**Decision:** The document was **noted**.

##### 7.14.1.2 CSI-RS based intra-frequency and inter-frequency measurements definition [NR\_CSIRS\_L3meas-Core]

**R4-2010072 Discussion on the synchronization assumption for CSI-RS measurement**

*Type: discussion For: Approval  
 Source: CMCC*

**Discussion:**

The contribution was discussed during email thread [96e][224] NR\_CSIRS\_L3meas\_RRM\_1. The discussion was recorded in R4-2012224.

**Decision:** The document was **noted**.

**R4-2010390 38.133 CR on introduction of CSI-RS based intra-frequency measurement**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1003 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

The definition of CSI-RS based intra-frequency measurement and the scope of the Rel16 requirements were agreed in RAN4 #95e meeting. They needs to be introduced to TS 38.133.

**Discussion:**

The contribution was discussed during email thread [96e][224] NR\_CSIRS\_L3meas\_RRM\_1. The discussion was recorded in R4-2012224.

**Decision:** The document was **revised to R4-2012176**.

**R4-2012176 38.133 CR on introduction of CSI-RS based measurement**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1003 rev 1 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2010390)

**Abstract:**

The CR on CSI-RS based L3 measurement framework and introduction R4-2009004 was technically endorsed in RAN4#95e meeting. The scope of the Rel16 requirements need to be updated capturing the agreements so far. The CR is a revision of R4-2010390.

**Discussion:**

The contribution was discussed during email thread [96e][224] NR\_CSIRS\_L3meas\_RRM\_1. The discussion was recorded in R4-2012224.

**Decision:** The document was **agreed**.

**R4-2010577 Discussion on synchronization assumption for CSI-RS based L3 measurement**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: NTT DOCOMO, INC.*

**Discussion:**

The contribution was discussed during email thread [96e][224] NR\_CSIRS\_L3meas\_RRM\_1. The discussion was recorded in R4-2012224.

**Decision:** The document was **noted**.

**R4-2009840 Discussion on CSI-RS based intra and inter-frequency measurement definition**

*Type: discussion For: Discussion  
 Source: CATT*

**Discussion:**

The contribution was discussed during email thread [96e][224] NR\_CSIRS\_L3meas\_RRM\_1. The discussion was recorded in R4-2012224.

**Decision:** The document was **noted**.

##### 7.14.1.3 Measurement capability [NR\_CSIRS\_L3meas-Core]

**R4-2010053 On UE measurement capability of CSI-RS based L3 measurement**

*Type: discussion For: Approval  
 38.133 v..  
 Source: Apple*

**Discussion:**

The contribution was discussed during email thread [96e][225] NR\_CSIRS\_L3meas\_RRM\_2. The discussion was recorded in R4-2012225.

**Decision:** The document was **noted**.

**R4-2010057 CR on MRTD for FR2 inter-band CA**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0970 Cat: B (Rel-16)  
  
 Source: Apple*

**Abstract:**

Revise CSSF when CSI-RS resources for L3 measurement are considered on top of SSB

**Discussion:**

The contribution was discussed during email thread [96e][225] NR\_CSIRS\_L3meas\_RRM\_2. The discussion was recorded in R4-2012225.

**Decision:** The document was **revised to R4-2012181**.

**R4-2012181 CR on MRTD for FR2 inter-band CA**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0970 rev 1 Cat: B (Rel-16)  
  
 Source: Apple*

(Replaces R4-2010057)

**Abstract:**

Revise CSSF when CSI-RS resources for L3 measurement are considered on top of SSB

**Discussion:**

The contribution was discussed during email thread [96e][225] NR\_CSIRS\_L3meas\_RRM\_2. The discussion was recorded in R4-2012225.

**Decision:** The document was **agreed**.

**R4-2010065 Further discussion on CSI-RS measurement capability**

*Type: discussion For: Approval  
 Source: CMCC*

**Discussion:**

The contribution was discussed during email thread [96e][225] NR\_CSIRS\_L3meas\_RRM\_2. The discussion was recorded in R4-2012225.

**Decision:** The document was **noted**.

**R4-2010073 38.133 CR on UE measurement capability on the number of frequency layers to be monitored for CSI-RS measurement**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0971 Cat: B (Rel-16)  
  
 Source: CMCC*

**Abstract:**

In the last meeting, the CR on the UE measurement capability for CSI-RS measurement was endorsed (R4-1009005). This CR is to remove the square bracket.

**Discussion:**

The contribution was discussed during email thread [96e][225] NR\_CSIRS\_L3meas\_RRM\_2. The discussion was recorded in R4-2012225.

**Decision:** The document was **revised to R4-2012169**.

**R4-2012169 38.133 CR on UE measurement capability on the number of frequency layers to be monitored for CSI-RS measurement**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0971 rev 1 Cat: B (Rel-16)  
  
 Source: CMCC*

(Replaces R4-2010073)

**Abstract:**

In the last meeting, the CR on the UE measurement capability for CSI-RS measurement was endorsed (R4-1009005). This CR is to remove the square bracket.

**Discussion:**

The contribution was discussed during email thread [96e][225] NR\_CSIRS\_L3meas\_RRM\_2. The discussion was recorded in R4-2012225.

**Decision:** The document was **agreed**.

**R4-2010312 Discussion on measurement capability for CSI-RS RRM**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

The contribution was discussed during email thread [96e][225] NR\_CSIRS\_L3meas\_RRM\_2. The discussion was recorded in R4-2012225.

**Decision:** The document was **noted**.

**R4-2010386 Discussion on the CSI-RS based measurement capability**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

The contribution was discussed during email thread [96e][225] NR\_CSIRS\_L3meas\_RRM\_2. The discussion was recorded in R4-2012225.

**Decision:** The document was **noted**.

**R4-2010713 On measurement capability of CSI-RS L3 measurement**

*Type: discussion For: Approval  
 Source: OPPO*

**Discussion:**

The contribution was discussed during email thread [96e][225] NR\_CSIRS\_L3meas\_RRM\_2. The discussion was recorded in R4-2012225.

**Decision:** The document was **noted**.

**R4-2011172 On CSI-RS measurement capability and time windowing**

*Type: LS out For: Approval  
 to RAN1, RAN2  
 Source: Huawei, Hisilicon*

**Discussion:**

The contribution was discussed during email thread [96e][225] NR\_CSIRS\_L3meas\_RRM\_2. The discussion was recorded in R4-2012225.

**Decision:** The document was **noted**.

**R4-2011315 Remaining open issues on UE measurement capability of CSI-RS based L3 measurement**

*Type: discussion For: Discussion  
 Source: ZTE*

**Discussion:**

The contribution was discussed during email thread [96e][225] NR\_CSIRS\_L3meas\_RRM\_2. The discussion was recorded in R4-2012225.

**Decision:** The document was **noted**.

**R4-2009746 Discussion about CSI-RS L3 measurement capability and requirements**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][225] NR\_CSIRS\_L3meas\_RRM\_2. The discussion was recorded in R4-2012225.

**Decision:** The document was **noted**.

**R4-2009761 Discussion on the remaining issues for UE measurement capabilities requirements**

*Type: discussion For: Discussion  
 Source: Xiaomi*

**Discussion:**

The contribution was discussed during email thread [96e][225] NR\_CSIRS\_L3meas\_RRM\_2. The discussion was recorded in R4-2012225.

**Decision:** The document was **noted**.

**R4-2009841 Discussion on CSI-RS based UE measurement capabilities**

*Type: discussion For: Discussion  
 Source: CATT*

**Discussion:**

The contribution was discussed during email thread [96e][225] NR\_CSIRS\_L3meas\_RRM\_2. The discussion was recorded in R4-2012225.

**Decision:** The document was **noted**.

##### 7.14.1.4 Intra-frequency and inter-frequency measurement requirements [NR\_CSIRS\_L3meas-Core]

**R4-2010066 Discussion on CSI-RS measurement requirements**

*Type: discussion For: Discussion  
 Source: CMCC*

**Discussion:**

The contribution was discussed during email thread [96e][225] NR\_CSIRS\_L3meas\_RRM\_2. The discussion was recorded in R4-2012225.

**Decision:** The document was **noted**.

**R4-2010181 Discussion on CSI-RS L3 measurement requirement**

*Type: discussion For: Discussion  
 Source: LG Electronics UK*

**Discussion:**

The contribution was discussed during email thread [96e][225] NR\_CSIRS\_L3meas\_RRM\_2. The discussion was recorded in R4-2012225.

**Decision:** The document was **noted**.

**R4-2010313 Cell identification requirements for CSI-RS RRM**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

The contribution was discussed during email thread [96e][225] NR\_CSIRS\_L3meas\_RRM\_2. The discussion was recorded in R4-2012225.

**Decision:** The document was **noted**.

**R4-2010314 Introduction of CSSF requirement for CSI-RS based L3 measurement**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0994 Cat: B (Rel-16)  
  
 Source: MediaTek inc.*

**Abstract:**

Carrier-specific scaling factor for CSI-RS measurements need to be defined.

**Discussion:**

The contribution was discussed during email thread [96e][225] NR\_CSIRS\_L3meas\_RRM\_2. The discussion was recorded in R4-2012225.

**Decision:** The document was **postponed**.

**R4-2012180 Introduction of CSSF requirement for CSI-RS based L3 measurement**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0994 rev 1 Cat: B (Rel-16)  
  
 Source: MediaTek inc.*

**Decision:** The document was **withdrawn**.

**R4-2010333 Discussion on CSI-RS based L3 measurement period requirement**

*Type: discussion For: Discussion  
 Source: vivo*

**Discussion:**

The contribution was discussed during email thread [96e][225] NR\_CSIRS\_L3meas\_RRM\_2. The discussion was recorded in R4-2012225.

**Decision:** The document was **noted**.

**R4-2010335 CR on introduction, applicablity and capability for CSI-RS inter-frequency measurement requirements**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0996 Cat: B (Rel-16)  
  
 Source: vivo*

**Abstract:**

Introduce the defintion of inter-frequency measurement for L3 CSI-RS based measurements, and specify requirement applicability and number of cells/beams to be measured for inter-frequency measurement

**Discussion:**

The contribution was discussed during email thread [96e][225] NR\_CSIRS\_L3meas\_RRM\_2. The discussion was recorded in R4-2012225.

**Decision:** The document was **revised to R4-2012171**.

**R4-2012171 CR on introduction, applicability and capability for CSI-RS inter-frequency measurement requirements**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0996 rev 1 Cat: B (Rel-16)  
  
 Source: vivo*

(Replaces R4-2010335)

**Abstract:**

Introduce the defintion of inter-frequency measurement for L3 CSI-RS based measurements, and specify requirement applicability and number of cells/beams to be measured for inter-frequency measurement

**Discussion:**

The contribution was discussed during email thread [96e][225] NR\_CSIRS\_L3meas\_RRM\_2. The discussion was recorded in R4-2012225.

**Decision:** The document was **revised to R4-2012250**.

**R4-2012250 CR on introduction, applicability and capability for CSI-RS inter-frequency measurement requirements**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0996 rev 2 Cat: B (Rel-16)  
  
 Source: vivo*

(Replaces R4-2012171)

**Abstract:**

Introduce the defintion of inter-frequency measurement for L3 CSI-RS based measurements, and specify requirement applicability and number of cells/beams to be measured for inter-frequency measurement

**Discussion:**

The contribution was discussed during email thread [96e][225] NR\_CSIRS\_L3meas\_RRM\_2. The discussion was recorded in R4-2012225.

**Decision:** The document was **agreed**.

**R4-2010387 CSI-RS based intra-frequency measurement requirements**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

The contribution was discussed during email thread [96e][225] NR\_CSIRS\_L3meas\_RRM\_2. The discussion was recorded in R4-2012225.

**Decision:** The document was **noted**.

**R4-2010391 38.133 CR on CSI-RS based intra-frequency measurement requirements**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1004 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

The intra-frequency measurement requirements for CSI-RS based measurement are not specified.

**Discussion:**

The contribution was discussed during email thread [96e][225] NR\_CSIRS\_L3meas\_RRM\_2. The discussion was recorded in R4-2012225.

**Decision:** The document was **merged**.

**R4-2010578 Discussion on CSI-RS based L3 measurement requirement and capability**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: NTT DOCOMO, INC.*

**Discussion:**

The contribution was discussed during email thread [96e][225] NR\_CSIRS\_L3meas\_RRM\_2. The discussion was recorded in R4-2012225.

**Decision:** The document was **noted**.

**R4-2010714 On measurement requirements for CSI-RS L3 measurement**

*Type: discussion For: Approval  
 Source: OPPO*

**Discussion:**

The contribution was discussed during email thread [96e][225] NR\_CSIRS\_L3meas\_RRM\_2. The discussion was recorded in R4-2012225.

**Decision:** The document was **noted**.

**R4-2010715 CR on inter-frequency CSI-RS L3 measurement requirements**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1020 Cat: B (Rel-16)  
  
 Source: OPPO*

**Abstract:**

CSI-RS L3 measurement requirements should be introduced in Rel-16.

**Discussion:**

The contribution was discussed during email thread [96e][225] NR\_CSIRS\_L3meas\_RRM\_2. The discussion was recorded in R4-2012225.

**Decision:** The document was **revised to R4-2012173**.

**R4-2012173 CR on inter-frequency CSI-RS L3 measurement requirements**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1020 rev 1 Cat: B (Rel-16)  
  
 Source: OPPO*

(Replaces R4-2010715)

**Abstract:**

CSI-RS L3 measurement requirements should be introduced in Rel-16.

**Discussion:**

The contribution was discussed during email thread [96e][225] NR\_CSIRS\_L3meas\_RRM\_2. The discussion was recorded in R4-2012225.

**Decision:** The document was **agreed**.

**R4-2011115 Discussion on CSI-RS based L3 measurement requirements**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Discussion:**

The contribution was discussed during email thread [96e][225] NR\_CSIRS\_L3meas\_RRM\_2. The discussion was recorded in R4-2012225.

**Decision:** The document was **noted**.

**R4-2011116 CR on CSI-RS based intra-frequency measurement requirements**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1064 Cat: B (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

CSI-RS based measurement requirements needs to be defined.

**Discussion:**

The contribution was discussed during email thread [96e][225] NR\_CSIRS\_L3meas\_RRM\_2. The discussion was recorded in R4-2012225.

**Decision:** The document was **revised to R4-2012172**.

**R4-2012172 CR on CSI-RS based intra-frequency measurement requirements**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1064 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei, Hisilicon*

(Replaces R4-2011116)

**Abstract:**

CSI-RS based measurement requirements needs to be defined.

**Discussion:**

The contribution was discussed during email thread [96e][225] NR\_CSIRS\_L3meas\_RRM\_2. The discussion was recorded in R4-2012225.

**Decision:** The document was **revised to R4-2012261**.

**R4-2012261 CR on CSI-RS based intra-frequency measurement requirements**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1064 rev 2 Cat: B (Rel-16)  
  
 Source: Huawei, Hisilicon*

(Replaces R4-2012172)

**Abstract:**

CSI-RS based measurement requirements needs to be defined.

**Discussion:**

The contribution was discussed during email thread [96e][225] NR\_CSIRS\_L3meas\_RRM\_2. The discussion was recorded in R4-2012225.

**Decision:** The document was **agreed**.

**R4-2011316 Remaining open issues on measurement requirements for CSI-RS based L3 mobility**

*Type: discussion For: Discussion  
 Source: ZTE*

**Discussion:**

The contribution was discussed during email thread [96e][225] NR\_CSIRS\_L3meas\_RRM\_2. The discussion was recorded in R4-2012225.

**Decision:** The document was **noted**.

**R4-2009762 Discussion on the remaining issues for cell identification requirement**

*Type: discussion For: Discussion  
 Source: Xiaomi*

**Discussion:**

The contribution was discussed during email thread [96e][225] NR\_CSIRS\_L3meas\_RRM\_2. The discussion was recorded in R4-2012225.

**Decision:** The document was **noted**.

**R4-2009842 Discussion on CSI-RS based intra and inter measurement requirements**

*Type: discussion For: Discussion  
 Source: CATT*

**Discussion:**

The contribution was discussed during email thread [96e][225] NR\_CSIRS\_L3meas\_RRM\_2. The discussion was recorded in R4-2012225.

**Decision:** The document was **noted**.

**R4-2009844 CR on CSI-RS based intra-frequency measurement requirement (Introduction, requirement applicability and number of cell and beams)**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0937 Cat: B (Rel-16)  
  
 Source: CATT*

**Abstract:**

CSI-RS based intra-frequency measurement requirements need to be introduced.

**Discussion:**

The contribution was discussed during email thread [96e][225] NR\_CSIRS\_L3meas\_RRM\_2. The discussion was recorded in R4-2012225.

**Decision:** The document was **revised to R4-2012170**.

**R4-2012170 CR on CSI-RS based intra-frequency measurement requirement (Introduction, requirement applicability and number of cell and beams)**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0937 rev 1 Cat: B (Rel-16)  
  
 Source: CATT*

(Replaces R4-2009844)

**Abstract:**

CSI-RS based intra-frequency measurement requirements need to be introduced.

**Discussion:**

The contribution was discussed during email thread [96e][225] NR\_CSIRS\_L3meas\_RRM\_2. The discussion was recorded in R4-2012225.

**Decision:** The document was **agreed**.

##### 7.14.1.5 Other requirements [NR\_CSIRS\_L3meas-Core]

**R4-2010054 On other remaining issues of CSI-RS based L3 measurement**

*Type: discussion For: Approval  
 38.133 v..  
 Source: Apple*

**Discussion:**

The contribution was discussed during email thread [96e][224] NR\_CSIRS\_L3meas\_RRM\_1. The discussion was recorded in R4-2012224.

**Decision:** The document was **noted**.

**R4-2010315 Synchronization assumption for L3 CSI-RS measurement**

*Type: discussion For: Discussion  
 Source: MediaTek inc.*

**Discussion:**

The contribution was discussed during email thread [96e][224] NR\_CSIRS\_L3meas\_RRM\_1. The discussion was recorded in R4-2012224.

**Decision:** The document was **noted**.

**R4-2010334 Discussion on synchronization assumption for CSI-RS based L3 measurement**

*Type: discussion For: Discussion  
 Source: vivo*

**Discussion:**

The contribution was discussed during email thread [96e][224] NR\_CSIRS\_L3meas\_RRM\_1. The discussion was recorded in R4-2012224.

**Decision:** The document was **noted**.

**R4-2010388 Discussion on synchronization assumption**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

The contribution was discussed during email thread [96e][224] NR\_CSIRS\_L3meas\_RRM\_1. The discussion was recorded in R4-2012224.

**Decision:** The document was **noted**.

**R4-2010389 Simulation results for CSI-RS based measurements**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

The contribution was discussed during email thread [96e][224] NR\_CSIRS\_L3meas\_RRM\_1. The discussion was recorded in R4-2012224.

**Decision:** The document was **noted**.

**R4-2010392 38.133 CR on the performance of CSI-RS based intra-frequency measurement**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1005 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

The performance of the CSI-RS based intra-frequency measurement needs to be specified.

**Discussion:**

The contribution was discussed during email thread [96e][224] NR\_CSIRS\_L3meas\_RRM\_1. The discussion was recorded in R4-2012224.

**Decision:** The document was **postponed**.

**R4-2010716 On UE capability signalling for CSI-RS L3 measurement**

*Type: discussion For: Approval  
 Source: OPPO*

**Discussion:**

The contribution was discussed during email thread [96e][224] NR\_CSIRS\_L3meas\_RRM\_1. The discussion was recorded in R4-2012224.

**Decision:** The document was **noted**.

**R4-2010761 Discussion on Synchronisation assumption for CSI-RS measurements**

*Type: discussion For: Approval  
 Source: NEC*

**Abstract:**

In this contribution, we provide our views on the synchronisation assumption for CSI-RS measurements

**Discussion:**

The contribution was discussed during email thread [96e][224] NR\_CSIRS\_L3meas\_RRM\_1. The discussion was recorded in R4-2012224.

**Decision:** The document was **noted**.

**R4-2011173 On synchronization assumption for CSI-RS measurement requirements**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Discussion:**

The contribution was discussed during email thread [96e][224] NR\_CSIRS\_L3meas\_RRM\_1. The discussion was recorded in R4-2012224.

**Decision:** The document was **noted**.

**R4-2011174 CR on reporting criteria for CSI-RS measurement**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1087 Cat: B (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

There is no reporting cirteria requirement for CSI-RS based mobility measurement.

**Discussion:**

The contribution was discussed during email thread [96e][224] NR\_CSIRS\_L3meas\_RRM\_1. The discussion was recorded in R4-2012224.

**Decision:** The document was **merged**.

**R4-2009763 CR on capabilities for support of event triggering and reporting criteria**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0928 Cat: F (Rel-16)  
  
 Source: Xiaomi*

**Abstract:**

CSI-RS L3 measurement was introduced in Rel-16, hence the corresponding capabilities for support of event triggering and reporting criteria shall be introduced.

In addition, reporting criteria for intra/inter-frequency CSI-RS based measurement for NR E-CID was missing in Table 9.1.4.2-1.

**Discussion:**

The contribution was discussed during email thread [96e][224] NR\_CSIRS\_L3meas\_RRM\_1. The discussion was recorded in R4-2012224.

**Decision:** The document was **revised to R4-2012175**.

**R4-2012175 CR on capabilities for support of event triggering and reporting criteria**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0928 rev 1 Cat: F (Rel-16)  
  
 Source: Xiaomi*

(Replaces R4-2009763)

**Abstract:**

CSI-RS L3 measurement was introduced in Rel-16, hence the corresponding capabilities for support of event triggering and reporting criteria shall be introduced.

**Discussion:**

The contribution was discussed during email thread [96e][224] NR\_CSIRS\_L3meas\_RRM\_1. The discussion was recorded in R4-2012224.

**Decision:** The document was **agreed**.

### 7.15 NR support for high speed train scenario [NR\_HST]

**R4-2012057 Email discussion summary for [96e][226] NR\_HST\_RRM**

*Type: other For: discussion  
 Source: Moderator (CMCC)*

**Discussion:**

The contribution summarized email discussion thread [96e][226] NR\_HST\_RRM. The topic areas for discussion were RRM requirements (Core maintenance and Perf). The email thread was moderated by Jingjing Chen (China Mobile Com. Corporation). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2012226**.

**R4-2012226 Email discussion summary for [96e][226] NR\_HST\_RRM**

*Type: other For: discussion  
 Source: Moderator (CMCC)*

(Replaces R4-2012057)

**Discussion:**

The contribution summarized email discussion thread [96e][226] NR\_HST\_RRM. The topic areas for discussion were RRM requirements (Core maintenance and Perf). The email thread was moderated by Jingjing Chen (China Mobile Com. Corporation). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **noted**.

#### 7.15.1 RRM core requirements maintenance (38.133) [NR\_HST-Core]

**R4-2012182 WF on RRM requirements for NR HST**

*Type: other For: discussion  
 Source: CMCC*

**Discussion:**

The contribution was discussed during email thread [96e][226] NR\_HST\_RRM. The discussion was recorded in R4-2012226.

**Decision:** The document was **approved**.

**R4-2010064 Discussion on release independent for RRM enhanced requirements for NR HST**

*Type: discussion For: Approval  
 Source: CMCC*

**Discussion:**

The contribution was discussed during email thread [96e][226] NR\_HST\_RRM. The discussion was recorded in R4-2012226.

**Decision:** The document was **noted**.

**R4-2010077 36.133 CR on cell identification in connected mode for EUTRAN-NR measurement for Rel-16 NR HST**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6922 Cat: F (Rel-16)  
  
 Source: CMCC*

**Abstract:**

The signalling on RRM enhancements for high speed need to be updated based on RAN2 IE name

**Discussion:**

The contribution was discussed during email thread [96e][226] NR\_HST\_RRM. The discussion was recorded in R4-2012226.

**Decision:** The document was **agreed**.

**R4-2010078 38.133 CR on cell re-selection requirements for Rel-16 NR HST**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0972 Cat: F (Rel-16)  
  
 Source: CMCC*

**Abstract:**

The signalling on RRM enhancements for high speed need to be updated based on RAN2 IE name

**Discussion:**

The contribution was discussed during email thread [96e][226] NR\_HST\_RRM. The discussion was recorded in R4-2012226.

**Decision:** The document was **agreed**.

**R4-2010330 CR on HST cell reselection requirment of interRAT higher priority carrier in TS 38.133**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0995 Cat: F (Rel-16)  
  
 Source: vivo*

**Abstract:**

No requirement enhancement for higher priority interRAT HST carrier has been introduced.

The decription of the HST state is ambiguous, since RAN2 had not agreed on the variable name in last RAN4 meeting.

The requirement for 2.56s DRX cycle length is missing.

**Discussion:**

The contribution was discussed during email thread [96e][226] NR\_HST\_RRM. The discussion was recorded in R4-2012226.

**Decision:** The document was **postponed**.

**R4-2010331 CR on HST cell reselection requirment of interRAT higher priority carrier in TS 36.133**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6923 Cat: F (Rel-16)  
  
 Source: vivo*

**Abstract:**

No requirement enhancement for higher priority interRAT HST carrier has been introduced.

The decription of the HST state is ambiguous, since RAN2 had not agreed on the variable name in last RAN4 meeting.

**Discussion:**

The contribution was discussed during email thread [96e][226] NR\_HST\_RRM. The discussion was recorded in R4-2012226.

**Decision:** The document was **postponed**.

**R4-2010374 Correction to cell re-selection for EUTRAN-NR high speed in TS36.133**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6924 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

In one part, idle mode requirements for LTE idle mode refer to an incorrect symbol Tevaluate, NR,nonHST

**Discussion:**

The contribution was discussed during email thread [96e][226] NR\_HST\_RRM. The discussion was recorded in R4-2012226.

**Decision:** The document was **agreed**.

**R4-2011119 Correction on inter-RAT measurement in HST**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6937 Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

The evaluation time is not correct when there are HST carriers and non-HST carriers.

**Discussion:**

The contribution was discussed during email thread [96e][226] NR\_HST\_RRM. The discussion was recorded in R4-2012226.

**Decision:** The document was **not pursued**.

**R4-2011325 CR to TS 36.133: Corrections to subclause 4.2.2.5.6**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6960 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

There is an error for one of the parameters in subclause 4.2.2.5.6.

**Discussion:**

The contribution was discussed during email thread [96e][226] NR\_HST\_RRM. The discussion was recorded in R4-2012226.

**Decision:** The document was **not pursued**.

**R4-2011329 CR to TS 38.133: Corrections to Table 9.4.3.3-2 in subclause 9.4.3.3 (Requirements when DRX is used)**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1101 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

There is an error for one of the parameters in Table 9.4.3.3-2.

**Discussion:**

The contribution was discussed during email thread [96e][226] NR\_HST\_RRM. The discussion was recorded in R4-2012226.

**Decision:** The document was **agreed**.

**R4-2011378 NR HST remaining requirement**

*Type: discussion For: Discussion  
 Source: Qualcomm, Inc.*

**Discussion:**

The contribution was discussed during email thread [96e][226] NR\_HST\_RRM. The discussion was recorded in R4-2012226.

**Decision:** The document was **noted**.

#### 7.15.2 RRM perf. requirements (38.133) [NR\_HST-Perf]

**R4-2012292 Draft Big CR for NR HST RRM performance requirements**

*Type: pCR For: Approval  
 Source: CMCC*

**Discussion:**

The contribution was discussed during email thread [96e][226] NR\_HST\_RRM. The discussion was recorded in R4-2012226.

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2010379 Testing for NR HST RRM requirements**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Proposed test case list for NR HST

**Discussion:**

The contribution was discussed during email thread [96e][226] NR\_HST\_RRM. The discussion was recorded in R4-2012226.

**Decision:** The document was **noted**.

##### 7.15.2.1 General [NR\_HST-Perf]

**R4-2010081 Discussion on SS-SINR measurement for NR HST**

*Type: discussion For: Discussion  
 Source: CMCC*

**Discussion:**

The contribution was discussed during email thread [96e][226] NR\_HST\_RRM. The discussion was recorded in R4-2012226.

**Decision:** The document was **noted**.

**R4-2010332 Discussion on SS-SINR accuracy requirement in NR HST**

*Type: discussion For: Discussion  
 Source: vivo*

**Discussion:**

The contribution was discussed during email thread [96e][226] NR\_HST\_RRM. The discussion was recorded in R4-2012226.

**Decision:** The document was **noted**.

**R4-2011117 Discussion on SS-SINR in NR HST**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Discussion:**

The contribution was discussed during email thread [96e][226] NR\_HST\_RRM. The discussion was recorded in R4-2012226.

**Decision:** The document was **noted**.

**R4-2011118 CR on SS-SINR in NR HST**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1065 Cat: B (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

The SS-SINR accuracy shall be specified for NR HST.

**Discussion:**

The contribution was discussed during email thread [96e][226] NR\_HST\_RRM. The discussion was recorded in R4-2012226.

**Decision:** The document was **endorsed**.

**R4-2011331 Discussions on SS-SINR measurements for Rel-16 high speed train**

*Type: other For: Discussion  
 38.133 v..  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Proposal 1: RRM relevant use cases should be taken into consideration in order to decide if there is a need to specify the SS-SINR accuracy.

**Discussion:**

The contribution was discussed during email thread [96e][226] NR\_HST\_RRM. The discussion was recorded in R4-2012226.

**Decision:** The document was **noted**.

##### 7.15.2.2 Test cases [NR\_HST-Perf]

**R4-2010067 Discussion on test case list for Rel-16 NR HST**

*Type: discussion For: Approval  
 Source: CMCC*

**Discussion:**

The contribution was discussed during email thread [96e][226] NR\_HST\_RRM. The discussion was recorded in R4-2012226.

**Decision:** The document was **noted**.

**R4-2011120 Discussion on test case list in NR high speed scenarios**

*Type: discussion For: Discussion  
 Source: Huawei, Hisilicon*

**Discussion:**

The contribution was discussed during email thread [96e][226] NR\_HST\_RRM. The discussion was recorded in R4-2012226.

**Decision:** The document was **noted**.

**R4-2011376 NR HST test case discussion**

*Type: discussion For: Discussion  
 Source: Qualcomm, Inc.*

**Discussion:**

The contribution was discussed during email thread [96e][226] NR\_HST\_RRM. The discussion was recorded in R4-2012226.

**Decision:** The document was **noted**.

**R4-2011377 38.133 CR on additional RRM tests for NR HST**

*Type: draftCR For: Endorsement  
 38.133 v16.4.0  
 Source: Qualcomm, Inc.*

**Abstract:**

The additional RRM tests for NR HST are not specified

**Discussion:**

The contribution was discussed during email thread [96e][226] NR\_HST\_RRM. The discussion was recorded in R4-2012226.

**Decision:** The document was **postponed**.

#### 7.15.3 Demodulation and CSI requirements (38.101-4 / 38.104) [NR\_HST-Perf]

##### 7.15.3.1 UE demodulation and CSI requirements [NR\_HST-Perf]

**R4-2012555 Email discussion summary for [96e][322] NR\_HST\_Demod\_UE**

*Type: other For: discussion  
 Source: Moderator (CMCC)*

**Discussion:**

The contribution summarized email discussion thread [96e][322] NR\_HST\_Demod\_UE. The topic areas for discussion were Rel-16 NR HST UE demodulation and CSI requirements. The email thread was moderated by Xiaoran Zhang (China Mobile Com. Corporation). All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2012738**.

**R4-2012738 Email discussion summary for [96e][322] NR\_HST\_Demod\_UE**

*Type: other For: discussion  
 Source: Moderator (CMCC)*

(Replaces R4-2012555)

**Discussion:**

The contribution summarized email discussion thread [96e][322] NR\_HST\_Demod\_UE. The topic areas for discussion were Rel-16 NR HST UE demodulation and CSI requirements. The email thread was moderated by Xiaoran Zhang (China Mobile Com. Corporation). All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **noted**.

**GTW session Aug 25th**

**Issue 1-8: Whether to introduce test cases for DPS transmission scheme 1b**

If option1 is agreed, the applicability rule can be further discussed.

Option 1: Define performance requirements for DPS transmission scheme 1b with applicability rules

* Option 1a: with 2 active TCI states.
* Option 1b: with 2 and more than 2 active TCI states.

Option 2: Do not introduce test case for DPS transmission scheme 1b

Agreement:

Introduce DPS transmission scheme 1b test cases with test applicable rules which can be further discussed among below options

Option 1:

* If UE declared supporting > 1 TCI states, UE will pass scheme 1b and skipped HST single tap test cases and scheme 1a test cases
* If UE only support 1TCI state, UE need to pass both scheme 1a and HST single tap test cases and skip scheme 1b test cases

Option 2: If UE pass HST-SFN test cases, then UE can skip HST-DPS scheme 1a/1b

We didn’t any additional benefits compared existing RRM TCI state and HST single Taps demod test cases.

Apple: We share similar view as QC.

Intel: Transmission scheme 1b brings benefits compared to scheme 1a; also fading channel model not verified in RRM TCI state cases. No much additional work effort compared to agreed test 1a. Also following the comments from QC commented in power saving test cases, we should focus on realistic scenario.

Huawei: similar view as Intel. It’s to verify UE receiver performance not only functionality.

CMCC: Similar view as Intel, we can introduce test applicable rule among scheme 1a and 1b.

Apple: What’s the channel model between 1a and 1b? If same, only difference is UE tracking two TCI states with fast switch delay.

QC: We agree 1b have more benefits compared 1a; but no new UE behaviour verified. We have similar behaviour as single Tap test cases from demodulation aspect.

Intel: It’s up to UE implementation, we still see difference. We can apply test applicable rules among scheme 1a/1b and single tap test cases.

Huawei: We have different understanding on UE behaviour, we have specific UE feature for TCI state supporting.

**Issue 1-9: Test applicable rule among 1a/[1b] with HST-SFN requirements**

Whether to have applicability rule between HST-SFN and DPS.

* Option 1: Do not introduce applicability rule between DPS and HST-SFN requirement
* Option 2: UE can skip HST-DPS test if UE can pass HST-SFN test

Whether to have applicability rule between DPS transmission scheme 1a and 1b assuming that transmission scheme 1b is introduced.

* Option 1: Applicability rule between 1a and 1b can be considered.
* Option 2: If UE passed HST DPS requirements with more than 1 active TCI state it does not need to be tested in HST-DPS with smaller number of active TCI states.

Recommended WF

Continue to discuss in 2nd round whether to have applicability rule between HST-SFN and DPS.

Continue to discuss in 2nd round whether to have applicability rule between DPS transmission scheme 1a and 1b assuming that transmission scheme 1b is introduced.

Introduce Test cases for both test 1a and test 1b with 2 TCI state only

Pending on UE capability, if UE pass test 1b, then no need to test 1a

FFS whether test applicable rule will be applied among HST-SFN and HST-DPS schemes Test 1a/test 1b

RAN4 can further discuss whether test cases for HST-DPS schemes with larger than 2 TCI states needed or not in further release i.e. Rel-17 HST WI.

**R4-2012668 WF on NR HST UE demodulation requirements**

*Type: other For: discussion  
 Source: CMCC*

**Decision:** The document was **approved**.

**R4-2010079 Further discussion on UE demodulation for NR HST**

*Type: discussion For: Approval  
 Source: CMCC*

**Discussion:**

The contribution was discussed during email thread [96e][322] NR\_HST\_Demod\_UE. The discussion was recorded in R4-2012738.

**Decision:** The document was **noted**.

**R4-2011044 Views on HST applicability rules**

*Type: discussion For: Discussion  
 Source: NTT DOCOMO, INC.*

**Discussion:**

The contribution was discussed during email thread [96e][322] NR\_HST\_Demod\_UE. The discussion was recorded in R4-2012738.

**Decision:** The document was **noted**.

###### 7.15.3.1.1 Scenarios and transmission schemes [NR\_HST-Perf]

**R4-2010479 PDSCH demodulation requirements for HST-DPS**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the test setup of the PDSCH demodulation requirements for HST-DPS.

**Discussion:**

The contribution was discussed during email thread [96e][322] NR\_HST\_Demod\_UE. The discussion was recorded in R4-2012738.

**Decision:** The document was **noted**.

**R4-2010911 CR to TS 38.101-4: Propagation conditions for HST scenarios**

*Type: CR For: Agreement  
 38.101-4 v16.1.0 CR-0068 Cat: B (Rel-16)  
  
 Source: Intel Corporation*

**Abstract:**

Add Propagation conditions description for HST test cases

**Discussion:**

The contribution was discussed during email thread [96e][322] NR\_HST\_Demod\_UE. The discussion was recorded in R4-2012738.

**Decision:** The document was **revised to R4-2012674**.

**R4-2012674 CR to TS 38.101-4: Propagation conditions for HST scenarios**

*Type: CR For: Agreement  
 38.101-4 v16.1.0 CR-0068 rev 1 Cat: B (Rel-16)  
  
 Source: Intel Corporation*

(Replaces R4-2010911)

**Abstract:**

Add Propagation conditions description for HST test cases

**Discussion:**

The contribution was discussed during email thread [96e][322] NR\_HST\_Demod\_UE. The discussion was recorded in R4-2012738.

**Decision:** The document was **endorsed**.

**R4-2011003 Discussion on UE performance requirements for DPS transmission scheme**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][322] NR\_HST\_Demod\_UE. The discussion was recorded in R4-2012738.

**Decision:** The document was **noted**.

**R4-2011005 Summary of ideal and impairment results for NR HST demodulation requirements**

*Type: other For: Information  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][322] NR\_HST\_Demod\_UE. The discussion was recorded in R4-2012738.

**Decision:** The document was **noted**.

**R4-2011006 CR on applicability rules for HST scenarios**

*Type: CR For: Agreement  
 38.101-4 v16.1.0 CR-0073 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

Introduce applicability rules for HST scenarios as per RAN4 agreements

**Discussion:**

The contribution was discussed during email thread [96e][322] NR\_HST\_Demod\_UE. The discussion was recorded in R4-2012738.

**Decision:** The document was **revised to R4-2012675**.

**R4-2012675 CR on applicability rules for HST scenarios**

*Type: CR For: Agreement  
 38.101-4 v16.1.0 CR-0073 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2011006)

**Abstract:**

Introduce applicability rules for HST scenarios as per RAN4 agreements

**Discussion:**

The contribution was discussed during email thread [96e][322] NR\_HST\_Demod\_UE. The discussion was recorded in R4-2012738.

**Decision:** The document was **endorsed**.

**R4-2011434 Views on Tests for High Speed Train Scenarios**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

The contribution was discussed during email thread [96e][322] NR\_HST\_Demod\_UE. The discussion was recorded in R4-2012738.

**Decision:** The document was **noted**.

**R4-2009734 Views on NR UE demodulation requirements for DPS transmission scheme**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][322] NR\_HST\_Demod\_UE. The discussion was recorded in R4-2012738.

**Decision:** The document was **noted**.

###### 7.15.3.1.2 Requirements for HST-SFN [NR\_HST-Perf]

**R4-2010069 Updated simulation results for HST-SFN**

*Type: discussion For: Discussion  
 Source: CMCC*

**Discussion:**

The contribution was discussed during email thread [96e][322] NR\_HST\_Demod\_UE. The discussion was recorded in R4-2012738.

**Decision:** The document was **noted**.

**R4-2010076 CR on HST-SFN requirements for TDD**

*Type: CR For: Agreement  
 38.101-4 v16.1.0 CR-0062 Cat: B (Rel-16)  
  
 Source: CMCC*

**Abstract:**

The HST-SFN requirements for TDD are not specified

**Discussion:**

The contribution was discussed during email thread [96e][322] NR\_HST\_Demod\_UE. The discussion was recorded in R4-2012738.

**Decision:** The document was **revised to R4-2012669**.

**R4-2012669 CR on HST-SFN requirements for TDD**

*Type: CR For: Agreement  
 38.101-4 v16.1.0 CR-0062 rev 1 Cat: B (Rel-16)  
  
 Source: CMCC*

(Replaces R4-2010076)

**Abstract:**

The HST-SFN requirements for TDD are not specified

**Discussion:**

The contribution was discussed during email thread [96e][322] NR\_HST\_Demod\_UE. The discussion was recorded in R4-2012738.

**Decision:** The document was **endorsed**.

**R4-2010278 Simulation results for NR HST UE demodulation**

*Type: discussion For: Discussion  
 Source: Samsung*

**Discussion:**

The contribution was discussed during email thread [96e][322] NR\_HST\_Demod\_UE. The discussion was recorded in R4-2012738.

**Decision:** The document was **noted**.

**R4-2010910 CR to TS 38.101-4: HST-SFN FDD performance requirements**

*Type: CR For: Agreement  
 38.101-4 v16.1.0 CR-0067 Cat: B (Rel-16)  
  
 Source: Intel Corporation*

**Abstract:**

Add Rel-16 DL HST-SFN FDD performacne requirements

**Discussion:**

The contribution was discussed during email thread [96e][322] NR\_HST\_Demod\_UE. The discussion was recorded in R4-2012738.

**Decision:** The document was **revised to R4-2012670**.

**R4-2012670 CR to TS 38.101-4: HST-SFN FDD performance requirements**

*Type: CR For: Agreement  
 38.101-4 v16.1.0 CR-0067 rev 1 Cat: B (Rel-16)  
  
 Source: Intel Corporation*

(Replaces R4-2010910)

**Abstract:**

Add Rel-16 DL HST-SFN FDD performacne requirements

**Discussion:**

The contribution was discussed during email thread [96e][322] NR\_HST\_Demod\_UE. The discussion was recorded in R4-2012738.

**Decision:** The document was **endorsed**.

**R4-2010999 Simulation results on NR UE HST performance requirements for SFN**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][322] NR\_HST\_Demod\_UE. The discussion was recorded in R4-2012738.

**Decision:** The document was **noted**.

**R4-2009735 Simulation results for HST-SFN**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][322] NR\_HST\_Demod\_UE. The discussion was recorded in R4-2012738.

**Decision:** The document was **noted**.

###### 7.15.3.1.3 Requirements for HST single tap [NR\_HST-Perf]

**R4-2010070 Updated simulation results for HST single tap**

*Type: discussion For: Discussion  
 Source: CMCC*

**Discussion:**

The contribution was discussed during email thread [96e][322] NR\_HST\_Demod\_UE. The discussion was recorded in R4-2012738.

**Decision:** The document was **noted**.

**R4-2011000 Simulation results on NR UE HST performance requirements for single-tap**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][322] NR\_HST\_Demod\_UE. The discussion was recorded in R4-2012738.

**Decision:** The document was **noted**.

**R4-2011001 CR on HST single-tap and HST multi-path fading requirements**

*Type: CR For: Agreement  
 38.101-4 v16.1.0 CR-0072 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

Introduce minimum requirements for HST single-tap scenario and HST multi-path fading scenario as per RAN4 agreements

**Discussion:**

The contribution was discussed during email thread [96e][322] NR\_HST\_Demod\_UE. The discussion was recorded in R4-2012738.

**Decision:** The document was **revised to R4-2012671**.

**R4-2012671 CR on HST single-tap and HST multi-path fading requirements**

*Type: CR For: Agreement  
 38.101-4 v16.1.0 CR-0072 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2011001)

**Abstract:**

Introduce minimum requirements for HST single-tap scenario and HST multi-path fading scenario as per RAN4 agreements

**Discussion:**

The contribution was discussed during email thread [96e][322] NR\_HST\_Demod\_UE. The discussion was recorded in R4-2012738.

**Decision:** The document was **endorsed**.

**R4-2011368 Simulation results for NR UE HST Single tap**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this paper we provide HST single tap simulation results

**Discussion:**

The contribution was discussed during email thread [96e][322] NR\_HST\_Demod\_UE. The discussion was recorded in R4-2012738.

**Decision:** The document was **noted**.

**R4-2011369 Addition of Rel-16 HST FRCs**

*Type: CR For: Agreement  
 38.101-4 v16.1.0 CR-0076 Cat: B (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Endorsed in #95-e R4-2008819

Introduction of Rel-16 HST TDD FRC without Special slot data. Addition of HST single Tap MCS17 FRC.

**Discussion:**

The contribution was discussed during email thread [96e][322] NR\_HST\_Demod\_UE. The discussion was recorded in R4-2012738.

**Decision:** The document was **revised to R4-2012672**.

**R4-2012672 Addition of Rel-16 HST FRCs**

*Type: CR For: Agreement  
 38.101-4 v16.1.0 CR-0076 rev 1 Cat: B (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2011369)

**Abstract:**

Endorsed in #95-e R4-2008819

Introduction of Rel-16 HST TDD FRC without Special slot data. Addition of HST single Tap MCS17 FRC.

**Discussion:**

The contribution was discussed during email thread [96e][322] NR\_HST\_Demod\_UE. The discussion was recorded in R4-2012738.

**Decision:** The document was **endorsed**.

**R4-2011419 Draft CR on FDD HST Single-Tap and Multipath Fading Requirements**

*Type: draftCR For: Endorsement  
 38.101-4 v16.1.0  
 Source: Qualcomm Incorporated*

**Abstract:**

FDD HST Single-Tap and Multipath Fading requirements are not defined.

**Discussion:**

The contribution was discussed during email thread [96e][322] NR\_HST\_Demod\_UE. The discussion was recorded in R4-2012738.

**Decision:** The document was **revised to R4-2012673**.

**R4-2012673 Draft CR on FDD HST Single-Tap and Multipath Fading Requirements**

*Type: draftCR For: Endorsement  
 38.101-4 v16.1.0  
 Source: Qualcomm Incorporated*

(Replaces R4-2011419)

**Abstract:**

FDD HST Single-Tap and Multipath Fading requirements are not defined.

**Discussion:**

The contribution was discussed during email thread [96e][322] NR\_HST\_Demod\_UE. The discussion was recorded in R4-2012738.

**Decision:** The document was **endorsed**.

**R4-2009736 Simulation results for HST Single Tap**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][322] NR\_HST\_Demod\_UE. The discussion was recorded in R4-2012738.

**Decision:** The document was **noted**.

###### 7.15.3.1.4 Requirements for multi-path fading channels [NR\_HST-Perf]

**R4-2010071 Simulation results for multi-path fading channel**

*Type: discussion For: Discussion  
 Source: CMCC*

**Discussion:**

The contribution was discussed during email thread [96e][322] NR\_HST\_Demod\_UE. The discussion was recorded in R4-2012738.

**Decision:** The document was **noted**.

**R4-2011002 Simulation results on NR UE HST performance requirements for multi-path fading channel**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][322] NR\_HST\_Demod\_UE. The discussion was recorded in R4-2012738.

**Decision:** The document was **noted**.

**R4-2009737 Simulation results for HST multi-path fading**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][322] NR\_HST\_Demod\_UE. The discussion was recorded in R4-2012738.

**Decision:** The document was **noted**.

###### 7.15.3.1.5 Network assistance and UE capability signalling [NR\_HST-Perf]

**R4-2010480 Release independence and applicability rule for NR HST demodulation requirements**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the release independence requirements applicable for NR HST.

**Discussion:**

The contribution was discussed during email thread [96e][322] NR\_HST\_Demod\_UE. The discussion was recorded in R4-2012738.

**Decision:** The document was **noted**.

**R4-2011004 Discussion on feature lists and applicability for different scenarios**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][322] NR\_HST\_Demod\_UE. The discussion was recorded in R4-2012738.

**Decision:** The document was **noted**.

##### 7.15.3.2 BS demodulation requirements [NR\_HST-Perf]

**R4-2012556 Email discussion summary for [96e][323] NR\_HST\_Demod\_BS**

*Type: other For: discussion  
 Source: Moderator (Nokia)*

**Discussion:**

The contribution summarized email discussion thread [96e][323] NR\_HST\_Demod\_BS. The topic areas for discussion were Rel-16 NR HST BS demodulation requirements. The email thread was moderated by Axel Mueller (Nokia). All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2012739**.

**R4-2012739 Email discussion summary for [96e][323] NR\_HST\_Demod\_BS**

*Type: other For: discussion  
 Source: Moderator (Nokia)*

(Replaces R4-2012556)

**Discussion:**

The contribution summarized email discussion thread [96e][323] NR\_HST\_Demod\_BS. The topic areas for discussion were Rel-16 NR HST BS demodulation requirements. The email thread was moderated by Axel Mueller (Nokia). All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **noted**.

**GTW session Aug 25th**

**Issue 1-2-3: Specification of multi-path fading channel under high Doppler**

* Option 1: Do not specify requirements for multi-path fading channel models with high Doppler values.
* Option 4: If agreed to introduce PUSCH requirement with multi-path fading under high Doppler value, focus on the requirements with CP-OFDM waveform with test configuration  
  − Doppler: 15 KHz for 600Hz, and 30KHz for 1200Hz  
  − DMRS with 1+1+1 configuration  
  − MCS 2.
* Option 5a: If agreed to introduce PUSCH requirement with multi-path fading under high Doppler value, focus on the requirements with CP-OFDM waveform with test configuration  
  • Scenario: HST open area  
  • MCS: 2   
  • Waveform: CP-OFDM  
  • Antenna configuration: 1Tx2Rx  
  • Bandwidth: 5MHz for 15kHz SCS, 10MHz for 30kHz SCS  
  • Doppler shift: 600Hz for 15kHz SCS, 1200Hz for 30kHz SCS
* Option 6: For PUSCH requirements for HST multi-path fading channel under high Doppler, define limited cases that the same configuration as UE side, i.e. only MCS 13, 2T2R, rank 1 and the maximum Doppler shift of 600Hz and 1200Hz for 15kHz SCS and 30kHz SCS, respectively.
* Option 7: Introduce PUSCH requirements for HST multi-path fading channel under high Doppler, with configuration  
  - TDLC300-600 FO=0Hz (15kHz), TDLC300-1200 FO=0Hz (30kHz)  
  - Scenario: HST open area  
  - MCS: 2  
  - Waveform: CP-OFDM  
  - DM-RS: 1+1+1  
  - Antenna: 1T2R  
  - Bandwidth: 5MHz for 15kHz SCS, 10MHz for 30kHz SCS

*Recommendations for 2nd round:*

* Please evaluate the compromise proposal by the moderator (option 7).   
  Candidate for online discussion.

Agreement:

Agree option 7 with remove “- Scenario: HST open area”.

**Issue 1-2-1: Multi-path fading scenarios under consideration**

* Option 2: The following models are under consideration:
* TDLC300-600 FO=0Hz  
  TDLC300-1200 FO=0Hz
* Option 3: An arbitrary Doppler spread is not an appropriate and the Doppler shift part, which is a separate value with respect to scenarios, requires further study.

*Recommendations for 2nd round:*

* Compromise to option 2 seems feasible. Please discuss in second round.  
  Candidate for online discussion.

**Agreement: Option2**

**Issue 2-1-1: TDLC300-100 propagation conditions for long preamble formats**

* Option 1: Introduce TDLC300-100 FO=400Hz for PRACH restricted set type A and B.
* Option 2: Do not introduce TDLC300-100 fading channel with frequency offset of 400Hz requirements for long preamble formats for HST requirements.
* Option 3: Introduce this test case under non-HST section
* Option 4: Align with PUSCH HST multi-path channel model for PRACH restricted set type A and B.
  + - TDLC300-100 FO=0Hz

*Recommendations for 2nd round:*

* Continue discussion in 2nd round.  
  Candidate for online discussion.

Agreement:

ZTE: The performance among restricted and non-restricted, we need to align PUSCH and PRACH. We prefer op2.

E///: It’s already verified in normal mode with unrestricted set. Restricted only applied for HST scenario. Short format only specified in normal mode. It’s better to include normal mode section.

Samsung: Two issues, issue 1 BS receiver processing: AWGN already there, in LTE we already similar test cases; we need to ensure test coverage. Prefer option1

Huawei: TDLC -300-100 FO not proper channel for HST. With HST, speed up to 350km/h~ 500km/h; 400Hz not proper value under HST. We also didn’t see much performance difference.

Nokia: We don’t think placed under non-HST section as it’s applied with restricted set which only applied to HST mode.

Gain pending Preamble selection, 0.5dB gain we observed.

NTT DoCoMo: we observed 1.6 dB performance differences as maximum, not marginable. Test coverage issue still exist.

ZTE: The proper modelling need to further discussed.

Samsung: Detection algorithm under restricted set still has difference; frequency offset still need to be there.

400Hz for PRACH designed for specific purpose assuming CFO error.

ZTE: There is no proper modelling with multi-path fading channel + frequency offset.

Go with option1, the actual meaning of such test cases?

Samsung: In case of multi-path model we only Doppler spread; in case HST we consider frequency offset/Doppler shift.

Agreements:

Introduce TDLC300-100 FO= 0Hz for PRACH with restricted set type A and B.

In Rel-16, no additional test cases for PRACH besides what we already agreed test case.

The test cases applied for BS if BS declared supporting corresponding restricted set A/B.

**Issue 3-1-1: Addition of scenario “X”**

* Option 1: Specify requirements for scenario X (“120km/h”) in NR\_HST-Perf as HST requirement.
* Option 3: Do not specify requirements for scenario X (“120km/h”) in NR\_HST-Perf.
* Option 4: If scenario X requirements has to be discussed together with Rel-16 HST requirements, adding it in non-HST sections/tables to avoid misleading.
* Option 5: Discuss in plenary meeting to include scenario X in a different WI.

*Recommendations for 2nd round:*

* Continue the discussion in 2nd round.
* Option 4 seems like a potentially agreeable compromise to introduce scenario X in Rel-16.  
  Please consider compromising.

Agreement:

RAN4 agree to introduce scenario X requirements under rel-16 HST WI, adding it in non-HST sections/tables to avoid misleading.

If BS pass Y/Z, then X can be skipped

**R4-2012676 WF on NR HST BS demodulation requirements**

*Type: other For: discussion  
 Source: Nokia*

**Discussion:**

The contribution was discussed during email thread [96e][323] NR\_HST\_Demod\_BS. The discussion was recorded in R4-2012739.

The following was agreed regarding specification drafting of multi-path fading requirements;

– Introduce multi-path fading channel requirements with high Doppler value in a separate table under section “8.2.4 Requirements for PUSCH for high speed train”,

– This requirement only applicable for wide-area, medium-range BS which supporting HST.

**Decision:** The document was **approved**.

**R4-2010080 Discussion on BS demodulation for NR HST**

*Type: discussion For: Approval  
 Source: CMCC*

**Discussion:**

The contribution was discussed during email thread [96e][323] NR\_HST\_Demod\_BS. The discussion was recorded in R4-2012739.

**Decision:** The document was **noted**.

**R4-2009782 Summary of ideal and impairment results for NR HST demodulation requirements**

*Type: discussion For: Discussion  
 Source: CATT*

**Discussion:**

The contribution was discussed during email thread [96e][323] NR\_HST\_Demod\_BS. The discussion was recorded in R4-2012739.

**Decision:** The document was **revised to R4-2012749**.

**R4-2012749 Summary of ideal and impairment results for NR HST demodulation requirements**

*Type: discussion For: Discussion  
 Source: CATT*

(Replaces R4-2009782)

**Discussion:**

The contribution was discussed during email thread [96e][323] NR\_HST\_Demod\_BS. The discussion was recorded in R4-2012739.

**Decision:** The document was **noted**.

###### 7.15.3.2.1 PUSCH requirements [NR\_HST-Perf]

**R4-2010280 Discussion and simulation results for NR HST PUSCH**

*Type: discussion For: Discussion  
 Source: Samsung*

**Discussion:**

The contribution was discussed during email thread [96e][323] NR\_HST\_Demod\_BS. The discussion was recorded in R4-2012739.

**Decision:** The document was **noted**.

**R4-2010607 Discussion on HST PUSCH remain issues**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

Open issue discussion on HST PUSCH

**Discussion:**

The contribution was discussed during email thread [96e][323] NR\_HST\_Demod\_BS. The discussion was recorded in R4-2012739.

**Decision:** The document was **noted**.

**R4-2010608 simulation results for NR PUSCH HST**

*Type: other For: Information  
 Source: Ericsson*

**Abstract:**

simulation results for additional BW for HST PUSCH

**Discussion:**

The contribution was discussed during email thread [96e][323] NR\_HST\_Demod\_BS. The discussion was recorded in R4-2012739.

**Decision:** The document was **noted**.

**R4-2010612 Additional bandwidth test cases for HST PUSCH**

*Type: draftCR For: Endorsement  
 38.141-2 v16.4.0  
 Source: Ericsson*

**Abstract:**

RAN4 have agreed to add additional BW requirements for HST PUSCH in previous meeting.

**Discussion:**

The contribution was discussed during email thread [96e][323] NR\_HST\_Demod\_BS. The discussion was recorded in R4-2012739.

**Decision:** The document was **revised to R4-2012681**.

**R4-2012681 Additional bandwidth test cases and FRC tables for HST PUSCH**

*Type: draftCR For: Endorsement  
 38.141-2 v16.4.0  
 Source: Ericsson*

(Replaces R4-2010612)

**Abstract:**

RAN4 have agreed to add additional BW requirements for HST PUSCH in previous meeting.

**Discussion:**

The contribution was discussed during email thread [96e][323] NR\_HST\_Demod\_BS. The discussion was recorded in R4-2012739.

**Decision:** The document was **endorsed**.

**R4-2010786 Further discussion on NR HST BS demodulation performance**

*Type: discussion For: Discussion  
 Source: ZTE Wistron Telecom AB*

**Discussion:**

The contribution was discussed during email thread [96e][323] NR\_HST\_Demod\_BS. The discussion was recorded in R4-2012739.

**Decision:** The document was **noted**.

**R4-2010787 Additional simulation results for NR HST BS demodulation performance**

*Type: discussion For: Information  
 Source: ZTE Wistron Telecom AB*

**Discussion:**

The contribution was discussed during email thread [96e][323] NR\_HST\_Demod\_BS. The discussion was recorded in R4-2012739.

**Decision:** The document was **noted**.

**R4-2011007 Discussion on the NR HST PUSCH performance requirements**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][323] NR\_HST\_Demod\_BS. The discussion was recorded in R4-2012739.

**Decision:** The document was **noted**.

**R4-2011397 Simulation results on the NR HST PUSCH performance requirements**

*Type: other For: Information  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][323] NR\_HST\_Demod\_BS. The discussion was recorded in R4-2012739.

**Decision:** The document was **noted**.

**R4-2009695 Views on NR PUSCH for high speed**

*Type: other For: Approval  
 Source: NTT DOCOMO, INC.*

**Discussion:**

The contribution was discussed during email thread [96e][323] NR\_HST\_Demod\_BS. The discussion was recorded in R4-2012739.

**Decision:** The document was **noted**.

**R4-2009696 CR for TS 38.141-1: Updates of NR PUSCH performance requirements for HST**

*Type: CR For: Agreement  
 38.141-1 v16.4.0 CR-0141 Cat: B (Rel-16)  
  
 Source: NTT DOCOMO, INC.*

**Abstract:**

This CR updates PUSCH requirements for 350km/h and 500km/h high speed train (HST) conditions.

**Discussion:**

The contribution was discussed during email thread [96e][323] NR\_HST\_Demod\_BS. The discussion was recorded in R4-2012739.

**Decision:** The document was **revised to R4-2012677**.

**R4-2012677 CR for TS 38.141-1: Updates of NR PUSCH performance requirements for HST**

*Type: CR For: Agreement  
 38.141-1 v16.4.0 CR-0141 rev 1 Cat: B (Rel-16)  
  
 Source: NTT DOCOMO, INC.*

(Replaces R4-2009696)

**Abstract:**

This CR updates PUSCH requirements for 350km/h and 500km/h high speed train (HST) conditions.

**Discussion:**

The contribution was discussed during email thread [96e][323] NR\_HST\_Demod\_BS. The discussion was recorded in R4-2012739.

**Decision:** The document was **agreed**.

**R4-2009697 CR for TS 38.141-1: Updates of NR PUSCH performance Annex including FRC and channel model for HST**

*Type: CR For: Agreement  
 38.141-1 v16.4.0 CR-0142 Cat: B (Rel-16)  
  
 Source: NTT DOCOMO, INC.*

**Abstract:**

This CR is to introduce new FRCs for high speed train (HST) scenarios and new HST scenarios for 500km/h.

**Discussion:**

The contribution was discussed during email thread [96e][323] NR\_HST\_Demod\_BS. The discussion was recorded in R4-2012739.

**Decision:** The document was **revised to R4-2012678**.

**R4-2012678 CR for TS 38.141-1: Updates of NR PUSCH performance Annex including FRC and channel model for HST**

*Type: CR For: Agreement  
 38.141-1 v16.4.0 CR-0142 rev 1 Cat: B (Rel-16)  
  
 Source: NTT DOCOMO, INC.*

(Replaces R4-2009697)

**Abstract:**

This CR is to introduce new FRCs for high speed train (HST) scenarios and new HST scenarios for 500km/h.

**Discussion:**

The contribution was discussed during email thread [96e][323] NR\_HST\_Demod\_BS. The discussion was recorded in R4-2012739.

**Decision:** The document was **agreed**.

**R4-2009787 CR for TS 38.141-2: Add maximum test system uncertainty for NR HST PUSCH with single port and AWGN**

*Type: CR For: Agreement  
 38.141-2 v16.4.0 CR-0205 Cat: F (Rel-16)  
  
 Source: CATT*

**Abstract:**

In RAN4#95-e meeting, it was agreed that the maximum test system uncertainty for NR HST PUSCH with single port and AWGN is 0.3dB, which was not captured in TS 38.141-2.

**Discussion:**

The contribution was discussed during email thread [96e][323] NR\_HST\_Demod\_BS. The discussion was recorded in R4-2012739.

**Decision:** The document was **agreed**.

**R4-2009788 CR for TS 38.141-1: Add maximum test system uncertainty for NR HST PUSCH with single port and AWGN**

*Type: CR For: Agreement  
 38.141-1 v16.4.0 CR-0143 Cat: F (Rel-16)  
  
 Source: CATT*

**Abstract:**

In RAN4#95-e meeting, it was agreed that the maximum test system uncertainty for NR HST PUSCH with single port and AWGN is 0.3dB, which was not captured in TS 38.141-1.

**Discussion:**

The contribution was discussed during email thread [96e][323] NR\_HST\_Demod\_BS. The discussion was recorded in R4-2012739.

**Decision:** The document was **agreed**.

**R4-2009835 Discussion on remaining issues of NR HST PUSCH**

*Type: discussion For: Discussion  
 Source: CATT*

**Discussion:**

The contribution was discussed during email thread [96e][323] NR\_HST\_Demod\_BS. The discussion was recorded in R4-2012739.

**Decision:** The document was **noted**.

**R4-2009851 On NR Rel-16 HST BS demodulation PUSCH requirements and simulation results**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

In this contribution we have provided our views on various open PUSCH HST issues. In particular, MCS configuration of 1T1R requirements for the tunnel scenario, dft-s-OFDM requirement introduction, multi-path fading channel under high Doppler values. Addi

**Discussion:**

The contribution was discussed during email thread [96e][323] NR\_HST\_Demod\_BS. The discussion was recorded in R4-2012739.

**Decision:** The document was **noted**.

**R4-2009852 CR for 38.104: HST PUSCH demodulation requirements**

*Type: CR For: Agreement  
 38.104 v16.4.0 CR-0218 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

- Decision to introduce additional CBWs for PUSCH HST performance requirements.

- Decision to introduce 1T1R requirements for PUSCH HST.

**Discussion:**

The contribution was discussed during email thread [96e][323] NR\_HST\_Demod\_BS. The discussion was recorded in R4-2012739.

**Decision:** The document was **revised to R4-2012679**.

**R4-2012679 CR for 38.104: HST PUSCH demodulation requirements**

*Type: CR For: Agreement  
 38.104 v16.4.0 CR-0218 rev 1 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2009852)

**Abstract:**

- Decision to introduce additional CBWs for PUSCH HST performance requirements.

- Decision to introduce 1T1R requirements for PUSCH HST.

**Discussion:**

The contribution was discussed during email thread [96e][323] NR\_HST\_Demod\_BS. The discussion was recorded in R4-2012739.

**Decision:** The document was **agreed**.

**R4-2009853 CR for 38.104: HST PUSCH demodulation FRC and channel model annexes**

*Type: CR For: Agreement  
 38.104 v16.4.0 CR-0219 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

- Decision to introduce additional CBWs for PUSCH HST performance requirements.

**Discussion:**

The contribution was discussed during email thread [96e][323] NR\_HST\_Demod\_BS. The discussion was recorded in R4-2012739.

**Decision:** The document was **revised to R4-2012680**.

**R4-2012680 CR for 38.104: HST PUSCH demodulation FRC and channel model annexes**

*Type: CR For: Agreement  
 38.104 v16.4.0 CR-0219 rev 1 Cat: B (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2009853)

**Abstract:**

- Decision to introduce additional CBWs for PUSCH HST performance requirements.

**Discussion:**

The contribution was discussed during email thread [96e][323] NR\_HST\_Demod\_BS. The discussion was recorded in R4-2012739.

**Decision:** The document was **agreed**.

###### 7.15.3.2.2 PRACH requirements [NR\_HST-Perf]

**R4-2010611 Discussion on HST PRACH remain issues**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

Open issue discussion on HST PRACH

**Discussion:**

The contribution was discussed during email thread [96e][323] NR\_HST\_Demod\_BS. The discussion was recorded in R4-2012739.

**Decision:** The document was **noted**.

**R4-2011017 CR for TS 38.141-1: Introduction of test tolerance for HST PRACH and update measurement setup of performance requirements for NR HST**

*Type: CR For: Agreement  
 38.141-1 v16.4.0 CR-0148 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

This CR introduces the test tolerance for HST PRACH and update the measurement setup of performance requirements for NR HST

**Discussion:**

The contribution was discussed during email thread [96e][323] NR\_HST\_Demod\_BS. The discussion was recorded in R4-2012739.

**Decision:** The document was **revised to R4-2012684**.

**R4-2012684 CR for TS 38.141-1: Introduction of test tolerance for HST PRACH and update measurement setup of performance requirements for NR HST**

*Type: CR For: Agreement  
 38.141-1 v16.4.0 CR-0148 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2011017)

**Abstract:**

This CR introduces the test tolerance for HST PRACH and update the measurement setup of performance requirements for NR HST

**Discussion:**

The contribution was discussed during email thread [96e][323] NR\_HST\_Demod\_BS. The discussion was recorded in R4-2012739.

**Decision:** The document was **agreed**.

**R4-2011018 CR for TS 38.141-2: Introduction of test tolerance for NR HST PRACH**

*Type: CR For: Agreement  
 38.141-2 v16.4.0 CR-0218 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

This CR introduces the test tolerance for HST PRACH

**Discussion:**

The contribution was discussed during email thread [96e][323] NR\_HST\_Demod\_BS. The discussion was recorded in R4-2012739.

**Decision:** The document was **revised to R4-2012685**.

**R4-2012685 CR for TS 38.141-2: Introduction of test tolerance for NR HST PRACH**

*Type: CR For: Agreement  
 38.141-2 v16.4.0 CR-0218 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2011018)

**Abstract:**

This CR introduces the test tolerance for HST PRACH

**Discussion:**

The contribution was discussed during email thread [96e][323] NR\_HST\_Demod\_BS. The discussion was recorded in R4-2012739.

**Decision:** The document was **agreed**.

**R4-2011019 Discussion on open issues of NR HST PRACH**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][323] NR\_HST\_Demod\_BS. The discussion was recorded in R4-2012739.

**Decision:** The document was **noted**.

**R4-2009698 Views on NR PRACH for high speed**

*Type: other For: Approval  
 Source: NTT DOCOMO, INC.*

**Discussion:**

The contribution was discussed during email thread [96e][323] NR\_HST\_Demod\_BS. The discussion was recorded in R4-2012739.

**Decision:** The document was **noted**.

**R4-2009836 Discussion on remaining issues of NR HST PRACH**

*Type: discussion For: Discussion  
 Source: CATT*

**Discussion:**

The contribution was discussed during email thread [96e][323] NR\_HST\_Demod\_BS. The discussion was recorded in R4-2012739.

**Decision:** The document was **noted**.

**R4-2009837 CR for TS 38.141-1, Introduction of high speed support declaration for NR HST PRACH**

*Type: CR For: Agreement  
 38.141-1 v16.4.0 CR-0144 Cat: B (Rel-16)  
  
 Source: CATT*

**Abstract:**

The high speed support declaration and test applicability for NR HST PRACH should be introduced in TS 38.141-1.

**Discussion:**

The contribution was discussed during email thread [96e][323] NR\_HST\_Demod\_BS. The discussion was recorded in R4-2012739.

**Decision:** The document was **revised to R4-2012682**.

**R4-2012682 CR for TS 38.141-1, Introduction of high speed support declaration for NR HST PRACH**

*Type: CR For: Agreement  
 38.141-1 v16.4.0 CR-0144 rev 1 Cat: B (Rel-16)  
  
 Source: CATT*

(Replaces R4-2009837)

**Abstract:**

The high speed support declaration and test applicability for NR HST PRACH should be introduced in TS 38.141-1.

**Discussion:**

The contribution was discussed during email thread [96e][323] NR\_HST\_Demod\_BS. The discussion was recorded in R4-2012739.

**Decision:** The document was **agreed**.

**R4-2009838 CR for TS 38.141-2, Introduction of high speed support declaration for NR HST**

*Type: CR For: Agreement  
 38.141-2 v16.4.0 CR-0206 Cat: B (Rel-16)  
  
 Source: CATT*

**Abstract:**

The high speed support declaration and test applicability for NR HST PRACH should be introduced in TS 38.141-2

**Discussion:**

The contribution was discussed during email thread [96e][323] NR\_HST\_Demod\_BS. The discussion was recorded in R4-2012739.

**Decision:** The document was **revised to R4-2012683**.

**R4-2012683 CR for TS 38.141-2, Introduction of high speed support declaration for NR HST**

*Type: CR For: Agreement  
 38.141-2 v16.4.0 CR-0206 rev 1 Cat: B (Rel-16)  
  
 Source: CATT*

(Replaces R4-2009838)

**Abstract:**

The high speed support declaration and test applicability for NR HST PRACH should be introduced in TS 38.141-2

**Discussion:**

The contribution was discussed during email thread [96e][323] NR\_HST\_Demod\_BS. The discussion was recorded in R4-2012739.

**Decision:** The document was **agreed**.

**R4-2009854 On NR Rel-16 HST BS demodulation PRACH requirements**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

In this contribution we have provided our views on various open PRACH HST issues. In particular, TDLC300-100, manufacturer declarations, and test applicability for short PRACH.

**Discussion:**

The contribution was discussed during email thread [96e][323] NR\_HST\_Demod\_BS. The discussion was recorded in R4-2012739.

**Decision:** The document was **noted**.

###### 7.15.3.2.3 UL timing adjustment requirements [NR\_HST-Perf]

**R4-2010279 Discussion and simulation results for NR HST UL timing adjustment**

*Type: discussion For: Discussion  
 Source: Samsung*

**Discussion:**

The contribution was discussed during email thread [96e][323] NR\_HST\_Demod\_BS. The discussion was recorded in R4-2012739.

**Decision:** The document was **noted**.

**R4-2010281 CR on UL timing adjustment conducted performance requirement for TS 38.141-1**

*Type: CR For: Agreement  
 38.141-1 v16.4.0 CR-0145 Cat: B (Rel-16)  
  
 Source: Samsung*

**Abstract:**

UL timing adjustment requirement have been introduced for NR HST in Rel-16. The tdoc R4-2005562 for draft CR on UL timing requirement and the tdoc R4-2004909 on FRC and moving propagation condition for UL timing asjustment was endorsed in RAN4#94b-e meeting

**Discussion:**

The contribution was discussed during email thread [96e][323] NR\_HST\_Demod\_BS. The discussion was recorded in R4-2012739.

**Decision:** The document was **revised to R4-2012686**.

**R4-2012686 CR on UL timing adjustment conducted performance requirement for TS 38.141-1**

*Type: CR For: Agreement  
 38.141-1 v16.4.0 CR-0145 rev 1 Cat: B (Rel-16)  
  
 Source: Samsung*

(Replaces R4-2010281)

**Abstract:**

UL timing adjustment requirement have been introduced for NR HST in Rel-16. The tdoc R4-2005562 for draft CR on UL timing requirement and the tdoc R4-2004909 on FRC and moving propagation condition for UL timing asjustment was endorsed in RAN4#94b-e meeting

**Discussion:**

The contribution was discussed during email thread [96e][323] NR\_HST\_Demod\_BS. The discussion was recorded in R4-2012739.

**Decision:** The document was **agreed**.

**R4-2010609 Discussion on HST UL TA remain issues**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

Open issue discussion on HST UL TA

**Discussion:**

The contribution was discussed during email thread [96e][323] NR\_HST\_Demod\_BS. The discussion was recorded in R4-2012739.

**Decision:** The document was **noted**.

**R4-2010610 simulation results for NR PUSCH UL TA HST**

*Type: other For: Information  
 Source: Ericsson*

**Abstract:**

simulation results for additional BW for HST UL TA

**Discussion:**

The contribution was discussed during email thread [96e][323] NR\_HST\_Demod\_BS. The discussion was recorded in R4-2012739.

**Decision:** The document was **noted**.

**R4-2010781 CR for 38.104: Performance requirements for UL timing adjustment**

*Type: CR For: Agreement  
 38.104 v16.4.0 CR-0228 Cat: F (Rel-16)  
  
 Source: ZTE Wistron Telecom AB*

**Abstract:**

FRC case numbers defined for HST ULTA are duplicated with HST PUSCH

**Discussion:**

The contribution was discussed during email thread [96e][323] NR\_HST\_Demod\_BS. The discussion was recorded in R4-2012739.

**Decision:** The document was **agreed**.

**R4-2011008 Discussion on the UL timing adjustment**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][323] NR\_HST\_Demod\_BS. The discussion was recorded in R4-2012739.

**Decision:** The document was **noted**.

**R4-2011398 Simulation results on the UL timing adjustment**

*Type: other For: Information  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][323] NR\_HST\_Demod\_BS. The discussion was recorded in R4-2012739.

**Decision:** The document was **noted**.

**R4-2009699 Views on NR PUSCH for UL timing adjustment**

*Type: other For: Approval  
 Source: NTT DOCOMO, INC.*

**Discussion:**

The contribution was discussed during email thread [96e][323] NR\_HST\_Demod\_BS. The discussion was recorded in R4-2012739.

**Decision:** The document was **noted**.

**R4-2009783 Simulation results for NR PUSCH UL timing adjustment demodulation requirement**

*Type: discussion For: Discussion  
 Source: CATT*

**Discussion:**

The contribution was discussed during email thread [96e][323] NR\_HST\_Demod\_BS. The discussion was recorded in R4-2012739.

**Decision:** The document was **noted**.

**R4-2009784 Discussion on the remaining issues of NR HST PUSCH UL TA**

*Type: discussion For: Discussion  
 Source: CATT*

**Discussion:**

The contribution was discussed during email thread [96e][323] NR\_HST\_Demod\_BS. The discussion was recorded in R4-2012739.

**Decision:** The document was **noted**.

**R4-2009785 CR for TS 38.141-2: Introduction of NR PUSCH UL timing adjustment performance requirement for scenario Z**

*Type: CR For: Agreement  
 38.141-2 v16.4.0 CR-0203 Cat: B (Rel-16)  
  
 Source: CATT*

**Abstract:**

Introuding UL timing adjustment for scenario Z according to the agreements in RAN4 #95-e.

**Discussion:**

The contribution was discussed during email thread [96e][323] NR\_HST\_Demod\_BS. The discussion was recorded in R4-2012739.

**Decision:** The document was **agreed**.

**R4-2009786 CR for 38.141-2: appendix for NR PUSCH UL timing adjustment for scenario Z**

*Type: CR For: Agreement  
 38.141-2 v16.4.0 CR-0204 Cat: B (Rel-16)  
  
 Source: CATT*

**Decision:** The document was **withdrawn**.

**R4-2009855 On NR Rel-16 HST BS demodulation UL timing adjustment requirements and simulation results**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

In this contribution we have provided our views on various open UL TA HST issues. In particular, the addition of scenario X and corresponding additional manufacturer declarations, as well as, the specification organization. Additionally, the simulation re

**Discussion:**

The contribution was discussed during email thread [96e][323] NR\_HST\_Demod\_BS. The discussion was recorded in R4-2012739.

**Decision:** The document was **noted**.

### 7.16 NR performance requirement enhancement [NR\_perf\_enh-Perf]

#### 7.16.1 UE demodulation and CSI requirements (38.101-4) [NR\_perf\_enh-Perf]

**R4-2012557 Email discussion summary for [96e][324] NR\_perf\_enh\_Demod**

*Type: other For: discussion  
 Source: Moderator (China Telecomm)*

**Discussion:**

The contribution summarized email discussion thread [96e][324] NR\_perf\_enh\_Demod. The topic areas for discussion were NR Rel-16 performance requirements enhancement. The email thread was moderated by Shan Yang (China Telecomunication Corp.). All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2012740**.

**R4-2012740 Email discussion summary for [96e][324] NR\_perf\_enh\_Demod**

*Type: other For: discussion  
 Source: Moderator (China Telecomm)*

(Replaces R4-2012557)

**Discussion:**

The contribution summarized email discussion thread [96e][324] NR\_perf\_enh\_Demod. The topic areas for discussion were NR Rel-16 performance requirements enhancement. The email thread was moderated by Shan Yang (China Telecomunication Corp.). All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **noted**.

* **CA normal PDSCH issue 2-1:** Pcell configuration for TDD 15 kHz + TDD 30 kHz CA test
  + Option 1: 15 kHz SCS cell as Pcell (CTC, CMCC, Intel, DCM)
  + Option 2: 30 kHz SCS cell as Pcell (HW, QC, Intel)

Agreements: Option 1

Huawei: op2 more typical case, no performance difference; we already comprise a lot.

QC: Similar view Huawei

Intel: From requirements, we still need to cover both cases with applicable rules. Slightly prefer option 2.

CMCC: Pcell can be adjusted based on deployment scenarios. 15kHz Pcell can be used in LTE refarming band with better coverage. We prefer to cover such scenario.

China Telecomm: we already have applicable rules. In our network, current no such deployment.

Huawei/QC: We have concern on such demand from operators; we hope companies also consider comprise somewhere.

* **Power imbalance issue 4-2-4:** SCS for TDD EN-DC power imbalance
  + Option 1: 30kHz (CMCC, DCM, E///, HW, QC)
  + Option 2: 15kHz and 30kHz (Intel, CMCC, DCM)

Agreement: option 1

Intel: if with option 1, we worry about the test applicable rule and coverage issue.

* **Power imbalance issue 4-2-6:** Test applicability and special inter-band EN-DC
  + Option 1 (HW, DCM, SoftBank, CMCC, E///)
    - UE supports only intra-band contiguous EN-DC, i,e., if UE does not indicate “intraBandENDC-Support”,
      * power imbalance requirement for intra-band contiguous EN-DC is applied
    - UE supports only intra-band non-contiguous EN-DC, i.e., if UE indicates “non-contiguous” in “intraBandENDC-Support” or UE does not indicate “interBandContiguousMRDC”,
      * power imbalance requirement for intra-band non-contiguous EN-DC is applied
    - UE supports both intra-band contiguous and non-contiguous EN-DC, i.e., if UE indicates “both” in “intraBandENDC-Support” or UE indicates “interBandContiguousMRDC”,
      * power imbalance requirement for FR1 intra-band contiguous EN-DC
  + Option 2 (Intel, CMCC, HW)
    - UE supports only intra-band contiguous EN-DC, i,e., if UE does not indicate “intraBandENDC-Support”,
      * power imbalance requirement for intra-band contiguous EN-DC is applied
    - UE supports only intra-band non-contiguous EN-DC, i.e., if UE indicates “non-contiguous” in “intraBandENDC-Support”
      * power imbalance requirement for intra-band non-contiguous EN-DC is applied
    - UE supports both intra-band contiguous and non-contiguous EN-DC, i.e., if UE indicates “both” in “intraBandENDC-Support”
      * power imbalance requirement for FR1 intra-band contiguous EN-DC
  + Discussion point: Is it common understanding RAN4 agreed that some inter-band EN-DC combinations like B42-n77 are treated as "intra-band EN-DC"? If yes, is it feasible to go with option 1 of test applicability?

Intel: we would like to check whether any impact on RF aspect with option 1.

NTT DoCoMO: such Inter-band EN-DC combos actually as intra-band EN-DC. RAN4 should apply same applicable rules.

SoftBank: In RF specification 38.101-1 already clear indicated such band combos applied intra-band EN-DC requirements.

Intel: In RF spec , which assumption applicable for such requirements. There is no discussion for this case.

E///: which part you refer to ? Section 5.5 in TS 38.101-3 or RX image requirements section?

Intel: I’m not mentioned current spec, what’s the assumption we can use for the requirements i.e. whether previous assumption agreed in RF session for intra-band EN-DC power imbalance requirements can be re-used for this case?

Agreement: Companies are encouraged to further check this scenario in RF agenda in next meeting, with the confirmation in RF part, we can introduce requirements for such case (option 1).

**R4-2012687 Way forward on release independent aspect for UE demodulation and CSI reporting requirements**

*Type: other For: discussion  
 Source: Huawei*

**Discussion:**

The contribution was discussed during email thread [96e][324] NR\_perf\_enh\_Demod. The discussion was recorded in R4-2012740.

**Decision:** The document was **approved**.

**R4-2012688 Way forward on PDSCH CA normal demodulation requirements**

*Type: other For: discussion  
 Source: Intel*

**Discussion:**

The contribution was discussed during email thread [96e][324] NR\_perf\_enh\_Demod. The discussion was recorded in R4-2012740.

**Decision:** The document was **approved**.

**R4-2012689 Way forward on PMI reporting requirements for Tx ports larger than 8 and up to 32**

*Type: other For: discussion  
 Source: Ericsson, Samsung*

**Discussion:**

The contribution was discussed during email thread [96e][324] NR\_perf\_enh\_Demod. The discussion was recorded in R4-2012740.

**Decision:** The document was **revised to R4-2012762**.

**R4-2012762 Way forward on PMI reporting requirements for Tx ports larger than 8 and up to 32**

*Type: other For: discussion  
 Source: Ericsson, Samsung*

(Replaces R4-2012689)

**Discussion:**

The contribution was discussed during email thread [96e][324] NR\_perf\_enh\_Demod. The discussion was recorded in R4-2012740.

**Decision:** The document was **approved**.

**R4-2012690 Simulation assumptions for NR PMI reporting requirements for more than 8 Tx ports**

*Type: other For: discussion  
 Source: Ericsson*

**Discussion:**

The contribution was discussed during email thread [96e][324] NR\_perf\_enh\_Demod. The discussion was recorded in R4-2012740.

**Decision:** The document was **revised to R4-2012765**.

**R4-2012765 Simulation assumptions for NR PMI reporting requirements for more than 8 Tx ports**

*Type: other For: discussion  
 Source: Ericsson*

(Replaces R4-2012690)

**Discussion:**

The contribution was discussed during email thread [96e][324] NR\_perf\_enh\_Demod. The discussion was recorded in R4-2012740.

**Decision:** The document was **approved**.

**R4-2012691 Way forward on UE power imbalance requirements for FR1 CA and EN-DC**

*Type: other For: discussion  
 Source: NTT DoCoMo*

**Discussion:**

The contribution was discussed during email thread [96e][324] NR\_perf\_enh\_Demod. The discussion was recorded in R4-2012740.

**Decision:** The document was **approved**.

**R4-2012692 Way forward on CA CQI reporting requirements**

*Type: other For: discussion  
 Source: China Telecomm*

**Discussion:**

The contribution was discussed during email thread [96e][324] NR\_perf\_enh\_Demod. The discussion was recorded in R4-2012740.

**Decision:** The document was **approved**.

**R4-2010482 Release independent requirements for Rel-16 performance requirement enhancement**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the release independence and applicability of UE performance requirements defined in Rel-16 Performance enhancement WI.

**Discussion:**

The contribution was discussed during email thread [96e][324] NR\_perf\_enh\_Demod. The discussion was recorded in R4-2012740.

**Decision:** The document was **noted**.

##### 7.16.1.1 NR CA PDSCH requirements [NR\_perf\_enh-Perf]

**R4-2010103 draftCR: Introduction of NR PDSCH FR1 CA 2Rx performance requirements**

*Type: CR For: Agreement  
 38.101-4 v16.1.0 CR-0063 Cat: B (Rel-16)  
  
 Source: CMCC*

**Decision:** The document was **withdrawn**.

**R4-2010106 Test applicability rule for NR CA PDSCH normal demodulation**

*Type: discussion For: Discussion  
 Source: CMCC*

**Discussion:**

The contribution was discussed during email thread [96e][324] NR\_perf\_enh\_Demod. The discussion was recorded in R4-2012740.

**Decision:** The document was **noted**.

**R4-2010175 draftCR: Introduction of NR PDSCH FR1 CA 2Rx performance requirements**

*Type: CR For: Agreement  
 38.101-4 v16.1.0 CR-0064 Cat: B (Rel-16)  
  
 Source: CMCC*

**Decision:** The document was **withdrawn**.

**R4-2010182 draftCR: Introduction of NR PDSCH FR1 CA 2Rx performance requirements**

*Type: draftCR For: Endorsement  
 38.101-4 v16.1.0  
 Source: CMCC*

**Abstract:**

Revised Rel-16 NR performance requirements enhancement WI RP-200472 is approved in RAN#87-e meeting. NR CA PDSCH normal demodulation requirements for NR CA are agreed to be defined for the following CA configs:

FDD CA with 15kHz SCS

TDD CA

30kHz SCS + 30kHz SCS

15kHz SCS + 30kHz SCS

TDD FDD CA

FDD 15kHz SCS + TDD 15kHz SCS

FDD 15kHz SCS + TDD 30kHz SCS

**Discussion:**

The contribution was discussed during email thread [96e][324] NR\_perf\_enh\_Demod. The discussion was recorded in R4-2012740.

**Decision:** The document was **revised to R4-2012693**.

**R4-2012693 draftCR: Introduction of NR PDSCH FR1 CA 2Rx performance requirements**

*Type: draftCR For: Endorsement  
 38.101-4 v16.1.0  
 Source: CMCC*

(Replaces R4-2010182)

**Discussion:**

The contribution was discussed during email thread [96e][324] NR\_perf\_enh\_Demod. The discussion was recorded in R4-2012740.

**Decision:** The document was **endorsed**.

**R4-2011010 Discussion on PDSCH CA normal demodulation requirements**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][324] NR\_perf\_enh\_Demod. The discussion was recorded in R4-2012740.

**Decision:** The document was **noted**.

**R4-2011011 draftCR: Introduction of performance requirements for NR FR1 PDSCH CA with 4Rx**

*Type: draftCR For: Endorsement  
 38.101-4 v16.1.0  
 Source: Huawei, HiSilicon*

**Abstract:**

Revised Rel-16 NR performance requirements enhancement WI RP-200472 is approved in RAN#87-e meeting. NR PDSCH normal demodulation requirements for NR CA were agreed to be defined for the following CA configs:

FDD CA with 15kHz SCS

TDD CA

30kHz SCS + 30kHz SCS

15kHz SCS + 30kHz SCS

TDD FDD CA

FDD 15kHz SCS + TDD 15kHz SCS

FDD 15kHz SCS + TDD 30kHz SCS

**Discussion:**

The contribution was discussed during email thread [96e][324] NR\_perf\_enh\_Demod. The discussion was recorded in R4-2012740.

**Decision:** The document was **revised to R4-2012694**.

**R4-2012694 draftCR: Introduction of performance requirements for NR FR1 PDSCH CA with 4Rx**

*Type: draftCR For: Endorsement  
 38.101-4 v16.1.0  
 Source: Huawei, HiSilicon*

(Replaces R4-2011011)

**Discussion:**

The contribution was discussed during email thread [96e][324] NR\_perf\_enh\_Demod. The discussion was recorded in R4-2012740.

**Decision:** The document was **endorsed**.

**R4-2011043 Views on CA PDSCH requirements**

*Type: discussion For: Discussion  
 Source: NTT DOCOMO, INC.*

**Discussion:**

The contribution was discussed during email thread [96e][324] NR\_perf\_enh\_Demod. The discussion was recorded in R4-2012740.

**Decision:** The document was **noted**.

**R4-2011413 Draft CR on FR2 PDSCH CA Requirements**

*Type: draftCR For: Endorsement  
 38.101-4 v16.1.0  
 Source: Qualcomm Incorporated*

**Abstract:**

FR2 PDSCH CA requirements are not defined.

**Discussion:**

The contribution was discussed during email thread [96e][324] NR\_perf\_enh\_Demod. The discussion was recorded in R4-2012740.

**Decision:** The document was **revised to R4-2012695**.

**R4-2012695 Draft CR on FR2 PDSCH CA Requirements**

*Type: draftCR For: Endorsement  
 38.101-4 v16.1.0  
 Source: Qualcomm Incorporated*

(Replaces R4-2011413)

**Abstract:**

FR2 PDSCH CA requirements are not defined.

**Discussion:**

The contribution was discussed during email thread [96e][324] NR\_perf\_enh\_Demod. The discussion was recorded in R4-2012740.

**Decision:** The document was **endorsed**.

**R4-2011436 Views on NR CA PDSCH Demodulation Performance Tests**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

The contribution was discussed during email thread [96e][324] NR\_perf\_enh\_Demod. The discussion was recorded in R4-2012740.

**Decision:** The document was **noted**.

**R4-2009579 On NR CA PDSCH normal demodulation requirements**

*Type: discussion For: Discussion  
 Source: China Telecom*

**Discussion:**

The contribution was discussed during email thread [96e][324] NR\_perf\_enh\_Demod. The discussion was recorded in R4-2012740.

**Decision:** The document was **noted**.

**R4-2009730 Discussion on NR CA UE demodulation requirements**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][324] NR\_perf\_enh\_Demod. The discussion was recorded in R4-2012740.

**Decision:** The document was **noted**.

**R4-2009731 Draft CR on FRC for Normal NR CA demodulation requirements**

*Type: draftCR For: Endorsement  
 38.101-4 v16.1.0  
 Source: Intel Corporation*

**Abstract:**

Definition of FRCs for Normal CA requirements

**Discussion:**

The contribution was discussed during email thread [96e][324] NR\_perf\_enh\_Demod. The discussion was recorded in R4-2012740.

**Decision:** The document was **revised to R4-2012696**.

**R4-2012696 Draft CR on FRC for Normal NR CA demodulation requirements**

*Type: draftCR For: Endorsement  
 38.101-4 v16.1.0  
 Source: Intel Corporation*

(Replaces R4-2009731)

**Abstract:**

Definition of FRCs for Normal CA requirements

**Discussion:**

The contribution was discussed during email thread [96e][324] NR\_perf\_enh\_Demod. The discussion was recorded in R4-2012740.

**Decision:** The document was **endorsed**.

##### 7.16.1.2 PMI reporting requirements with larger number of Tx ports [NR\_perf\_enh-Perf]

**R4-2010104 Simulation results of NR UE PMI with 16, and 32Tx antennas**

*Type: discussion For: Discussion  
 Source: CMCC*

**Discussion:**

The contribution was discussed during email thread [96e][324] NR\_perf\_enh\_Demod. The discussion was recorded in R4-2012740.

**Decision:** The document was **noted**.

**R4-2010142 Views and simulation results for PMI test cases**

*Type: discussion For: Approval  
 Source: Samsung*

**Discussion:**

The contribution was discussed during email thread [96e][324] NR\_perf\_enh\_Demod. The discussion was recorded in R4-2012740.

**Decision:** The document was **revised to R4-2012565**.

**R4-2012565 Views and simulation results for PMI test cases**

*Type: discussion For: Approval  
 Source: Samsung*

(Replaces R4-2010142)

**Discussion:**

The contribution was discussed during email thread [96e][324] NR\_perf\_enh\_Demod. The discussion was recorded in R4-2012740.

**Decision:** The document was **noted**.

**R4-2010192 On PMI reporting requirements with larger number of TX ports**

*Type: discussion For: Discussion  
 Source: Apple*

**Decision:** The document was **withdrawn**.

**R4-2011014 CR for TS 38.101-4: Applicability for NR PMI requirements with Tx ports larger than 8 and up to 32**

*Type: CR For: Agreement  
 38.101-4 v16.1.0 CR-0074 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

This CR introduces the applicability rule for Type I single panel codebook of NR PMI requirements with Tx ports larger than 8 and up to 32

**Discussion:**

The contribution was discussed during email thread [96e][324] NR\_perf\_enh\_Demod. The discussion was recorded in R4-2012740.

**Decision:** The document was **agreed**.

**R4-2011015 Simulaiton results for Type I codebook PMI reporting test**

*Type: other For: Information  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][324] NR\_perf\_enh\_Demod. The discussion was recorded in R4-2012740.

**Decision:** The document was **noted**.

**R4-2011016 Discussion on Type II codebook based PMI reporting test**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][324] NR\_perf\_enh\_Demod. The discussion was recorded in R4-2012740.

**Decision:** The document was **noted**.

**R4-2011365 Evaluations of Rel-15 Type II PMI testing**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

In this paper we evaluate the novel MU-MIMO test setup for Rel-15 Type II PMI reporting requirements

**Discussion:**

The contribution was discussed during email thread [96e][324] NR\_perf\_enh\_Demod. The discussion was recorded in R4-2012740.

**Decision:** The document was **noted**.

**R4-2011367 Addition of Rel-16 SP Type I PMI tests, FRCs, and spatial correlation matrices**

*Type: CR For: Agreement  
 38.101-4 v16.1.0 CR-0075 Cat: B (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Introduction of Rel-16 PMI Single panel Type I test cases (Endorsed in #95-e R4-2008845)

Introduction of Rel-16 PMI Single panel Type I FRCs (Endorsed in #95-e R4-2008844)

Needing definitions of spatial correlation matrices for 2D antenna arrays (Endorsed in #95-e R4-2008843)

**Discussion:**

The contribution was discussed during email thread [96e][324] NR\_perf\_enh\_Demod. The discussion was recorded in R4-2012740.

**Decision:** The document was **agreed**.

**R4-2011437 Parameters and simulation results on PMI reporting requirements with larger number of Tx ports**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

The contribution was discussed during email thread [96e][324] NR\_perf\_enh\_Demod. The discussion was recorded in R4-2012740.

**Decision:** The document was **noted**.

**R4-2009580 On PMI reporting requirements for larger Tx ports**

*Type: discussion For: Discussion  
 Source: China Telecom*

**Discussion:**

The contribution was discussed during email thread [96e][324] NR\_perf\_enh\_Demod. The discussion was recorded in R4-2012740.

**Decision:** The document was **noted**.

**R4-2009581 Simulation results for 16 Tx subband PMI reporting requirements**

*Type: discussion For: Information  
 Source: China Telecom*

**Discussion:**

The contribution was discussed during email thread [96e][324] NR\_perf\_enh\_Demod. The discussion was recorded in R4-2012740.

**Decision:** The document was **noted**.

**R4-2009610 On PMI reporting requirements with larger number of TX ports**

*Type: discussion For: Discussion  
 Source: Apple*

**Discussion:**

The contribution was discussed during email thread [96e][324] NR\_perf\_enh\_Demod. The discussion was recorded in R4-2012740.

**Decision:** The document was **noted**.

**R4-2009732 Simulation results for PMI Type I**

*Type: other For: Information  
 Source: Intel Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][324] NR\_perf\_enh\_Demod. The discussion was recorded in R4-2012740.

**Decision:** The document was **noted**.

**R4-2012562 Summary of simulation results of NR UE CSI PMI with 16, and 32Tx antennas**

*Type: other For: discussion  
 Source: Ericsson*

**Discussion:**

The contribution was discussed during email thread [96e][324] NR\_perf\_enh\_Demod. The discussion was recorded in R4-2012740.

**Decision:** The document was **noted**.

##### 7.16.1.3 LTE-NR co-existence for TDD [NR\_perf\_enh-Perf]

##### 7.16.1.4 FR1 CA and EN-DC power imbalance requirements [NR\_perf\_enh-Perf]

**R4-2010102 Discussion on FR1 CA and EN-DC power imbalance requirements**

*Type: discussion For: Discussion  
 Source: CMCC*

**Discussion:**

The contribution was discussed during email thread [96e][324] NR\_perf\_enh\_Demod. The discussion was recorded in R4-2012740.

**Decision:** The document was **noted**.

**R4-2011025 Discusson on UE power imbalance performance requirements for FR1 CA and EN-DC**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][324] NR\_perf\_enh\_Demod. The discussion was recorded in R4-2012740.

**Decision:** The document was **noted**.

**R4-2011040 draft CR: FR1 CA and EN-DC power imbalance requirements**

*Type: draftCR For: Endorsement  
 38.101-4 v16.1.0  
 Source: NTT DOCOMO, INC.*

**Abstract:**

Revised Rel-16 NR performance requirements enhancement WI RP-200472 is approved in RAN#87-e meeting. FR1 CA and EN-DC power imbalance requirements are agreed to be defined.

**Discussion:**

The contribution was discussed during email thread [96e][324] NR\_perf\_enh\_Demod. The discussion was recorded in R4-2012740.

**Decision:** The document was **revised to R4-2012697**.

**R4-2012697 draft CR: FR1 EN-DC power imbalance requirements**

*Type: draftCR For: Endorsement  
 38.101-4 v16.1.0  
 Source: NTT DOCOMO, INC.*

(Replaces R4-2011040)

**Abstract:**

Revised Rel-16 NR performance requirements enhancement WI RP-200472 is approved in RAN#87-e meeting. FR1 CA and EN-DC power imbalance requirements are agreed to be defined.

**Discussion:**

The contribution was discussed during email thread [96e][324] NR\_perf\_enh\_Demod. The discussion was recorded in R4-2012740.

**Decision:** The document was **endorsed**.

**R4-2011045 Views on FR1 power imbalance requirements**

*Type: discussion For: Discussion  
 Source: NTT DOCOMO, INC.*

**Discussion:**

The contribution was discussed during email thread [96e][324] NR\_perf\_enh\_Demod. The discussion was recorded in R4-2012740.

**Decision:** The document was **noted**.

**R4-2011438 Views on Power Imbalance Tests**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

The contribution was discussed during email thread [96e][324] NR\_perf\_enh\_Demod. The discussion was recorded in R4-2012740.

**Decision:** The document was **noted**.

**R4-2009582 On power imbalance requirements for FR1 CA and EN-DC**

*Type: discussion For: Discussion  
 Source: China Telecom*

**Discussion:**

The contribution was discussed during email thread [96e][324] NR\_perf\_enh\_Demod. The discussion was recorded in R4-2012740.

**Decision:** The document was **noted**.

**R4-2009733 Discussion on FR1 CA and EN-DC power imbalance requirements**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][324] NR\_perf\_enh\_Demod. The discussion was recorded in R4-2012740.

**Decision:** The document was **noted**.

##### 7.16.1.5 NR CA CQI reporting requirements [NR\_perf\_enh-Perf]

**R4-2010483 Setup for CA CQI reporting requirements**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the test setup and test points for CA CQI reporting requirements.

**Discussion:**

The contribution was discussed during email thread [96e][324] NR\_perf\_enh\_Demod. The discussion was recorded in R4-2012740.

**Decision:** The document was **noted**.

**R4-2011026 Discusson on CA CQI reporting requirements**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][324] NR\_perf\_enh\_Demod. The discussion was recorded in R4-2012740.

**Decision:** The document was **noted**.

**R4-2011395 Views on CA CQI Reporting Tests**

*Type: discussion For: (not specified)  
 Source: Qualcomm Incorporated*

**Discussion:**

The contribution was discussed during email thread [96e][324] NR\_perf\_enh\_Demod. The discussion was recorded in R4-2012740.

**Decision:** The document was **noted**.

**R4-2009583 On NR CA CQI reporting requirements**

*Type: discussion For: Discussion  
 Source: China Telecom*

**Discussion:**

The contribution was discussed during email thread [96e][324] NR\_perf\_enh\_Demod. The discussion was recorded in R4-2012740.

**Decision:** The document was **noted**.

#### 7.16.2 BS demodulation requirements (38.104) [NR\_perf\_enh-Perf]

##### 7.16.2.1 30% TP test point [NR\_perf\_enh-Perf]

##### 7.16.2.2 Additional FR2 requirements [NR\_perf\_enh-Perf]

### 7.17 Over the air (OTA) base station (BS) testing TR [OTA\_BS\_testing-Perf]

#### 7.17.1 General [OTA\_BS\_testing-Perf]

**R4-2012558 Email discussion summary for [96e][311] OTA\_BS\_testing**

*Type: other For: discussion  
 Source: Moderator (Huawei)*

**Discussion:**

The contribution summarized email discussion thread [96e][311] OTA\_BS\_testing. The topic areas for discussion were Over the air (OTA) base station (BS) testing TR. The email thread was moderated by Michal Szydelko (Huawei). All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2012741**.

**R4-2012741 Email discussion summary for [96e][311] OTA\_BS\_testing**

*Type: other For: discussion  
 Source: Moderator (Huawei)*

(Replaces R4-2012558)

**Discussion:**

The contribution summarized email discussion thread [96e][311] OTA\_BS\_testing. The topic areas for discussion were Over the air (OTA) base station (BS) testing TR. The email thread was moderated by Michal Szydelko (Huawei). All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2012764**.

**R4-2012764 Email discussion summary for [96e][311] OTA\_BS\_testing**

*Type: other For: discussion  
 Source: Moderator (Huawei)*

(Replaces R4-2012741)

**Discussion:**

The contribution summarized email discussion thread [96e][311] OTA\_BS\_testing. The topic areas for discussion were Over the air (OTA) base station (BS) testing TR. The email thread was moderated by Michal Szydelko (Huawei). All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **noted**.

**R4-2011257 CR to TR 37.941: editorial cleanup, Rel-15**

*Type: CR For: Agreement  
 37.941 v15.0.0 CR-0007 Cat: F (Rel-15)  
  
 Source: Huawei*

**Abstract:**

According to the WID in RP-200276, the OTA BS testing WI is supposed to be completed during this meeting.

In this CR we provide cleanup corrections of the whole TR. It is expected that more corrections will be introduced during this meeting in the revised versionb of this contribution.

**Discussion:**

The contribution was discussed during email thread [96e][311] OTA\_BS\_testing. The discussion was recorded in R4-2012764.

**Decision:** The document was **revised to R4-2012698**.

**R4-2012698 CR to TR 37.941: editorial cleanup, Rel-15**

*Type: CR For: Agreement  
 37.941 v15.0.0 CR-0007 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei*

(Replaces R4-2011257)

**Abstract:**

According to the WID in RP-200276, the OTA BS testing WI is supposed to be completed during this meeting.

In this CR we provide cleanup corrections of the whole TR. It is expected that more corrections will be introduced during this meeting in the revised versionb of this contribution.

**Discussion:**

The contribution was discussed during email thread [96e][311] OTA\_BS\_testing. The discussion was recorded in R4-2012764.

**Decision:** The document was **agreed**.

**R4-2011258 CR to TR 37.941: editorial cleanup, Rel-16**

*Type: CR For: Agreement  
 37.941 v16.0.1 CR-0008 Cat: A (Rel-16)  
  
 Source: Huawei*

**Abstract:**

According to the WID in RP-200276, the OTA BS testing WI is supposed to be completed during this meeting.

In this CR we provide cleanup corrections of the whole TR. It is expected that more corrections will be introduced during this meeting in the revised versionb of this contribution.

**Discussion:**

The contribution was discussed during email thread [96e][311] OTA\_BS\_testing. The discussion was recorded in R4-2012764.

**Decision:** The document was **agreed**.

#### 7.17.2 OTA calibration and test method procedures [OTA\_BS\_testing-Perf]

#### 7.17.3 OTA BS measurements classification [OTA\_BS\_testing-Perf]

**R4-2009970 CR to TR 37.941: Clause 6 Measurement Types**

*Type: CR For: Agreement  
 37.941 v15.0.0 CR-0001 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

Definitions of EIRP/TRP are not inclusive of all test methods

**Discussion:**

The contribution was discussed during email thread [96e][311] OTA\_BS\_testing. The discussion was recorded in R4-2012764.

**Decision:** The document was **revised to R4-2012699**.

**R4-2012699 CR to TR 37.941: Clause 6 Measurement Types**

*Type: CR For: Agreement  
 37.941 v15.0.0 CR-0001 rev 1 Cat: F (Rel-15)  
  
 Source: Ericsson*

(Replaces R4-2009970)

**Abstract:**

Definitions of EIRP/TRP are not inclusive of all test methods

**Discussion:**

The contribution was discussed during email thread [96e][311] OTA\_BS\_testing. The discussion was recorded in R4-2012764.

**Decision:** The document was **agreed**.

**R4-2009972 CR to TR 37.941: Clause 6 Measurement Types**

*Type: CR For: Agreement  
 37.941 v16.0.1 CR-0003 Cat: A (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Definitions of EIRP/TRP are not inclusive of all test methods

**Discussion:**

The contribution was discussed during email thread [96e][311] OTA\_BS\_testing. The discussion was recorded in R4-2012764.

**Decision:** The document was **agreed**.

#### 7.17.4 MU / TT values: derivation and tables [OTA\_BS\_testing-Perf]

**R4-2011203 Plane Wave Synthesizer**

*Type: discussion For: Discussion  
 37.941 v..  
 Source: ROHDE & SCHWARZ*

**Discussion:**

The contribution was discussed during email thread [96e][311] OTA\_BS\_testing. The discussion was recorded in R4-2012764.

**Decision:** The document was **noted**.

**R4-2011215 CR to TR 37.941: Completion of MU terms for PWS.**

*Type: CR For: Agreement  
 37.941 v15.0.0 CR-0005 Cat: F (Rel-15)  
  
 Source: ROHDE & SCHWARZ*

**Abstract:**

There are still MU values and MU descriptions between brackets for PWS that requires completion.

**Discussion:**

The contribution was discussed during email thread [96e][311] OTA\_BS\_testing. The discussion was recorded in R4-2012764.

**Decision:** The document was **revised to R4-2012700**.

**R4-2012700 CR to TR 37.941: Completion of MU terms for PWS.**

*Type: CR For: Agreement  
 37.941 v15.0.0 CR-0005 rev 1 Cat: F (Rel-15)  
  
 Source: ROHDE & SCHWARZ*

(Replaces R4-2011215)

**Abstract:**

There are still MU values and MU descriptions between brackets for PWS that requires completion.

**Discussion:**

The contribution was discussed during email thread [96e][311] OTA\_BS\_testing. The discussion was recorded in R4-2012764.

**Decision:** The document was **agreed**.

**R4-2011231 Mirror CR to TR 37.941: Completion of MU terms for PWS.**

*Type: CR For: Agreement  
 37.941 v16.0.1 CR-0006 Cat: A (Rel-16)  
  
 Source: ROHDE & SCHWARZ*

**Abstract:**

There are still MU values and MU descriptions between brackets for PWS that requires completion.

**Discussion:**

The contribution was discussed during email thread [96e][311] OTA\_BS\_testing. The discussion was recorded in R4-2012764.

**Decision:** The document was **revised to R4-2012701**.

**R4-2012701 Mirror CR to TR 37.941: Completion of MU terms for PWS.**

*Type: CR For: Agreement  
 37.941 v16.0.1 CR-0006 rev 1 Cat: A (Rel-16)  
  
 Source: ROHDE & SCHWARZ*

(Replaces R4-2011231)

**Abstract:**

There are still MU values and MU descriptions between brackets for PWS that requires completion.

**Discussion:**

The contribution was discussed during email thread [96e][311] OTA\_BS\_testing. The discussion was recorded in R4-2012764.

**Decision:** The document was **agreed**.

#### 7.17.5 Annexes [OTA\_BS\_testing-Perf]

**R4-2011259 CR to TR 37.941: new Annex for Excel spreadsheets with MU derivation, Rel-15**

*Type: CR For: Agreement  
 37.941 v15.0.0 CR-0009 Cat: B (Rel-15)  
  
 Source: Huawei*

**Abstract:**

During the OTA BS testing WI, the MU values were verified based on the series of Excel spreadsheets, which were created specifically for the purpose of MU derivation verification and workflow aignment among the test procedures.

Excel spreadsheets were generated for the following requirement sets:

FR1 transmitter requirements

FR1 receiver requirements

FR2 transmitter requirements

FR2 receiver requirements

Co-location requirements

This CR introduces new annex to the TR 37.941 in order to capture Excel spreadsheets used for the MU values derivation for OTA BS requirements.

**Discussion:**

The contribution was discussed during email thread [96e][311] OTA\_BS\_testing. The discussion was recorded in R4-2012764.

**Decision:** The document was **revised to R4-2012702**.

**R4-2012702 CR to TR 37.941: new Annex for Excel spreadsheets with MU derivation, Rel-15**

*Type: CR For: Agreement  
 37.941 v15.0.0 CR-0009 rev 1 Cat: B (Rel-15)  
  
 Source: Huawei*

(Replaces R4-2011259)

**Discussion:**

The contribution was discussed during email thread [96e][311] OTA\_BS\_testing. The discussion was recorded in R4-2012764.

**Decision:** The document was **revised to R4-2012763**.

**R4-2012763 CR to TR 37.941: new Annex for Excel spreadsheets with MU derivation, Rel-15**

*Type: CR For: Agreement  
 37.941 v15.0.0 CR-0009 rev 2 Cat: B (Rel-15)  
  
 Source: Huawei*

(Replaces R4-2012702)

**Discussion:**

The contribution was discussed during email thread [96e][311] OTA\_BS\_testing. The discussion was recorded in R4-2012764.

**Decision:** The document was **agreed**.

**R4-2011260 CR to TR 37.941: new Annex for Excel spreadsheets with MU derivation, Rel-16**

*Type: CR For: Agreement  
 37.941 v16.0.1 CR-0010 Cat: A (Rel-16)  
  
 Source: Huawei*

**Abstract:**

During the OTA BS testing WI, the MU values were verified based on the series of Excel spreadsheets, which were created specifically for the purpose of MU derivation verification and workflow aignment among the test procedures.

Excel spreadsheets were generated for the following requirement sets:

FR1 transmitter requirements

FR1 receiver requirements

FR2 transmitter requirements

FR2 receiver requirements

FR1 Co-location requirements

This CR introduces new annex to the TR 37.941 in order to capture Excel spreadsheets summary, and to attach the referred Excel spreadhseets to the TR.

**Discussion:**

The contribution was discussed during email thread [96e][311] OTA\_BS\_testing. The discussion was recorded in R4-2012764.

**Decision:** The document was **agreed**.

#### 7.17.6 Others [OTA\_BS\_testing-Perf]

**R4-2011255 CR to TS 37.145-2: internal TR references corrections (wrt. TR 37.941 for OTA BS testing), Rel-15**

*Type: CR For: Agreement  
 37.145-2 v15.7.0 CR-0237 Cat: F (Rel-15)  
  
 Source: Huawei*

**Abstract:**

In relation to the OTA BS testing WI and the new TR 37.941, multiple TR/TS were reviewed with the goal to capture the OTA BS testing content in a single external TR 37.941, as well as to remove any outstanding references to internal TRs. This CR provides correction to the internal TR references in TS 37.145-2.

This CR is a fine-tuned version based on the agreed content of R4-2007454, which was not implemented into TS 37.145-2 due to comments received from MCC after RAN4#95-e meeting.

**Discussion:**

The contribution was discussed during email thread [96e][311] OTA\_BS\_testing. The discussion was recorded in R4-2012764.

**Decision:** The document was **revised to R4-2012704**.

**R4-2012704 CR to TS 37.145-2: internal TR references corrections (wrt. TR 37.941 for OTA BS testing), Rel-15**

*Type: CR For: Agreement  
 37.145-2 v15.7.0 CR-0237 rev 1 Cat: F (Rel-15)  
  
 Source: Huawei*

(Replaces R4-2011255)

**Abstract:**

In relation to the OTA BS testing WI and the new TR 37.941, multiple TR/TS were reviewed with the goal to capture the OTA BS testing content in a single external TR 37.941, as well as to remove any outstanding references to internal TRs. This CR provides correction to the internal TR references in TS 37.145-2.

This CR is a fine-tuned version based on the agreed content of R4-2007454, which was not implemented into TS 37.145-2 due to comments received from MCC after RAN4#95-e meeting.

**Discussion:**

The contribution was discussed during email thread [96e][311] OTA\_BS\_testing. The discussion was recorded in R4-2012764.

**Decision:** The document was **agreed**.

**R4-2011256 CR to TS 37.145-2: internal TR references corrections (wrt. TR 37.941 for OTA BS testing), Rel-16**

*Type: CR For: Agreement  
 37.145-2 v16.4.0 CR-0238 Cat: A (Rel-16)  
  
 Source: Huawei*

**Abstract:**

In relation to the OTA BS testing WI and the new TR 37.941, multiple TR/TS were reviewed with the goal to capture the OTA BS testing content in a single external TR 37.941, as well as to remove any outstanding references to internal TRs. This CR provides correction to the internal TR references in TS 37.145-2.

This CR is a fine-tuned version based on the agreed content of R4-2007454, which was not implemented into TS 37.145-2 due to comments received from MCC after RAN4#95-e meeting.

**Discussion:**

The contribution was discussed during email thread [96e][311] OTA\_BS\_testing. The discussion was recorded in R4-2012764.

**Decision:** The document was **agreed**.

**R4-2009971 CR to TR 37.941: Clause 6.3.3 Angular alignment in TRP measurements**

*Type: CR For: Agreement  
 37.941 v15.0.0 CR-0002 Cat: F (Rel-15)  
  
 Source: Ericsson*

**Abstract:**

Current text is unclear. Proposed changes:

Table 6.3.3-1 caption and headings improvements are proposed to clairfy text to indicate errors due to off beam peak measurements for TRP measurement.

Paragraph directly following Table 6.3.3-1 has been improved to clarify the potential impact of TRP values if beam peak is not captured in the measurement grid point pertaining to test methods which could benefit from capturing peak EIRP

**Discussion:**

The contribution was discussed during email thread [96e][311] OTA\_BS\_testing. The discussion was recorded in R4-2012764.

**Decision:** The document was **revised to R4-2012703**.

**R4-2012703 CR to TR 37.941: Clause 6.3.3 Angular alignment in TRP measurements**

*Type: CR For: Agreement  
 37.941 v15.0.0 CR-0002 rev 1 Cat: F (Rel-15)  
  
 Source: Ericsson*

(Replaces R4-2009971)

**Abstract:**

Current text is unclear. Proposed changes:

Table 6.3.3-1 caption and headings improvements are proposed to clairfy text to indicate errors due to off beam peak measurements for TRP measurement.

Paragraph directly following Table 6.3.3-1 has been improved to clarify the potential impact of TRP values if beam peak is not captured in the measurement grid point pertaining to test methods which could benefit from capturing peak EIRP

**Discussion:**

The contribution was discussed during email thread [96e][311] OTA\_BS\_testing. The discussion was recorded in R4-2012764.

**Decision:** The document was **agreed**.

**R4-2009973 CR to TR 37.941: Clause 6.3.3 Angular alignment in TRP measurements**

*Type: CR For: Agreement  
 37.941 v16.0.1 CR-0004 Cat: A (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Current text is unclear. Proposed changes:

Table 6.3.3-1 caption and headings improvements are proposed to clairfy text to indicate errors due to off beam peak measurements for TRP measurement.

Paragraph directly following Table 6.3.3-1 has been improved to clarify the potential impact of TRP values if beam peak is not captured in the measurement grid point pertaining to test methods which could benefit from capturing peak EIRP

**Discussion:**

The contribution was discussed during email thread [96e][311] OTA\_BS\_testing. The discussion was recorded in R4-2012764.

**Decision:** The document was **agreed**.

### 7.18 2-step RACH for NR [NR\_2step\_RACH-Perf]

**R4-2012058 Email discussion summary for [96e][227] NR\_2step\_RACH\_RRM**

*Type: other For: discussion  
 Source: Moderator (ZTE)*

**Discussion:**

The contribution summarized email discussion thread [96e][227] NR\_2step\_RACH\_RRM. The topic areas for discussion were RRM requirements (Core maintenance and Perf). The email thread was moderated by Richie Leo (ZTE). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2012227**.

**R4-2012227 Email discussion summary for [96e][227] NR\_2step\_RACH\_RRM**

*Type: other For: discussion  
 Source: Moderator (ZTE)*

(Replaces R4-2012058)

**Discussion:**

The contribution summarized email discussion thread [96e][227] NR\_2step\_RACH\_RRM. The topic areas for discussion were RRM requirements (Core maintenance and Perf). The email thread was moderated by Richie Leo (ZTE). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **noted**.

**R4-2012183 WF on test cases for 2-step RACH RRM**

*Type: other For: discussion  
 Source: ZTE*

**Decision:** The document was **approved**.

#### 7.18.1 RRM core requirements maintenance (38.133) [NR\_2step\_RACH-Core]

**R4-2009686 Maintenance CR for 2-step RA**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0924 Cat: F (Rel-16)  
  
 Source: ZTE Corporation*

**Abstract:**

In core requirements, the description of the transmission power calculation needs to be clarified.

**Discussion:**

The contribution was discussed during email thread [96e][227] NR\_2step\_RACH\_RRM. The discussion was recorded in R4-2012227.

**Decision:** The document was **revised to R4-2012184**.

**R4-2012184 Maintenance CR for 2-step RA**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0924 rev 1 Cat: F (Rel-16)  
  
 Source: ZTE Corporation*

(Replaces R4-2009686)

**Abstract:**

In core requirements, the description of the transmission power calculation needs to be clarified.

**Discussion:**

The contribution was discussed during email thread [96e][227] NR\_2step\_RACH\_RRM. The discussion was recorded in R4-2012227.

**Decision:** The document was **agreed**.

#### 7.18.2 RRM perf. requirements (38.133) [NR\_2step\_RACH-Perf]

**R4-2012294 Draft Big CR on 2-step RACH RRM performance requirements**

*Type: draftCR For: Endorsement  
 Source: Nokia*

**Discussion:**

The contribution was discussed during email thread [96e][227] NR\_2step\_RACH\_RRM. The discussion was recorded in R4-2012227.

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

##### 7.18.2.1 General [NR\_2step\_RACH-Perf]

**R4-2010468 Overview of test cases with 2-step RACH**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution discusses the test case for 2-step RACH.

**Discussion:**

The contribution was discussed during email thread [96e][227] NR\_2step\_RACH\_RRM. The discussion was recorded in R4-2012227.

**Decision:** The document was **noted**.

**R4-2010908 On RRM performance requirements for 2-step RA type**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Discussion on the test cases for 2-step RACH RRM performance.

**Discussion:**

The contribution was discussed during email thread [96e][227] NR\_2step\_RACH\_RRM. The discussion was recorded in R4-2012227.

**Decision:** The document was **noted**.

**R4-2009683 Work split for 2-step RACH performance part**

*Type: discussion For: Discussion  
 Source: ZTE Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][227] NR\_2step\_RACH\_RRM. The discussion was recorded in R4-2012227.

**Decision:** The document was **noted**.

**R4-2009979 Features for Performance Tests in 2-step RACH**

*Type: discussion For: (not specified)  
 Source: Qualcomm*

**Discussion:**

The contribution was discussed during email thread [96e][227] NR\_2step\_RACH\_RRM. The discussion was recorded in R4-2012227.

**Decision:** The document was **noted**.

##### 7.18.2.2 Test cases [NR\_2step\_RACH-Perf]

**R4-2010909 Draft CR on 2-step RA type Contention based random access test in FR1 for NR standalone**

*Type: draftCR For: Endorsement  
 38.133 v16.4.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Addition of 2-step RACH tests for 2-step RACH.

**Discussion:**

The contribution was discussed during email thread [96e][227] NR\_2step\_RACH\_RRM. The discussion was recorded in R4-2012227.

**Decision:** The document was **revised to R4-2012186**.

**R4-2012186 Draft CR on 2-step RA type Contention based random access test in FR1 for NR standalone**

*Type: draftCR For: Endorsement  
 38.133 v16.4.0  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2010909)

**Abstract:**

Addition of 2-step RACH tests for 2-step RACH.

**Discussion:**

The contribution was discussed during email thread [96e][227] NR\_2step\_RACH\_RRM. The discussion was recorded in R4-2012227.

**Decision:** The document was **endorsed**.

**R4-2009684 [draftCR] Test cases for 2-step RACH (Random access)**

*Type: draftCR For: Endorsement  
 38.133 v16.4.0  
 Source: ZTE Corporation*

**Abstract:**

Add test cases corresponding to core requirements for 2 step RA. Correct some errors remaining in the current test cases for 4-step RA.

**Discussion:**

The contribution was discussed during email thread [96e][227] NR\_2step\_RACH\_RRM. The discussion was recorded in R4-2012227.

**Decision:** The document was **postponed**.

**R4-2012185 [draftCR] Test cases for 2-step RACH (Random access)**

*Type: draftCR For: Endorsement  
 38.133 v16.4.0  
 Source: ZTE Corporation*

(Replaces R4-2009684)

**Decision:** The document was **withdrawn**.

**R4-2009685 Test cases for 2-step RACH (Random access)**

*Type: discussion For: Discussion  
 Source: ZTE Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][227] NR\_2step\_RACH\_RRM. The discussion was recorded in R4-2012227.

**Decision:** The document was **noted**.

#### 7.18.3 BS Demodulation requirements (38.104) [NR\_2step\_RACH-Perf]

**R4-2012559 Email discussion summary for [96e][325] NR\_2step\_RACH\_Demod**

*Type: other For: discussion  
 Source: Moderator (ZTE)*

**Discussion:**

The contribution summarized email discussion thread [96e][325] NR\_2step\_RACH\_Demod. The topic areas for discussion were Rel-16 2-step RACH BS demodulation requirements. The email thread was moderated by Aijun Chao (ZTE). All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2012742**.

**R4-2012742 Email discussion summary for [96e][325] NR\_2step\_RACH\_Demod**

*Type: other For: discussion  
 Source: Moderator (ZTE)*

(Replaces R4-2012559)

**Discussion:**

The contribution summarized email discussion thread [96e][325] NR\_2step\_RACH\_Demod. The topic areas for discussion were Rel-16 2-step RACH BS demodulation requirements. The email thread was moderated by Aijun Chao (ZTE). All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **noted**.

**R4-2012705 WF on BS demodulation requirements for 2-step RACH**

*Type: other For: discussion  
 Source: ZTE*

**Discussion:**

The contribution was discussed during email thread [96e][325] NR\_2step\_RACH\_Demod. The discussion was recorded in R4-2012742.

Huawei: 1+1+1 in initial phase, then 1+1 in connected mode; bring complexity.

E///: DMRS configuration in connected mode can be different. 1+1+1 is default without signalling effort. TBS size and same RBs, no big difference.

Nokia: option 1 is more typical usage case and mandatory configuration for MSG3 in PRACH with less padding bits.

Samsung: Similar view as E/// and Nokia. Since no performance difference among option 1/2, option2 bring additional signalling effort. Test coverage for 1+1 already enough.

ZTE: Same view as Nokia/Samsung/E///. Signalling always required with option2.

Huawei: 1+1 widely used in current NR demod requirements. 1+1+1 is mandatory with capability signalling, how to deal UE with only support 1+1, BS always have choice.

Nokia: In msg3, 1+1+1 is already mandatory.

ZTE: This is special feature with 2step PRACH, enable this feature 1+1+1 is typical case. If UE support 2step RACH, then such UE need to support 1+1+1.

Intel: 1+1+1 is only mandatory with capability signalling for >1 ports; but for 1 port is mandatory without capability signalling.

E///: NO performance difference among op1 and op2. The default option is option 1.

Huawei: BS has the choice.

**Decision:** The document was **approved**.

**R4-2010283 Discussion and simulation results for BS 2-step RACH requirement**

*Type: discussion For: Discussion  
 Source: Samsung*

**Discussion:**

The contribution was discussed during email thread [96e][325] NR\_2step\_RACH\_Demod. The discussion was recorded in R4-2012742.

**Decision:** The document was **noted**.

**R4-2010783 Further discussion on BS demodulation performance requirements for 2-Step RACH**

*Type: discussion For: Discussion  
 Source: ZTE Wistron Telecom AB*

**Discussion:**

The contribution was discussed during email thread [96e][325] NR\_2step\_RACH\_Demod. The discussion was recorded in R4-2012742.

**Decision:** The document was **noted**.

**R4-2010784 Draft CR to TS 38.104 BS demodulation requirements for 2-step RACH**

*Type: draftCR For: Endorsement  
 38.104 v16.4.0  
 Source: ZTE Wistron Telecom AB*

**Abstract:**

BS demodulation requirements for 2-step RACH are missing in TS 38.104

**Discussion:**

The contribution was discussed during email thread [96e][325] NR\_2step\_RACH\_Demod. The discussion was recorded in R4-2012742.

**Decision:** The document was **revised to R4-2012706**.

**R4-2012706 Draft CR to TS 38.104 BS demodulation requirements for 2-step RACH**

*Type: draftCR For: Endorsement  
 38.104 v16.4.0  
 Source: ZTE Wistron Telecom AB*

(Replaces R4-2010784)

**Abstract:**

BS demodulation requirements for 2-step RACH are missing in TS 38.104

**Discussion:**

The contribution was discussed during email thread [96e][325] NR\_2step\_RACH\_Demod. The discussion was recorded in R4-2012742.

**Decision:** The document was **not pursued**.

**R4-2010785 Simulation results for 2-step RACH BS demodulation requirements**

*Type: discussion For: Information  
 Source: ZTE Wistron Telecom AB*

**Discussion:**

The contribution was discussed during email thread [96e][325] NR\_2step\_RACH\_Demod. The discussion was recorded in R4-2012742.

**Decision:** The document was **noted**.

**R4-2010842 2-step RACH demodulation requirements**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

Proposals for the remaining open issues

**Discussion:**

The contribution was discussed during email thread [96e][325] NR\_2step\_RACH\_Demod. The discussion was recorded in R4-2012742.

**Decision:** The document was **noted**.

**R4-2010906 2-step RACH BS demodulation simulation results**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

BS demodulation simulation results for 2-step RACH

**Discussion:**

The contribution was discussed during email thread [96e][325] NR\_2step\_RACH\_Demod. The discussion was recorded in R4-2012742.

**Decision:** The document was **noted**.

**R4-2010907 On 2-step RACH BS demodulation requirements**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Discussion on the open topics and simulation results for 2-step RACH demodulation.

**Discussion:**

The contribution was discussed during email thread [96e][325] NR\_2step\_RACH\_Demod. The discussion was recorded in R4-2012742.

**Decision:** The document was **noted**.

**R4-2011009 Discussion and simulation results on NR 2-step RACH BS performance requirements**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][325] NR\_2step\_RACH\_Demod. The discussion was recorded in R4-2012742.

**Decision:** The document was **noted**.

**R4-2009739 Views on BS demodulation requirements for NR 2-Step RACH**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][325] NR\_2step\_RACH\_Demod. The discussion was recorded in R4-2012742.

**Decision:** The document was **noted**.

#### 7.18.4 Others [NR\_2step\_RACH-Perf]

### 7.19 R16 NR maintenance [WI code or TEI16]

#### 7.19.1 UE transient period capability [TEI16]

**R4-2011552 Email discussion summary for [96e][119] NR\_transient\_period**

*Type: other For: discussion  
 Source: Moderator (CMCC)*

**Discussion:**

The contribution summarized email discussion thread [96e][119] NR\_transient\_period . The subject for discussion was . The email thread was moderated by Zhe Shao (China Mobile Group Device Co.) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **revised to R4-2011859**.

**R4-2011859 Email discussion summary for [96e][119] NR\_transient\_period**

*Type: other For: discussion  
 Source: Moderator (CMCC)*

(Replaces R4-2011552)

**Discussion:**

The contribution summarized email discussion thread [96e][119] NR\_transient\_period . The subject for discussion was . The email thread was moderated by Zhe Shao (China Mobile Group Device Co.) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **noted**.

**R4-2010914 Draft CR on introduction of shorter Transient Period Capability**

*Type: draftCR For: Endorsement  
 38.101-1 v16.4.0  
 Source: Qualcomm Incorporated, Verizon, Dish Network, Ericsson, CMCC, Keysight Technologies, Nokia, Nokia Shanghai Bell, AT&T, ZTE, Vodafone, Orange, T-Mobile USA, Deutsche Telekom, Telecom Italia, CHTTL, China Telecom, SGS Wireless, Interdigital*

**Abstract:**

Adding the newly defined shorter transient periods.

**Discussion:**

The contribution was discussed during email thread [96e][119] NR\_transient\_period . The discussion was recorded in R4-2011859.

**Decision:** The document was **revised to R4-2011766**.

**R4-2011766 Draft CR on introduction of shorter Transient Period Capability**

*Type: draftCR For: Endorsement  
 38.101-1 v16.4.0  
 Source: Qualcomm Incorporated, Verizon, Dish Network, Ericsson, CMCC, Keysight Technologies, Nokia, Nokia Shanghai Bell, AT&T, ZTE, Vodafone, Orange, T-Mobile USA, Deutsche Telekom, Telecom Italia, CHTTL, China Telecom, SGS Wireless, Interdigital*

(Replaces R4-2010914)

**Abstract:**

Adding the newly defined shorter transient periods.

**Discussion:**

The contribution was discussed during email thread [96e][119] NR\_transient\_period . The discussion was recorded in R4-2011859.

**Decision:** The document was **endorsed**.

**R4-2010915 Short Transient Period Testing**

*Type: discussion For: Discussion  
 Source: Qualcomm Incorporated*

**Discussion:**

The contribution was discussed during email thread [96e][119] NR\_transient\_period . The discussion was recorded in R4-2011859.

**Decision:** The document was **noted**.

**R4-2010916 Draft LS on shorter transient period capability**

*Type: LS out For: Approval  
 to RAN2  
 Source: Qualcomm Incorporated*

**Discussion:**

The contribution was discussed during email thread [96e][119] NR\_transient\_period . The discussion was recorded in R4-2011859.

**Decision:** The document was **revised to R4-2011767**.

**R4-2011767 Draft LS on shorter transient period capability**

*Type: LS out For: Approval  
 to RAN2  
 Source: Qualcomm Incorporated*

(Replaces R4-2010916)

**Decision:** The document was **withdrawn**.

**R4-2011475 On transient period UE capability**

*Type: other For: Approval  
 38.101-1 v..  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][119] NR\_transient\_period . The discussion was recorded in R4-2011859.

**Decision:** The document was **noted**.

**R4-2011523 Transient Period Capability for NR FR1**

*Type: discussion For: Approval  
 38.101-1 v..  
 Source: Skyworks Solutions Inc.*

**Discussion:**

The contribution was discussed during email thread [96e][119] NR\_transient\_period . The discussion was recorded in R4-2011859.

**Decision:** The document was **noted**.

#### 7.19.2 Transmit diversity and power class related to UL MIMO [TEI16]

**R4-2011553 Email discussion summary for [96e][120] NR\_TxD**

*Type: other For: discussion  
 Source: Moderator (vivo)*

**Discussion:**

The contribution summarized email discussion thread [96e][120] NR\_TxD. The subject for discussion was . The email thread was moderated by Sanjun Feng (vivo Communication Technology) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **revised to R4-2011860**.

**R4-2011860 Email discussion summary for [96e][120] NR\_TxD**

*Type: other For: discussion  
 Source: Moderator (vivo)*

(Replaces R4-2011553)

**Discussion:**

The contribution summarized email discussion thread [96e][120] NR\_TxD. The subject for discussion was . The email thread was moderated by Sanjun Feng (vivo Communication Technology) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **noted**.

**R4-2011768 WF on Rel-16 TxD**

*Type: other For: discussion  
 Source: Samsung*

**Discussion:**

The contribution was discussed during email thread [96e][120] NR\_TxD. The discussion was recorded in R4-2011860.

**Decision:** The document was **approved**.

**R4-2010599 Draft Reply LS to RAN5 on ambiguity in output power requirements for power class 2 UE for EN-DC**

*Type: LS out For: Approval  
 to RAN5  
 Source: Ericsson*

**Abstract:**

Discussion on signaling ambiguity and proposed draft reply to RAN5

**Discussion:**

The contribution was discussed during email thread [96e][120] NR\_TxD. The discussion was recorded in R4-2011860.

**Decision:** The document was **noted**.

##### 7.19.2.1 R16 support of transmit diversity [TEI16]

**R4-2010017 Discussion on Tx diversity open issues**

*Type: other For: Approval  
 Source: Xiaomi*

**Discussion:**

The contribution was discussed during email thread [96e][120] NR\_TxD. The discussion was recorded in R4-2011860.

**Decision:** The document was **noted**.

**R4-2010094 Discussion on the Support of Transparent Tx Diversity in Rel-16**

*Type: discussion For: Discussion  
 Source: Samsung*

**Discussion:**

The contribution was discussed during email thread [96e][120] NR\_TxD. The discussion was recorded in R4-2011860.

**Decision:** The document was **noted**.

**R4-2010095 Draft Reply LS to GCF on Requirement in Power Class 2 for UL MIMO Test Cases**

*Type: LS out For: Approval  
 to GCF-CAG, cc RAN5, PTCRB PVG  
 Source: Samsung*

**Discussion:**

The contribution was discussed during email thread [96e][120] NR\_TxD. The discussion was recorded in R4-2011860.

**Decision:** The document was **noted**.

**R4-2010303 Clarification on 2Tx requirements specified at sum of emissions from antenna connecters**

*Type: other For: Approval  
 38.101-1 v..  
 Source: NTT DOCOMO INC.*

**Discussion:**

The contribution was discussed during email thread [96e][120] NR\_TxD. The discussion was recorded in R4-2011860.

**Decision:** The document was **noted**.

**R4-2010766 CR on clarification of NR requirements under EN-DC**

*Type: CR For: Agreement  
 38.101-3 v16.4.0 CR-0338 Cat: F (Rel-16)  
  
 Source: OPPO*

**Abstract:**

In RAN#88e, LS RP-201392 was approved to introduce NR power class capability within EN-DC.

UE shall meet the NR requirements according to this newly introduced NR power class.

**Discussion:**

The contribution was discussed during email thread [96e][120] NR\_TxD. The discussion was recorded in R4-2011860.

**Decision:** The document was **not pursued**.

**R4-2010767 Draft LS on NR power class clarification**

*Type: LS out For: Approval  
 to GCF CAG, cc RAN5  
 Source: OPPO*

**Discussion:**

The contribution was discussed during email thread [96e][120] NR\_TxD. The discussion was recorded in R4-2011860.

**Decision:** The document was **revised to R4-2011903**.

**R4-2011903 LS on NR power class clarification**

*Type: LS out For: Approval  
 to GCF CAG, cc RAN5  
 Source: RAN4*

(Replaces R4-2010767)

**Discussion:**

The contribution was discussed during email thread [96e][120] NR\_TxD. The discussion was recorded in R4-2011860.

**Decision:** The document was **approved**.

**R4-2010768 Discussion on Rel-16 TxD**

*Type: discussion For: Approval  
 Source: OPPO*

**Discussion:**

The contribution was discussed during email thread [96e][120] NR\_TxD. The discussion was recorded in R4-2011860.

**Decision:** The document was **noted**.

**R4-2010803 Discussion on open issues for Tx diversity requirements**

*Type: discussion For: Approval  
 Source: Rohde & Schwarz*

**Discussion:**

The contribution was discussed during email thread [96e][120] NR\_TxD. The discussion was recorded in R4-2011860.

**Decision:** The document was **noted**.

**R4-2010806 On Tx diversity requirements**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][120] NR\_TxD. The discussion was recorded in R4-2011860.

**Decision:** The document was **noted**.

**R4-2010807 draft CR for TS 38.101-1 Tx diversity requirements**

*Type: draftCR For: Endorsement  
 38.101-1 v16.4.0  
 Source: Huawei, HiSilicon, OPPO*

**Abstract:**

Make necessary changes to eliminate the ambiguity for supporting transparent Tx diversity.

**Discussion:**

The contribution was discussed during email thread [96e][120] NR\_TxD. The discussion was recorded in R4-2011860.

**Decision:** The document was **revised to R4-2011769**.

**R4-2011769 draft CR for TS 38.101-1 Tx diversity requirements**

*Type: draftCR For: Endorsement  
 38.101-1 v16.4.0  
 Source: Huawei, HiSilicon, OPPO*

(Replaces R4-2010807)

**Abstract:**

Make necessary changes to eliminate the ambiguity for supporting transparent Tx diversity.

**Discussion:**

The contribution was discussed during email thread [96e][120] NR\_TxD. The discussion was recorded in R4-2011860.

**Decision:** The document was **not pursued**.

**R4-2011459 TxD for 29dBm PC1.5**

*Type: discussion For: Approval  
 Source: T-Mobile USA Inc.*

**Abstract:**

Discussed options for treatment of TxD for PC1.5.

**Discussion:**

The contribution was discussed during email thread [96e][120] NR\_TxD. The discussion was recorded in R4-2011860.

**Decision:** The document was **noted**.

**R4-2011519 Further Considerations on the EVM Definition for Antenna Ports Including Transparent Transmit Diversity**

*Type: discussion For: Approval  
 Source: Lenovo, Motorola Mobility*

**Discussion:**

The contribution was discussed during email thread [96e][120] NR\_TxD. The discussion was recorded in R4-2011860.

**Decision:** The document was **noted**.

**R4-2009756 On transparent transmit diversity**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][120] NR\_TxD. The discussion was recorded in R4-2011860.

**Decision:** The document was **noted**.

**R4-2009941 On transparent TxD**

*Type: discussion For: Decision  
 Source: Apple Inc.*

**Discussion:**

The contribution was discussed during email thread [96e][120] NR\_TxD. The discussion was recorded in R4-2011860.

**Decision:** The document was **noted**.

#### 7.19.3 Other UE RF [WI code or TEI16]

**R4-2011554 Email discussion summary for [96e][121] NR\_R16\_Maintenance**

*Type: other For: discussion  
 Source: Moderator (Dish Network)*

**Discussion:**

The contribution summarized email discussion thread [96e][121] NR\_R16\_Maintenance. The subject for discussion was . The email thread was moderated by Antti Immonen (Dish Network) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **revised to R4-2011861**.

**R4-2011861 Email discussion summary for [96e][121] NR\_R16\_Maintenance**

*Type: other For: discussion  
 Source: Moderator (Dish Network)*

(Replaces R4-2011554)

**Discussion:**

The contribution summarized email discussion thread [96e][121] NR\_R16\_Maintenance. The subject for discussion was . The email thread was moderated by Antti Immonen (Dish Network) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **noted**.

**R4-2011777 WF on handling new channel BW**

*Type: other For: discussion  
 Source: Qualcomm*

**Discussion:**

The contribution was discussed during email thread [96e][121] NR\_R16\_Maintenance. The discussion was recorded in R4-2011861.

**Decision:** The document was **approved**.

**R4-2011781 draft CR to TS 38.307 on release independent update for the Rel.16 EN-DC and NR CA/DC**

*Type: draftCR For: Endorsement  
 38.307 v16.3.0  
 Source: ZTE*

**Abstract:**

More Rel.16 EN-DC and NR CA/DC configurations have been introduced in latest TS 38.101-1, 38.101-2, 38.101-3, an update is needed for the release independent specification.

**Discussion:**

The contribution was discussed during email thread [96e][121] NR\_R16\_Maintenance. The discussion was recorded in R4-2011861.

**Decision:** The document was **endorsed**.

**R4-2010048 CR for TS 38.101-2: Correction on n259 ACS test parameters for Case 1**

*Type: CR For: Agreement  
 38.101-2 v16.4.0 CR-0227 Cat: F (Rel-16)  
  
 Source: Apple Inc.*

**Abstract:**

1.The Table numbers in clause 7.5 do not match with the clause number.

2.The n259 ACS requirements should be aligned with n260, however, the test parameters for Case 1 in Table 7.5-2 (currently labelled as 7.5A.1-2) were mistakenly defined in the same group as with lower frequency bands n257, n258, and n261.

**Discussion:**

The contribution was discussed during email thread [96e][121] NR\_R16\_Maintenance. The discussion was recorded in R4-2011861.

**Decision:** The document was **not pursued**.

**R4-2010121 Corrections of Japan-related CA co-ex tables for REL-16 combo**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0436 Cat: F (Rel-16)  
  
 Source: SoftBank Corp., NTT docomo INC., KDDI Corporation*

**Abstract:**

Some requirements for Japan related band protection are missed and necessary notes/prerequisities are inappricate for CA tables. (This is follow-up of R4-2008972 for single band requirement correction in R4#95-e.)

**Discussion:**

The contribution was discussed during email thread [96e][121] NR\_R16\_Maintenance. The discussion was recorded in R4-2011861.

**Decision:** The document was **not pursued**.

**R4-2010125 Corrections of Japan-related EN-DC co-ex tables for REL-16 combo**

*Type: CR For: Agreement  
 38.101-3 v16.4.0 CR-0327 Cat: F (Rel-16)  
  
 Source: SoftBank Corp., NTT docomo INC., KDDI Corporation*

**Abstract:**

Some requirements for Japan related band protection are missed and necessary notes/prerequisities are inappricate for EN-DC tables. (This is follow-up of R4-2008972 for single band requirement correction in R4#95-e.)

**Discussion:**

The contribution was discussed during email thread [96e][121] NR\_R16\_Maintenance. The discussion was recorded in R4-2011861.

**Decision:** The document was **not pursued**.

**R4-2010230 Restoring the clause structure of NR FR1 uplink contiguous intraband CA**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

The contribution was discussed during email thread [96e][121] NR\_R16\_Maintenance. The discussion was recorded in R4-2011861.

**Decision:** The document was **approved**.

**R4-2010231 CR Restoring the clause structure of NR FR1 uplink contiguous intraband CA**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0439 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell, Qualcomm Inc, Skyworks, Ericsson*

**Abstract:**

In RAN4#95e a CR R4-2008468 CR for intra-band UL contiguous CA RF requirements was agreed. It introduced intra-band UL contiguous CA feature for FR1. CR used clauses 6.xA.x.1 as was the intention when 38.101-1 specification structure was discussed in REL15. When CR was implemented new clause numbers were used 6.xA.x.4 instead ( some time also 6.xA.x.5 and 6.xA.x.6 was used in addition to 6.xA.x.4). Now 6.xA.x.1 remain Void.

**Discussion:**

The contribution was discussed during email thread [96e][121] NR\_R16\_Maintenance. The discussion was recorded in R4-2011861.

**Decision:** The document was **agreed**.

**R4-2011772 CR Restoring the clause structure of NR FR1 uplink contiguous intraband CA**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0439 rev 1 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell, Qualcomm Inc, Skyworks, Ericsson*

**Decision:** The document was **withdrawn**.

**R4-2010321 CR to TS 38.101-2 on corrections to intra-band contiguous CA configurations (Rel-16)**

*Type: CR For: Agreement  
 38.101-2 v16.4.0 CR-0232 Cat: F (Rel-16)  
  
 Source: ZTE Corporation*

**Abstract:**

The uplink CA configurations for CA\_n258 is not correct and should be corrected.

The fallback group for CA\_n259 is not correct and should be corrected.

**Discussion:**

The contribution was discussed during email thread [96e][121] NR\_R16\_Maintenance. The discussion was recorded in R4-2011861.

**Decision:** The document was **not pursued**.

**R4-2010519 Correction of ACS requiremet for n259**

*Type: CR For: Agreement  
 38.101-2 v16.4.0 CR-0235 Cat: F (Rel-16)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

ACS requirement for n259 was not correctly implemented due to overlapping changes to the same clauses (CR 0155, 0174, and 0198)

**Discussion:**

The contribution was discussed during email thread [96e][121] NR\_R16\_Maintenance. The discussion was recorded in R4-2011861.

**Decision:** The document was **agreed**.

**R4-2010587 MSD correction for new added CBW**

*Type: discussion For: Approval  
 38.101-1 v..  
 Source: MediaTek Inc.*

**Discussion:**

The contribution was discussed during email thread [96e][121] NR\_R16\_Maintenance. The discussion was recorded in R4-2011861.

**Decision:** The document was **revised to R4-2011779**.

**R4-2011779 MSD correction for new added CBW**

*Type: discussion For: Approval  
 38.101-1 v..  
 Source: MediaTek Inc.*

(Replaces R4-2010587)

**Decision:** The document was **withdrawn**.

**R4-2010625 CR to TS38.101-1: Correction on the general requirement and configured transmitted power requirement for inter-band DC**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0448 Cat: F (Rel-16)  
  
 Source: ZTE Corporation*

**Abstract:**

For the general requirement (subclause 4.3)

The sentence agreed in R4-2006997 was not implemented in the latest spec.

For Pcmax: (subclause 6.2B.4.1)

According to the configured transmitted power single carrier, the total power reduction is (MPR+ ∆MPR) dB.

The feature of PC2 inter-band NR-DC combination is not supported in Rel-16, therefore it is no need to consider ΔPPowerClass in the formulas.

The explanation for some inter-band DC specfied terms in the formulas are missing.

**Discussion:**

The contribution was discussed during email thread [96e][121] NR\_R16\_Maintenance. The discussion was recorded in R4-2011861.

**Decision:** The document was **not pursued**.

**R4-2010633 CR to TS 38.307 on NR-DC release-independent**

*Type: CR For: Agreement  
 38.307 v16.3.0 CR-0029 Cat: B (Rel-16)  
  
 Source: ZTE Corporation*

**Abstract:**

Some NR-DC configurations have been already included in TS38.101-1 in last meeting. However, no release-independent information in TS38.307

**Discussion:**

The contribution was discussed during email thread [96e][121] NR\_R16\_Maintenance. The discussion was recorded in R4-2011861.

**Decision:** The document was **not pursued**.

**R4-2010639 CR to TS 38.101-3: Clean up the MSD test point for ENDC(three band)**

*Type: CR For: Agreement  
 38.101-3 v16.4.0 CR-0335 Cat: F (Rel-16)  
  
 Source: ZTE Corporation*

**Abstract:**

In last meeting, two CRs of R4-2008383(R15) and R4-2007006(R16) were agreed to move redundant MSD test point information in the table for the combinations included in version 16.3.0. However, such redundant information are still kept for some new added combinations in version 16.4.0

**Discussion:**

The contribution was discussed during email thread [96e][121] NR\_R16\_Maintenance. The discussion was recorded in R4-2011861.

**Decision:** The document was **agreed**.

**R4-2010808 Discussion and draft reply LS On EN-DC power class**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][121] NR\_R16\_Maintenance. The discussion was recorded in R4-2011861.

**Decision:** The document was **noted**.

**R4-2010809 draft CR for TS 38.101-3 introduce new power class for EN-DC**

*Type: draftCR For: Endorsement  
 38.101-3 v16.4.0  
 Source: Huawei, HiSilicon*

**Abstract:**

It was agreed in RAN#88e that RAN2 to develop new power class UE capability signalling applicable for the NR part of the MR-DC band combination. This is in addition to the MR-DC power class, i.e. indicates that UE supports the newly indicated power class for the NR part of the MR-DC band combination also in addition the indicated power class for the MR-DC band combination. The value range for the signalled power class values is { pc1, pc2, pc3, pc5 } in RP-201392.

The power class for NR band in MR-DC could be different from that indicated in SA mode. If the power class of NR part is reported for the MR-DC, the UE shall meet the NR requirements for power class indicated by the newly introduced IE. The NR power class in Pcmax should then use the one indicated by the new IE instead.

**Discussion:**

The contribution was discussed during email thread [96e][121] NR\_R16\_Maintenance. The discussion was recorded in R4-2011861.

**Decision:** The document was **revised to R4-2011770**.

**R4-2011770 draft CR for TS 38.101-3 introduce new power class for EN-DC**

*Type: draftCR For: Endorsement  
 38.101-3 v16.4.0  
 Source: Huawei, HiSilicon*

(Replaces R4-2010809)

**Abstract:**

It was agreed in RAN#88e that RAN2 to develop new power class UE capability signalling applicable for the NR part of the MR-DC band combination. This is in addition to the MR-DC power class, i.e. indicates that UE supports the newly indicated power class for the NR part of the MR-DC band combination also in addition the indicated power class for the MR-DC band combination. The value range for the signalled power class values is { pc1, pc2, pc3, pc5 } in RP-201392.

The power class for NR band in MR-DC could be different from that indicated in SA mode. If the power class of NR part is reported for the MR-DC, the UE shall meet the NR requirements for power class indicated by the newly introduced IE. The NR power class in Pcmax should then use the one indicated by the new IE instead.

**Discussion:**

The contribution was discussed during email thread [96e][121] NR\_R16\_Maintenance. The discussion was recorded in R4-2011861.

**Decision:** The document was **endorsed**.

**R4-2011922 CR for TS 38.101-3 introduce new power class for EN-DC**

*Type: CR For: Agreement  
 38.101-3 v16.4.0 CR-0353 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

It was agreed in RAN#88e that RAN2 to develop new power class UE capability signalling applicable for the NR part of the MR-DC band combination. This is in addition to the MR-DC power class, i.e. indicates that UE supports the newly indicated power class for the NR part of the MR-DC band combination also in addition the indicated power class for the MR-DC band combination. The value range for the signalled power class values is { pc1, pc2, pc3, pc5 } in RP-201392.

The power class for NR band in MR-DC could be different from that indicated in SA mode. If the power class of NR part is reported for the MR-DC, the UE shall meet the NR requirements for power class indicated by the newly introduced IE. The NR power class in Pcmax should then use the one indicated by the new IE instead.

**Discussion:**

The contribution was discussed during email thread [96e][121] NR\_R16\_Maintenance. The discussion was recorded in R4-2011861.

**Decision:** The document was **agreed**.

**R4-2010851 Further discussion on power class fall back optimization**

*Type: discussion For: Discussion  
 Source: vivo*

**Decision:** The document was **withdrawn**.

**R4-2010855 Correction of delta Powerclass for Inter-band EN-DC**

*Type: CR For: Agreement  
 38.101-3 v16.4.0 CR-0344 Cat: F (Rel-16)  
  
 Source: vivo, CMCC, China Unicom*

**Abstract:**

Power class 2 had been introduced for TDD-TDD ENDC and the fallback scheme had been defined in 6.2B.1.3. It has been clarified that under different conditions, the requirements for default or the supported power class would be applied and would “set the configured transmitted power as specified sub-clause 6.2B.4”

However, no revisions had been done for section 6.2B.4.1.3 which is for inter-band EN-DC for FR1. The ∆PPowerClass,EN-DC which is used to adjust this was not updated as for other cases, thus make the specification incomplete.

**Discussion:**

The contribution was discussed during email thread [96e][121] NR\_R16\_Maintenance. The discussion was recorded in R4-2011861.

**Decision:** The document was **agreed**.

**R4-2010923 CR for 38.101-3 to remove PHS system, 860~890 and 1400~1427 protection for EN-DC band combination with band n1, n8 and n50**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0459 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

The PHS system protection can be signalled by the network(NS\_05). Thus, the corresponding frequency band protection can be removed for EN-DC band combination with band n1.

860~890 protection can be signalled by the network (NS\_43). The corresponding frequency band protection can be removed for EN-DC band combination with band n8.

1400~1427 protection can be signalled by the network (NS\_41). The corresponding frequency band protection can be removed for EN-DC band combination with band n50.

**Discussion:**

The contribution was discussed during email thread [96e][121] NR\_R16\_Maintenance. The discussion was recorded in R4-2011861.

**Decision:** The document was **revised to R4-2011773**.

**R4-2011773 CR for 38.101-1 to remove PHS system and 860~890 protection for NR CA band combination with band n1 and band n8**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0459 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2010923)

**Abstract:**

The PHS system protection can be signalled by the network(NS\_05). Thus, the corresponding frequency band protection can be removed for NR CA band combination with band n1.

860~890 protection can be signalled by the network (NS\_43). The corresponding frequency band protection can be removed for NR CA band combination with band n8.

**Discussion:**

The contribution was discussed during email thread [96e][121] NR\_R16\_Maintenance. The discussion was recorded in R4-2011861.

**Decision:** The document was **agreed**.

**R4-2010924 CR for 38.101-1 to remove PHS system and 860~890 protection for NR CA band combination with band n1 and band n8**

*Type: CR For: Agreement  
 38.101-3 v16.4.0 CR-0347 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

The PHS system protection can be signalled by the network(NS\_05). Thus, the corresponding frequency band protection can be removed for NR CA band combination with band n1.

860~890 protection can be signalled by the network (NS\_43). The corresponding frequency band protection can be removed for NR CA band combination with band n8.

**Discussion:**

The contribution was discussed during email thread [96e][121] NR\_R16\_Maintenance. The discussion was recorded in R4-2011861.

**Decision:** The document was **revised to R4-2011780**.

**R4-2011780 CR for 38.101-3 to remove PHS system, 860~890 and 1400~1427 protection for EN-DC band combination with band n1, n8 and n50**

*Type: CR For: Agreement  
 38.101-3 v16.4.0 CR-0347 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2010924)

**Abstract:**

The PHS system protection can be signalled by the network(NS\_05). Thus, the corresponding frequency band protection can be removed for EN-DC band combination with band n1.

860~890 protection can be signalled by the network (NS\_43). The corresponding frequency band protection can be removed for EN-DC band combination with band n8.

1400~1427 protection can be signalled by the network (NS\_41). The corresponding frequency band protection can be removed for EN-DC band combination with band n50.

**Discussion:**

The contribution was discussed during email thread [96e][121] NR\_R16\_Maintenance. The discussion was recorded in R4-2011861.

**Decision:** The document was **agreed**.

**R4-2010925 CR for 38.101-1 to add the missing region for NS\_18 and maintenance the ∆mprc**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0460 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

Based on the agreed CR R4-2002849, region A5 for NS\_18 wasn’t implemented.

Based on the agreed CR R4-2008086, it should be ‘mprc·∆mprc’ instead of ‘mprc, ∆mprc’. Comma should be replaced by multiplication sign.

**Discussion:**

The contribution was discussed during email thread [96e][121] NR\_R16\_Maintenance. The discussion was recorded in R4-2011861.

**Decision:** The document was **revised to R4-2011774**.

**R4-2011774 CR for 38.101-1 to add the missing region for NS\_18 and maintenance the ∆mprc**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0460 rev 1 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2010925)

**Abstract:**

Based on the agreed CR R4-2002849, region A5 for NS\_18 wasn’t implemented.

Based on the agreed CR R4-2008086, it should be ‘mprc·∆mprc’ instead of ‘mprc, ∆mprc’. Comma should be replaced by multiplication sign.

**Discussion:**

The contribution was discussed during email thread [96e][121] NR\_R16\_Maintenance. The discussion was recorded in R4-2011861.

**Decision:** The document was **agreed**.

**R4-2011184 Further discussion on power class fall back optimization**

*Type: discussion For: Discussion  
 Source: vivo*

**Discussion:**

The contribution was discussed during email thread [96e][121] NR\_R16\_Maintenance. The discussion was recorded in R4-2011861.

**Decision:** The document was **noted**.

**R4-2011339 Discussion on release independent update for the Rel.16 EN-DC and NR CA/DC combinations from the basket**

*Type: discussion For: (not specified)  
 Source: CHTTL*

**Abstract:**

In section 4, we provide the draft CR for TS 38.307 to update the Rel.16 combinations to be release independent from rel.15 according to the latest Rel.16 specifications. We propose to check those changes in section 4 before going directly to the CR if po

**Discussion:**

The contribution was discussed during email thread [96e][121] NR\_R16\_Maintenance. The discussion was recorded in R4-2011861.

**Decision:** The document was **noted**.

**R4-2011489 on power class fallback enhancement**

*Type: other For: Approval  
 38.101-1 v..  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][121] NR\_R16\_Maintenance. The discussion was recorded in R4-2011861.

**Decision:** The document was **noted**.

**R4-2011490 CR on inter-band ENDC Pcmax**

*Type: CR For: Agreement  
 38.101-3 v16.4.0 CR-0349 Cat: F (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

In Rel-16, band combinations of inter-band ENDC with 3 uplink CCs(1 LTE CC+2 NR CC) are introcuded. But there is no Pcmax definition for such combinations.

**Discussion:**

The contribution was discussed during email thread [96e][121] NR\_R16\_Maintenance. The discussion was recorded in R4-2011861.

**Decision:** The document was **agreed**.

**R4-2011515 CR to 38.101-3 - Correction to cross band isolation MSD tables and DC\_42\_n79**

*Type: CR For: Agreement  
 38.101-3 v16.4.0 CR-0351 Cat: F (Rel-16)  
  
 Source: Skyworks Solutions Inc., Mediatek*

**Abstract:**

MSD for new channel bandwidth (CBW) are missing.

70MHz CBW is missing

Alignment of MSD values with NR\_CA MSD due to cross band isolation

Re-ordering of UL configuration table to align with MSD combination order.

Wether DC\_42\_n79 supports simultaneous Tx/Rx is ambiguous, it cannot be supported by solutions implemented with n77 or n78 filter without MSD as already shown for CA\_n79-n79.

**Discussion:**

The contribution was discussed during email thread [96e][121] NR\_R16\_Maintenance. The discussion was recorded in R4-2011861.

**Decision:** The document was **revised to R4-2011778**.

**R4-2011778 CR to 38.101-3 - Correction to cross band isolation MSD tables and DC\_42\_n79**

*Type: CR For: Agreement  
 38.101-3 v16.4.0 CR-0351 rev 1 Cat: F (Rel-16)  
  
 Source: Skyworks Solutions Inc., Mediatek*

(Replaces R4-2011515)

**Abstract:**

MSD for new channel bandwidth (CBW) are missing.

70MHz CBW is missing

Alignment of MSD values with NR\_CA MSD due to cross band isolation

Re-ordering of UL configuration table to align with MSD combination order.

**Discussion:**

The contribution was discussed during email thread [96e][121] NR\_R16\_Maintenance. The discussion was recorded in R4-2011861.

**Decision:** The document was **agreed**.

**R4-2011528 CR to 38.101-1 - Correction to CA BCS and cross band isolation MSD tables**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0480 Cat: F (Rel-16)  
  
 Source: Skyworks Solutions Inc.*

**Abstract:**

n41 CBW for certain CA BCS do not match band definition CBW.

MSD for new channel bandwidth (CBW) vs BCS are missing.

Re-ordering of UL configuration table to facilitate future maintenance work.

CA\_n78A-n79A:

- MSD can not be defined at 70MHz CBW since this CBW is not defined for BCS0

- Add Note 3 to n78

**Discussion:**

The contribution was discussed during email thread [96e][121] NR\_R16\_Maintenance. The discussion was recorded in R4-2011861.

**Decision:** The document was **revised to R4-2011775**.

**R4-2011775 CR to 38.101-1 - Correction to CA BCS and cross band isolation MSD tables**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0480 rev 1 Cat: F (Rel-16)  
  
 Source: Skyworks Solutions Inc.*

(Replaces R4-2011528)

**Abstract:**

n41 CBW for certain CA BCS does not match band definition CBW.

MSD for new channel bandwidth (CBW) vs BCS are missing.

Re-ordering of UL configuration table to facilitate future maintenance work.

CA\_n78A-n79A:

- MSD can not be defined at 70MHz CBW since this CBW is not defined for BCS0

- Add Note 3 to n78

**Discussion:**

The contribution was discussed during email thread [96e][121] NR\_R16\_Maintenance. The discussion was recorded in R4-2011861.

**Decision:** The document was **agreed**.

**R4-2011529 CR to 38.101-1 Correction to NS\_18**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0481 Cat: F (Rel-16)  
  
 Source: Skyworks Solutions Inc.*

**Abstract:**

Previously agreed CR R4-2002849 has not been correctly implemented

**Discussion:**

The contribution was discussed during email thread [96e][121] NR\_R16\_Maintenance. The discussion was recorded in R4-2011861.

**Decision:** The document was **not pursued**.

**R4-2009615 CR for n26 AMPR for 256QAM**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0409 Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

Missing backoff for 256QAM AMPR

Technically endorsed draft CR R4-2005183

**Discussion:**

The contribution was discussed during email thread [96e][121] NR\_R16\_Maintenance. The discussion was recorded in R4-2011861.

**Decision:** The document was **agreed**.

**R4-2009618 CR for missing note for DC\_39A\_n41A for non-simultaneous RX/TX operation**

*Type: CR For: Agreement  
 38.101-3 v16.4.0 CR-0300 Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

Missing note to indicate non simultaneous RX/TX operation for DC\_39A\_n41A

**Discussion:**

The contribution was discussed during email thread [96e][121] NR\_R16\_Maintenance. The discussion was recorded in R4-2011861.

**Decision:** The document was **agreed**.

**R4-2009619 CR for correcting DC\_48\_n5 UE spurious coexistence in 38.101-3**

*Type: CR For: Agreement  
 38.101-3 v16.4.0 CR-0301 Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

Erroneous UE spurious coexistence requirements for DC\_48\_n5

**Discussion:**

The contribution was discussed during email thread [96e][121] NR\_R16\_Maintenance. The discussion was recorded in R4-2011861.

**Decision:** The document was **agreed**.

**R4-2009620 CR for missing DC\_3A\_n1A Cross Band Noise MSD for large NR UL BW in 38.101-3**

*Type: CR For: Agreement  
 38.101-3 v16.4.0 CR-0302 Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

Missing cross band noise MSD for various interband ENDC band combinations with large NR UL BW

**Discussion:**

The contribution was discussed during email thread [96e][121] NR\_R16\_Maintenance. The discussion was recorded in R4-2011861.

**Decision:** The document was **not pursued**.

**R4-2009621 CR for missing IMD MSD in 38.101-3 for DC\_3A-28A\_n41A, DC\_28A-41A\_n77A**

*Type: CR For: Agreement  
 38.101-3 v16.4.0 CR-0303 Cat: F (Rel-16)  
  
 Source: Qualcomm Incorporated*

**Abstract:**

Missing IMD MSD for various interband ENDC band combinations

**Discussion:**

The contribution was discussed during email thread [96e][121] NR\_R16\_Maintenance. The discussion was recorded in R4-2011861.

**Decision:** The document was **agreed**.

**R4-2009628 ENDC crossband noise impact with large NR BW**

*Type: other For: Approval  
 38.101-3 v..  
 Source: Qualcomm Incorporated*

**Discussion:**

The contribution was discussed during email thread [96e][121] NR\_R16\_Maintenance. The discussion was recorded in R4-2011861.

**Decision:** The document was **noted**.

**R4-2009666 Correction to ASEM for NS\_27**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0416 Cat: F (Rel-16)  
  
 Source: Anritsu Corporation*

**Abstract:**

Note in Table 6.5.2.3.8-1 is missing from Ver 16.3.0. It seems the note was removed by accident when R4-2000327 was implemented. (R4-2000327 itself is not wrong.)

Definition of ΔfOOB is an offset from the channel edge.

Therefore the expression “3540 MHz < ΔfOOB < 3710 MHz” is misleading and not aligned with the applicable range which is described in TR38.873 Figure 5.2.

**Discussion:**

The contribution was discussed during email thread [96e][121] NR\_R16\_Maintenance. The discussion was recorded in R4-2011861.

**Decision:** The document was **revised to R4-2011771**.

**R4-2011771 Correction to ASEM for NS\_27**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0416 rev 1 Cat: F (Rel-16)  
  
 Source: Anritsu Corporation*

(Replaces R4-2009666)

**Abstract:**

Note in Table 6.5.2.3.8-1 is missing from Ver 16.3.0. It seems the note was removed by accident when R4-2000327 was implemented. (R4-2000327 itself is not wrong.)

Definition of ΔfOOB is an offset from the channel edge.

Therefore the expression “3540 MHz < ΔfOOB < 3710 MHz” is misleading and not aligned with the applicable range which is described in TR38.873 Figure 5.2.

**Discussion:**

The contribution was discussed during email thread [96e][121] NR\_R16\_Maintenance. The discussion was recorded in R4-2011861.

**Decision:** The document was **agreed**.

**R4-2009718 Introduction of UE PC2 for NR band n40**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0419 Cat: F (Rel-16)  
  
 Source: Reliance Jio*

**Abstract:**

To enable Power class 2 UE transmission in n40 band

**Discussion:**

The contribution was discussed during email thread [96e][121] NR\_R16\_Maintenance. The discussion was recorded in R4-2011861.

**Decision:** The document was **agreed**.

**R4-2009939 Coexistence cleanup for 38101-1 Rel16**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0423 Cat: F (Rel-16)  
  
 Source: Apple Inc.*

**Abstract:**

Rel-16 features several band protections which are not technical possible due to sometimes TDD bands with overlapping regions are protected or similar issues. The CR focuses on correcting false protections so that a UE will not face technical impossible emission requirements.

**Discussion:**

The contribution was discussed during email thread [96e][121] NR\_R16\_Maintenance. The discussion was recorded in R4-2011861.

**Decision:** The document was **agreed**.

**R4-2009940 Coexistence cleanup for 38101-3 Rel16**

*Type: CR For: Agreement  
 38.101-3 v16.4.0 CR-0313 Cat: F (Rel-16)  
  
 Source: Apple Inc.*

**Abstract:**

Rel-16 features several band protections which are not technical possible due to sometimes TDD bands with overlapping regions are protected or similar issues. The CR focuses on correcting false protections so that a UE will not face technical impossible emission requirements.

**Discussion:**

The contribution was discussed during email thread [96e][121] NR\_R16\_Maintenance. The discussion was recorded in R4-2011861.

**Decision:** The document was **agreed**.

**R4-2009947 CR Editorial cleanup of band combination tables for 38101-1 Rel16**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0424 Cat: D (Rel-16)  
  
 Source: Apple Inc.*

**Abstract:**

The tables of the band combinations in 38.101-1 have a high number of editorial bugs like spaces where they don’t belong, typos in the band combinations, missing linefeeds etc.. This CR focuses on correcting these typos so that an automated extraction of the tables is enabled.

**Discussion:**

The contribution was discussed during email thread [96e][121] NR\_R16\_Maintenance. The discussion was recorded in R4-2011861.

**Decision:** The document was **agreed**.

**R4-2009948 CR Editorial cleanup of band combination tables for 38101-3 Rel16**

*Type: CR For: Agreement  
 38.101-3 v16.4.0 CR-0314 Cat: D (Rel-16)  
  
 Source: Apple Inc.*

**Abstract:**

The tables of the band combinations in 38.101-3 have a high number of editorial bugs like spaces where they don’t belong, typos in the band combinations, missing linefeeds etc.. This CR focuses on correcting these typos so that an automated extraction of the tables is enabled.

**Discussion:**

The contribution was discussed during email thread [96e][121] NR\_R16\_Maintenance. The discussion was recorded in R4-2011861.

**Decision:** The document was **agreed**.

**R4-2009949 Correction for REL16 FR2 contiguous intra-band CA configuration table**

*Type: CR For: Agreement  
 38.101-2 v16.4.0 CR-0226 Cat: F (Rel-16)  
  
 Source: Apple Inc.*

**Abstract:**

The UL CA configurations are inconsistently listed in the UL column of the intraband contiguous DL CA configurations table as was decribed in R4-2003054. This CR consistently changes this so that every valid UL is listed

**Discussion:**

The contribution was discussed during email thread [96e][121] NR\_R16\_Maintenance. The discussion was recorded in R4-2011861.

**Decision:** The document was **revised to R4-2011776**.

**R4-2011776 Correction for REL16 FR2 contiguous intra-band CA configuration table**

*Type: CR For: Agreement  
 38.101-2 v16.4.0 CR-0226 rev 1 Cat: F (Rel-16)  
  
 Source: Apple Inc.*

(Replaces R4-2009949)

**Abstract:**

The UL CA configurations are inconsistently listed in the UL column of the intraband contiguous DL CA configurations table as was decribed in R4-2003054. This CR consistently changes this so that every valid UL is listed

**Discussion:**

The contribution was discussed during email thread [96e][121] NR\_R16\_Maintenance. The discussion was recorded in R4-2011861.

**Decision:** The document was **agreed**.

**R4-2009976 CR to correct protected band of intra-band EN-DC**

*Type: CR For: Agreement  
 38.101-3 v16.4.0 CR-0319 Cat: F (Rel-16)  
  
 Source: KDDI Corporation*

**Abstract:**

some bands are missed in protected band specification of band 41/n41 intra-band EN-DC

**Discussion:**

The contribution was discussed during email thread [96e][121] NR\_R16\_Maintenance. The discussion was recorded in R4-2011861.

**Decision:** The document was **agreed**.

**R4-2013044 Correction of corrupted table**

*Type: CR For: Agreement  
 38.101-2 v16.4.0 CR-0259 Cat: F (Rel-16)  
  
 Source: ETSI MCC*

**Abstract:**

Table 5.4.3.3-1 is corrupted after implementation of CR0191r2.

**Discussion:**

The contribution was presented and discussed during GTW Main session 28-08-2020.

**Decision:** The document was **agreed**.

#### 7.19.4 BS RF [WI code or TEI16]

**R4-2010834 Correction to NB-IoT Bands with n26**

*Type: CR For: Agreement  
 38.104 v16.4.0 CR-0229 Cat: F (Rel-16)  
  
 Source: Dish Network*

**Abstract:**

Band n26 was completed in RAN#87, however, the work missed adding it to the list of NB-IoT bands in 38.104.

**Discussion:**

The contribution was discussed during email thread [96e][302] NR\_maintenance\_RF\_BS. The discussion was recorded in R4-2012718.

**Decision:** The document was **agreed**.

**R4-2011261 CR to TS 37.105: Introduction of requirements for NR + UTRA combinations, Rel-16**

*Type: CR For: Agreement  
 37.105 v16.4.0 CR-0187 Cat: B (Rel-16)  
  
 Source: Huawei*

**Abstract:**

Referring to the Rel-16 WI on MSR\_GSM\_UTRA\_LTE\_NR, the MSR BS specification was extended with additional CS configuration (e.g. UTRA+EUTRA+NR).

WID in RP-190642 captured that only MSR BS specifications are to be affected, i.e. TS 37.104, TS 37.141.

Related MSR BS CRs are listed below:

TS 37.104: R4-1908049Introduction of requirements for NR + UTRA/GSM combinations

TS 37.141: R4-1910476Introduction of requirements for NR + UTRA/GSM combinations

Still, the referred WI has also impacted OBUE and blocking requirements, which also impacts the AAS BS specifications.

Therefore, this CR provides modifications to the AAS BS core specification TS 37.105, to reflect modification from the MSR\_GSM\_UTRA\_LTE\_NR WI which were introduced to Rel-16 MSR BS TS 37.104.

**Discussion:**

The contribution was discussed during email thread [96e][302] NR\_maintenance\_RF\_BS. The discussion was recorded in R4-2012718.

**Decision:** The document was **revised to R4-2012582**.

**R4-2012582 CR to TS 37.105: Introduction of requirements for NR + UTRA combinations, Rel-16**

*Type: CR For: Agreement  
 37.105 v16.4.0 CR-0187 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei*

(Replaces R4-2011261)

**Discussion:**

The contribution was discussed during email thread [96e][302] NR\_maintenance\_RF\_BS. The discussion was recorded in R4-2012718.

**Decision:** The document was **postponed**.

**R4-2011262 CR to TS 37.145-1: Introduction of new BS capability set for NR+EUTRA+UTRA, Rel-16**

*Type: CR For: Agreement  
 37.145-1 v16.4.0 CR-0216 Cat: B (Rel-16)  
  
 Source: Huawei*

**Abstract:**

Referring to the Rel-16 WI on MSR\_GSM\_UTRA\_LTE\_NR, the MSR BS specification was extended with additional CS configuration (e.g. UTRA+EUTRA+NR).

WID in RP-190642 captured that only MSR BS specifications are to be affected, i.e. TS 37.104, TS 37.141.

Realted MSR BS CRs are listed below:

TS 37.104: R4-1908049Introduction of requirements for NR + UTRA/GSM combinations

TS 37.141: R4-1910476Introduction of requirements for NR + UTRA/GSM combinations

Still, the referred WI has also impacted OBUE and blocking requirements, which also impacts the AAS BS specifications, as well as the Capability Sets and test configurations were extended.

Therefore, this CR provides modifications to the AAS BS test specification TS 37.145-1, to reflect modification from the MSR\_GSM\_UTRA\_LTE\_NR WI which were introduced to Rel-16 MSR BS TS 37.141.

**Discussion:**

The contribution was discussed during email thread [96e][302] NR\_maintenance\_RF\_BS. The discussion was recorded in R4-2012718.

**Decision:** The document was **revised to R4-2012583**.

**R4-2012583 CR to TS 37.145-1: Introduction of new BS capability set for NR+EUTRA+UTRA, Rel-16**

*Type: CR For: Agreement  
 37.145-1 v16.4.0 CR-0216 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei*

(Replaces R4-2011262)

**Discussion:**

The contribution was discussed during email thread [96e][302] NR\_maintenance\_RF\_BS. The discussion was recorded in R4-2012718.

**Decision:** The document was **postponed**.

**R4-2011263 CR to TS 37.145-2: Introduction of new BS capability set for NR+EUTRA+UTRA, Rel-16**

*Type: CR For: Agreement  
 37.145-2 v16.4.0 CR-0239 Cat: B (Rel-16)  
  
 Source: Huawei*

**Abstract:**

Referring to the Rel-16 WI on MSR\_GSM\_UTRA\_LTE\_NR, the MSR BS specification was extended with additional CS configuration (e.g. UTRA+EUTRA+NR).

WID in RP-190642 captured that only MSR BS specifications are to be affected, i.e. TS 37.104, TS 37.141.

Realted MSR BS CRs are listed below:

TS 37.104: R4-1908049Introduction of requirements for NR + UTRA/GSM combinations

TS 37.141: R4-1910476Introduction of requirements for NR + UTRA/GSM combinations

Still, the referred WI has also impacted OBUE and blocking requirements, which also impacts the AAS BS specifications, as well as the Capability Sets and test configurations were extended.

Therefore, this CR provides modifications to the AAS BS test specification TS 37.145-1, to reflect modification from the MSR\_GSM\_UTRA\_LTE\_NR WI which were introduced to Rel-16 MSR BS TS 37.141.

**Discussion:**

The contribution was discussed during email thread [96e][302] NR\_maintenance\_RF\_BS. The discussion was recorded in R4-2012718.

**Decision:** The document was **revised to R4-2012584**.

**R4-2012584 CR to TS 37.145-2: Introduction of new BS capability set for NR+EUTRA+UTRA, Rel-16**

*Type: CR For: Agreement  
 37.145-2 v16.4.0 CR-0239 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei*

(Replaces R4-2011263)

**Discussion:**

The contribution was discussed during email thread [96e][302] NR\_maintenance\_RF\_BS. The discussion was recorded in R4-2012718.

**Decision:** The document was **postponed**.

#### 7.19.5 RRM [WI code or TEI16]

**R4-2012035 Email discussion summary for [96e][204] R16\_NR\_RRM\_maintenance**

*Type: other For: discussion  
 Source: Moderator (Apple)*

**Discussion:**

The contribution summarized email discussion thread [96e][204] R16\_NR\_RRM\_maintenance. The email thread was moderated by Yang Tang (Apple). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2012205**.

**R4-2012205 Email discussion summary for [96e][204] R16\_NR\_RRM\_maintenance**

*Type: other For: discussion  
 Source: Moderator (Apple)*

(Replaces R4-2012035)

**Discussion:**

The contribution summarized email discussion thread [96e][204] R16\_NR\_RRM\_maintenance. The email thread was moderated by Yang Tang (Apple). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **noted**.

*1st round email discussion conclusions*

**Topic #1: Dual DRX for FR1+FR2 CA**

Agreement

No interruption is allowed for transitions between active and non-active during DRX when UE is configured with dual DRX in FR1+FR2 CA, regardless per-FR gap is supported or not

**R4-2010024 CR for Table number mismatch for CLI performance tests**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0961 Cat: F (Rel-16)  
  
 Source: LG Electronics Inc.*

**Abstract:**

Following updates are needed

- correct Table number mismatch

- correct Table tile mismatch for test cases

- change font color from red to black

**Discussion:**

The contribution was discussed during email thread [96e][204] R16\_NR\_RRM\_maintenance. The discussion was recorded in R4-2012205.

**Decision:** The document was **agreed**.

**R4-2010210 CR for SCell activation delay in FR2 in R16**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0989 Cat: F (Rel-16)  
  
 Source: MediaTek inc.*

**Abstract:**

misaligned with in R15, on Tuncertainty\_MAC and Tuncertainty\_SP

**Discussion:**

The contribution was discussed during email thread [96e][204] R16\_NR\_RRM\_maintenance. The discussion was recorded in R4-2012205.

**Decision:** The document was **merged**.

**R4-2010517 [CR] Corrections to DAPS Handover**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1008 Cat: F (Rel-16)  
  
 Source: ZTE Corporation*

**Abstract:**

The value of Tinterrupt is not in slots aas it’s stated.

**Discussion:**

The contribution was discussed during email thread [96e][209] NR\_Mob\_enh\_RRM. The discussion was recorded in R4-2012209.

**Decision:** The document was **agreed**.

**R4-2010663 CR 38.133 (8.3.2-3) Corrections to SCell activation delay requirements**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1015 Cat: F (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

At RAN4#95e, CR 0816 (mirror to CR 0815) was agreed. However, during the CR implementation, some of the changes were mistakenly left out.

**Discussion:**

The contribution was discussed during email thread [96e][204] R16\_NR\_RRM\_maintenance. The discussion was recorded in R4-2012205.

**Decision:** The document was **revised to R4-2012235**.

**R4-2012235 CR 38.133 (8.3.2-3) Corrections to SCell activation delay requirements**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1015 rev 1 Cat: F (Rel-16)  
  
 Source: Ericsson, MediaTek*

(Replaces R4-2010663)

**Abstract:**

At RAN4#95e, CR 0816 (mirror to CR 0815) was agreed. However, during the CR implementation, some of the changes were mistakenly left out.

**Discussion:**

The contribution was discussed during email thread [96e][204] R16\_NR\_RRM\_maintenance. The discussion was recorded in R4-2012205.

**Decision:** The document was **agreed**.

**R4-2011144 CR on reporting criteria for CLI**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1078 Cat: F (Rel-16)  
  
 Source: Huawei, Hisilicon*

**Abstract:**

There is no reporting cirteria requirement for CLI measurement

**Discussion:**

The contribution was discussed during email thread [96e][204] R16\_NR\_RRM\_maintenance. The discussion was recorded in R4-2012205.

**Decision:** The document was **agreed**.

**R4-2011250 Analysis of interruption requirements under dual DRX**

*Type: other For: Discussion  
 Source: Ericsson*

**Abstract:**

This document analysis interruption requirements for dual DRX in NR FR1-FR2 CA

**Discussion:**

The contribution was discussed during email thread [96e][204] R16\_NR\_RRM\_maintenance. The discussion was recorded in R4-2012205.

**Decision:** The document was **noted**.

**R4-2011251 Interruption requirements under dual DRX**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1092 Cat: C (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

To define interruption requirements when secondary DRX is configured in FR1 and FR2 CA.

**Discussion:**

The contribution was discussed during email thread [96e][204] R16\_NR\_RRM\_maintenance. The discussion was recorded in R4-2012205.

**Decision:** The document was **postponed**.

**R4-2009900 CR on TS38.133 for intra-frequency measurement definition (Section 9.2.1)**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0952 Cat: F (Rel-16)  
  
 Source: MediaTek inc.*

**Abstract:**

The intra-frequency measurement definition has been wrongly replaced by minimum requirement at transitions

**Discussion:**

The contribution was discussed during email thread [96e][204] R16\_NR\_RRM\_maintenance. The discussion was recorded in R4-2012205.

**Decision:** The document was **agreed**.

**R4-2009916 On RRM requirement based on dual DRX for FR1+FR2 CA**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: Apple*

**Discussion:**

The contribution was discussed during email thread [96e][204] R16\_NR\_RRM\_maintenance. The discussion was recorded in R4-2012205.

**Decision:** The document was **noted**.

**R4-2009917 CR on RRM requirement based on dual DRX for FR1+FR2 CA**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0958 Cat: B (Rel-16)  
  
 Source: Apple*

**Abstract:**

RRM requirement based on dual DRX for FR1+FR2 CA is missing.

**Discussion:**

The contribution was discussed during email thread [96e][204] R16\_NR\_RRM\_maintenance. The discussion was recorded in R4-2012205.

**Decision:** The document was **revised to R4-2012267**.

**R4-2012267 CR on RRM requirement based on dual DRX for FR1+FR2 CA**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0958 rev 1 Cat: B (Rel-16)  
  
 Source: Apple*

(Replaces R4-2009917)

**Abstract:**

RRM requirement based on dual DRX for FR1+FR2 CA is missing.

**Discussion:**

The contribution was discussed during email thread [96e][204] R16\_NR\_RRM\_maintenance. The discussion was recorded in R4-2012205.

**Decision:** The document was **agreed**.

**R4-2009922 Update NR Frequency Band Groups to include Band n30**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0959 Cat: F (Rel-16)  
  
 Source: AT&T*

**Abstract:**

The NR Frequency Band Groups for FR1 in clause 3.5.2 do not contain Band n30.

**Discussion:**

The contribution was discussed during email thread [96e][204] R16\_NR\_RRM\_maintenance. The discussion was recorded in R4-2012205.

**Decision:** The document was **agreed**.

**R4-2009923 Update NR Frequency Band Groups to include Band n14**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-0960 Cat: F (Rel-16)  
  
 Source: AT&T*

**Abstract:**

The NR Frequency Band Groups for FR1 in clause 3.5.2 do not contain Band n14.

**Discussion:**

The contribution was discussed during email thread [96e][204] R16\_NR\_RRM\_maintenance. The discussion was recorded in R4-2012205.

**Decision:** The document was **agreed**.

**R4-2013034 [CR] Replacing x in references with correct numbers (Core R16 Cat F)**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1111 Cat: F (Rel-16)  
  
 Source: ZTE*

**Abstract:**

There are several places in the spec with ‘.x’ in the reference to another clause. As guided by the Secretary we prepare such a CR to replace the ‘.x’ with correct numbers to increase readability of the spec.

**Discussion:**

The contribution was discussed during email thread [96e][204] R16\_NR\_RRM\_maintenance. The discussion was recorded in R4-2012205.

**Decision:** The document was **agreed**.

#### 7.19.6 Demodulation and CSI [WI code or TEI16]

## 8 Rel-16 UE feature list

*GTW session (Aug 19th)*

**NR mobility enhancement**

Issue 2-1: the type of capabilities for intra-frequency DAPS (5-1, 5-5, 5-7, 5-9)

* Proposals:
  + Let RAN2 decide the type of capabilities. No need to discuss in this meeting.
* Discussion
  + CMCC: HW commented to reflector that they are ok to let RAN2 decide
  + QC: also ok with the proposal
  + E///: also ok to let RAN2 to decide
  + Intel: RAN2 agreed CR in the last meeting. They have ongoing discussion
  + Huawei: in RAN2 companies have contributions and then we can leave up to them
* Agreement:
  + The type of capabilities signalling for intra-frequency DAPS features 5-1, 5-5, 5-7, 5-9 will be up to RAN2 decision. Remove signalling type from UE feature list and recommend RAN2 to provide a solution.

Issue 2-2: new UE feature (supported channel bandwidth on source cell and target cell)

* Proposals:
  + For the feature of supported channel bandwidth per CC for DAPS, and other related features

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Features | Index | Feature group | Components | Type |
| 5. Mobility Enhancement | 5-X | Supported channel bandwidth on source cell and target cell | Indicate the supported channel bandwidth per SCS on source cell and target cell separately | Type 5 Per FSPC |

* + - Option 1: To capture the above features in UE feature list
    - Option 2: To capture the above features in TR (need to check whether there is a TR)
* Discussion
  + Huawei: Companies prefer not to include it in the feature list. We are ok to include a note into feature list and LS that previously agreed parameters shall be included into the capabilities signalling.
  + QC: Why does NW need to know the parameters?
    - Huawei: even for intra-frequency different capabilities may be needed for DAPS case and for regular case.
  + Intel: CBW is already captured in RAN2 specs
* Agreement: Include a note into RAN4 UE feature list LS that previously agreed parameters for DAPS including CBW shall be included into the UE capabilities signalling.

**MR-DC**

[6-4] Support of beam level Early Measurement Reporting

* Proposal in email summary document

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Index | Feature group | Components | Prerequisite feature groups | Need for the gNB to know if the feature is supported | Applicable to the capability signalling exchange between UEs (V2X WI only)”. | Consequence if the feature is not supported by the UE | Type | Need of FDD/TDD differentiation | Need of FR1/FR2 differentiation | Capability interpretation for mixture of FDD/TDD and/or FR1/FR2 | Note | Mandatory/Optional |
| [6-4] | Support of beam level Early Measurement Reporting | Supporting of beam level measurement and reporting for Early Measurement Reporting at connection setup. | TBD | Yes | N/A | Network cannot configure beam-level reporting to UE for EMR | Per UE | No | No | N/A |  | [Optional with capability signalling] |

* Discussion
  + Huawei: the measurement is done in IDLE mode.
  + CMCC: Huawei suggested to clarify that this applies to both IDLE and INACTIVE modes and QC preferred not to change the name. So, no changes were made.
  + HW: In the component we suggest to clarify that the measurement is done in IDLE and INACTIVE modes
  + Nokia: UEs in IDLE modes are supposed to support the measurements. Need to differentiate between NR inter-frequency and NR inter-RAT. For NR inter-frequency it is mandatory for UE to support already. For inter-RAT we do not have it.
    - MTK: In the original EMR capability inter-frequency and inter-RAT supported is already separated. In conventional re-selection UE needs to read SSB index only after UE selects the target cell and capability is need.
    - QC: To Nokia conventional Rel-15 UE does not need to read SSB index. UE needs to consider only total number of detected SSBs. In this feature UE needs to differentiate SSB index.
    - Huawei: Similar understanding with QC. EMR requirements include additional SSB index reading time. So, capability is needed.
    - Nokia: Clarifications are fine.
  + Huawei: we would like to differentiate capabilities for NR inter-frequency in NR IDLE/Inactive mode and LTE-NR Inter-RAT when UE is in LTE IDLE/INACTIVE mode
    - QC: what is the motivation behind this?
    - MTK: Support to have different capabilities
    - Apple: are these NR or LTE capabilities?
    - Huawei: one is for NR and the other is for LTE capability
* Agreement
  + NR UE feature list

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Index | Feature group | Components | Prerequisite feature groups | Need for the gNB to know if the feature is supported | Applicable to the capability signalling exchange between UEs (V2X WI only)”. | Consequence if the feature is not supported by the UE | Type | Need of FDD/TDD differentiation | Need of FR1/FR2 differentiation | Capability interpretation for mixture of FDD/TDD and/or FR1/FR2 | Note | Mandatory/Optional |
| 6-4 | Support of beam level Early Measurement Reporting | Supporting of beam level measurement and reporting when in NR Idle/Inactive mode for Early Measurement Reporting at connection setup. | *idleInactiveNR-MeasReport-r16* | Yes | N/A | Network cannot configure beam-level reporting to UE for EMR | Per UE | No | Yes | N/A |  | [Optional with capability signalling] |

* + LTE UE feature list

|  |  |  |  |  |  |  |  |  |  |  |  |  |
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| Index | Feature group | Components | Prerequisite feature groups | Need for the gNB to know if the feature is supported | Applicable to the capability signalling exchange between UEs (V2X WI only)”. | Consequence if the feature is not supported by the UE | Type | Need of FDD/TDD differentiation | Need of FR1/FR2 differentiation | Capability interpretation for mixture of FDD/TDD and/or FR1/FR2 | Note | Mandatory/Optional |
|  | Support of beam level Early Measurement Reporting | Supporting of NR beam level measurement and reporting when in LTE Idle/Inactive mode for Early Measurement Reporting at connection setup for FR1 | *endc-IdleInactiveMeasFR1-r16* | Yes | N/A | Network cannot configure beam-level reporting to UE for EMR | Per UE | No | N/A | N/A |  | [Optional with capability signalling] |
|  | Supporting of NR beam level measurement and reporting when in LTE Idle/Inactive mode for Early Measurement Reporting at connection setup for FR2 | *endc-IdleInactiveMeasFR2-r16* | Yes | N/A | Network cannot configure beam-level reporting to UE for EMR | Per UE | No | N/A | N/A |  | [Optional with capability signalling] |

**NR RRM Enhancements**

The latest list in email summary document

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Index | Feature group | Components | Prerequisite feature groups | Need for the gNB to know if the feature is supported | Applicable to the capability signalling exchange between UEs (V2X WI only)”. | Consequence if the feature is not supported by the UE | Type | Need of FDD/TDD differentiation | Need of FR1/FR2 differentiation | Capability interpretation for mixture of FDD/TDD and/or FR1/FR2 | Note | Mandatory/Optional |
| 9-1 | BWP switching on multiple CCs RRM requirements | [1) Support of BWP switching on multiple CCs RRM requirements.]  2) Incremental delay for BWP switch processing on additional CCs in timer/DCI based simultaneous BWP switching on multiple CCs | [RAN1 feature 6-2, 6-3, 6-4 specified in TR 38.822] | Yes | N/A | There may be additional unclear BWP switching delay if network trigger BWP switching on multiple CC simultaneously. | Per UE | No | [No] | N/A | For component 2), the candidate values are:   * {100us, 200us} for UE indicates type1 in bwp-SwitchingDelay * {400us, 800us, 1000us} for UE indicates type 2 in bwp-SwitchingDelay   The total BWP switching delay will be captured in TS38.133 | Optional with capability signalling |
| 9-2 | Mandatory gap pattern for NR-only measurements in NR SA and NR DC | 1) Support of additional mandatory gap patterns for NR-only measurements in NR SA and NR DC, |  | Yes | N/A | Network cannot configure corresponding gap patterns for the UE. | Per UE | No | No | N/A | Note: Agreements are provided in [R4-2005846]. According to RAN4 agreement, a bitmap should be introduced | Mandatory with capability |
| 9-3 | Mandatory gap pattern for NR measurement only in LTE SA, EN-DC, NE-DC | 1) Support of full set of mandatory additional gap patterns defined for NR SA and NR-DC for NR measurement only in LTE SA, EN-DC, NE-DC | 9-2 | Yes | N/A | Network cannot configure corresponding gap patterns for the UE. | Per UE | No | No | N/A | Note: Agreements are provided in [R4-2005846]. According to RAN4 agreement, a single bit should be introduced | Optional with capability |
| 9-4 | SSB based inter-frequency measurement without measurement gap | 1) Support of inter-frequency measurement without MG when the inter-frequency SSB is completely contained in the active DL BWP of the UE |  | Yes | N/A | 1) gNB has to configure measurement gap for inter-frequency measurement | Per UE | No | Yes | N/A |  | Optional with capability signalling |
| 9-5 | Different SCS between PDCCH/PDSCH and SSB in inter-frequency measurement without MG | 1) Support of SSB based measurement on inter-frequency without MG and data reception of PDCCH/PDSCH in serving with different SCS | 9-4 | Yes | N/A | 2) UE cannot support of SSB based measurement on inter-frequency without MG and data reception of PDCCH/PDSCH in serving with different SCS | Per UE | No | Yes | N/A | Details can be found in RAN4 LS R4-2005350 to RAN2, wherein two options are listed, i.e.1) update existing IE (simultaneousRxDataSSB-DiffNumerology); 2) introduce a new UE capability | Optional with capability signalling |
| 9-6 | CGI reading of an NR neighbour cell | 1) Support of autonomous gap-based CGI reading of an NR neighbour cell for EN-DC, NR SA, LTE SA, NR-DC, NE-DC |  | Yes | N/A | gNB cannot configure CGI reading of NR neighbor cell | Per UE | No | Yes | N/A | Signalling details are up to RAN2. | Optional with capability signalling |
| 9-7 | CGI reading of an E-UTRA neighbour cell | 1) Support of autonomous gap-based CGI reading of an E-UTRA neighbour cell for EN-DC, NR SA, LTE SA, NR-DC, NE-DC |  | Yes | N/A | gNB cannot configure CGI reading of E-UTRA neighbor cell | Per UE | No | Yes | N/A | Signalling details are up to RAN2. | Optional with capability signalling |
| [9-8] | [SRS carrier switching] | 1) Support of SRS carrier switching RRM requirements | [Rel-15 NR RAN1 UE feature list feature 2-56 (SRS carrier switch)] | Yes | N/A | Network cannot know the interruption time when SRS carrier switching happens for this UE. Therefore, either network may not trigger SRS carrier switch or there will be performance degradation | Per UE | No | Yes | N/A | Functionality of SRS carrier switching has already been supported since R15. RRM requirement is expected to be introduced in R16. Thus, R16 UE shall meet corresponding RRM requirement. The requirements apply when SRS carrier switching is on NR carrier or on LTE carrier i.e. it should cover also EN-DC and NE-DC scenarios.  9-5 is mandatory for Rel-16 UEs supporting SRS carrier switching | Optional with capability signalling |
| [9-9] | [Multiple SCell activation] | 1) Support of multiple SCell activation RRM requirement |  | Yes | N/A | Network cannot know the multiple SCell activation delay and corresponding interruption length for this UE. Therefore, either network may not trigger multiple SCell activation or there will be performance degradation | Per UE | No | Yes | N/A | Functionality of multiple SCell activation has already been supported since R15. RRM requirement is expected to be introduced in R16. Thus, R16 UE shall meet corresponding RRM requirement. | Optional with capability signalling |
| [9-10] | [UE specific CBW change] | 1) Support of UE-specific CBW change RRM requirement |  | Yes | N/A | Network cannot know the UE specific CBW change delay and corresponding interruption length for this UE. There will be performance degradation when UE specific CBW changes | Per UE | No | No | N/A | Functionality of UE specific CBW change has already been supported since R15. RRM requirement is expected to be introduced in R16. Thus, R16 UE shall meet corresponding RRM requirement. | Optional with capability signalling |
| [9-11] | [Spatial relation switch for uplink] | 1) Support of UL spatial relation switch RRM requirement |  | Yes | N/A | Network cannot know the uplink spatial relation switch delay for this UE. There will be performance degradation when uplink spatial relation changes | Per UE | No | No | N/A | Functionality of uplink spatial relation change has already been supported since R15. RRM requirement is expected to be introduced in R16. Thus, R16 UE shall meet corresponding RRM requirement. | Optional with capability signalling |
|  |  |  |  |  |  |  |  |  |  |  |  |  |

Issue 6-1: 9-1 (BWP switching on multiple CCs RRM requirements)

* Proposals:
  + Option 1 (Intel):
    - Remove components 1, i.e. support of BWP switching on multiple CCs RRM requirements. This can be implicitly indicated by the components of incremental delay.
    - Square brackets in Prerequisite feature groups should be removed. UE has to support corresponding BWP operation if it supports BWP switching on multiple CCs.
    - No need to differentiate FR1/FR2, similar with RAN1 feature 6-2, 6-3, 6-4 specified in TR 38.822.
  + Option 2 (Qualcomm):
    - 1) should not exist, requirements are not optional
    - 2) should be mandatory to support one of the options
* Discussion
  + QC: suggest another feature. Simultaneous processing of BWP in FR1 and FR2
  + Intel: this may need more discussion. In 221 email thread most companies prefer to go with the existing capabilities. Can update list if further agreements are reached.
  + MTK: Suggest additional value 200us for Type 2 UE. To QC, per FR gap capability can be used and do not see motivation in the new capability
  + Huawei: For QC proposal we share same view as Intel/MTK
  + QC: Component 1 shall be removed.
* Agreement

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| Index | Feature group | Components | Prerequisite feature groups | Need for the gNB to know if the feature is supported | Applicable to the capability signalling exchange between UEs (V2X WI only)”. | Consequence if the feature is not supported by the UE | Type | Need of FDD/TDD differentiation | Need of FR1/FR2 differentiation | Capability interpretation for mixture of FDD/TDD and/or FR1/FR2 | Note | Mandatory/Optional |
| 9-1 | BWP switching on multiple CCs RRM requirements | Incremental delay for BWP switch processing on additional CCs in timer/DCI based simultaneous BWP switching on multiple CCs | RAN1 feature 6-2, 6-3, 6-4 specified in TR 38.822 | Yes | N/A | There may be additional unclear BWP switching delay if network trigger BWP switching on multiple CC simultaneously. | Per UE | No | No | N/A | For component 2), the candidate values are:   * {100us, 200us} for UE indicates type1 in bwp-SwitchingDelay * {200us, 400us, 800us, 1000us} for UE indicates type 2 in bwp-SwitchingDelay   The total BWP switching delay will be captured in TS38.133  UE needs to indicate either of the candidate values in case it supports CA | Optional with capability signalling |

9-8 / 9-9 / 9-10 / 9-11

* Discussion
  + QC: This is a capability that UE supports the requirements. This should not be optional. If UE supports the feature but does not support requirements, how do we test it?
  + Intel: SRS carrier switching is fine. But for the rest of the features, there are no capabilities and new requirements were introduced in Rel-16 only. NW may not know if UE can meet the requirements. Some UEs may meet the requirements and some may not.
  + Huawei: Rel-15 UE may support 9-9, 9-10, 9-11 and we prefer not to specify capability. Rel-15 UEs do not need to pass the test. Rel-16 UEs need to pass the test. For 9-8 – the capability signalling is already present and no need to introduce a new one.
  + Apple: 9-9, 9-10, 9-11 are Rel-15 features but requirements are introduced in Rel-16. Rel-15 may not need to comply with requirements. If we do not introduce capabilities, then the new requirements become mandatory and prefer optional. For 9-8, we prefer mandatory with signalling and the purpose is to indicate that this applies to Rel-16 UEs.
  + ZTE: Agree with QC. Rel-16 UE needs to meet the requirements. Rel-15 UE should not meet the requirements. NW can read UE release to get the information.
  + MTK: Agree with QC, Huawei, ZTE since these all are Rel-15 leftovers. NW knows the release of the UE.
  + CMCC / China Telecom: Do not think signalling is needed. NW get release from the UE.
  + Intel: Relying on Rel number is not a good idea since UE needs to support all mandatory features before it can announce new release. We can also preclude late Rel-15 UEs to take benefit from the new capabilities.
  + QC: 9-9, 9-10, 9-11 are mandatory for Rel-15. These features are not broken even if UE does not meet the requirements. Simply it may take longer time. We can have capability for Rel-15 UEs only instead.
  + Apple: Need to differentiate 9-8 with others. We should not apply Rel-16 requirements to Rel-15 UEs. How does UE know how to apply the requirements? Capability is required to indicate whether it can meet the requirements. For the rest of the features – all of them are mandatory in Rel-15, we prefer to have new requirements as optional.
  + Huawei: For 9-9 to 9-11 – typically we introduce the requirements to make sure the NW may enable / disable some functionality. Do companies want to enable/disable some functionality or we simply want to make the requirements optional?
  + Nokia: what about release-independent features?
  + Apple: for example for CBW switching – why do we want to introduce it as mandatory? Deep concern on making all the requirements as mandatory.
  + Ericsson: These are Rel-16 requirements. All features are essential and shall be mandatory.
* Agreement
  + Feature 9-8 SRS carrier switching
    - Remove feature [9-8] [SRS carrier switching] from the features list
    - Rel-16 SRS carrier switching requirements apply for Rel-16 UEs only
  + Further discuss UE features 9-9, 9-10, 9-11
    - Whether the requirements for 9-9, 9-10, 9-11 are mandatory or optional for Rel-16 UEs
    - Whether the network needs to know that UE supports respective requirements
    - Whether UE release signalling is sufficient for NW to know that UE supports the requirements

**NR Positioning**

* Additional features to be introduced?
* Chair: recommend postpone to Thu GTW session

**NR L3 CSI-RS measurements**

The latest list in email summary document

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Index | Feature group | Components | Prerequisite feature groups | Need for the gNB to know if the feature is supported | Applicable to the capability signalling exchange between UEs (V2X WI only)”. | Consequence if the feature is not supported by the UE | Type | Need of FDD/TDD differentiation | Need of FR1/FR2 differentiation | Capability interpretation for mixture of FDD/TDD and/or FR1/FR2 | Note | Mandatory/Optional |
| [12-1] | [Simultaneous reception of CSI-RS of neighbour cell and SSB of serving cell] | UE support FDM-ed mix-numerology on simultaneous reception of CSI-RS of neighbour cell and SSB of serving cell | TBA | YES |  | The performance of CSI-RS L3 measurement cannot be guaranteed | Per UE | No | No |  |  | Optional with capability signalling |
| [12-2] | [CSI-RS measurement] | Support CSI-RS measurement based on timing of each of the detected associated SSB | csi-RSRP-AndRSRQ-MeasWithSSB | Yes | n/a | UE can only use a single common timing to measure CSI-RS resources per frequency layer, and can meet the accuracy requirements only under the timing error conditions defined in 38.133. | Per UE | no | no | n/a |  | Optional with capability signalling |

* Discussion
  + Apple: suggest to remove 12-1 and replace with several new capabilities
  + CATT: 12-1 is related to new proposal from Apple. Need further discussion.
  + Huawei: For 12-1 we propose to remove mixed numerology. Prefer further discussion.
  + MTK: Not possible to have quick discussion.
  + Nokia: 12-2 conflicts with our recent agreement on single FFT
  + OPPO: 12-1 suggest to revise the feature description based on the email discussion
  + ZTE: 12-1 more discussion. 12-2 does not contradict single capability
  + Huawei: 12-2 companies need to further discuss the exact wording
  + Apple: 12-2 agree with ZTE that it does not conflict with Single FFT case. What is the reference timing in case UE does not support the feature?
  + QC: 12-2 need to change the description to adopt 2 UE types depending whether UE can follow serving cell or associated SSBs
  + MTK: not very clear on 12-2.
  + Nokia: need more discussion on the wording.
* Conclusion: Continue discussion for both 12-1 and 12-2 in this meeting

**NR HST**

The latest list in email summary document (RRM-related)

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Index | Feature group | Components | Prerequisite feature groups | Need for the gNB to know if the feature is supported | Applicable to the capability signalling exchange between UEs (V2X WI only)”. | Consequence if the feature is not supported by the UE | Type | Need of FDD/TDD differentiation | Need of FR1/FR2 differentiation | Capability interpretation for mixture of FDD/TDD and/or FR1/FR2 | Note | Mandatory/Optional |
| 10-1 | RRM enhanced requirements specified within NR and NR-E-UTRAN inter-RAT measurement for NR HST | The enhanced RRM requirements specified within NR and NR-E-UTRAN inter-RAT measurement to support high speed up to 500 km/h, as specified in TS 38.133 |  | No |  | The performance of RRM in NR HST scenario cannot be guaranteed | Per UE | NO | FR1 only |  |  | [mandatory with capability signalling] |
| 10-3 | RRM enhancement for E-UTRAN -NR inter-RAT measurement for NR HST | The enhanced RRM requirements specified for E-UTRAN-NR inter-RAT measurement to support high speed up to 500 km/h, as specified in TS 36.133 |  | No |  | The performance of RRM in NR HST scenario cannot be guaranteed | Per UE | NO | FR1 only |  |  | [mandatory with capability signalling] |

**R4-2011555 Email discussion summary for [96e][122] R16\_UE\_ feature**

*Type: other For: discussion  
 Source: Moderator (CMCC)*

**Discussion:**

The contribution summarized email discussion thread [96e][122] R16\_UE\_ feature. The email thread was moderated by Xiaoran Zhang (China Mobile Com. Corporation) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **revised to R4-2011862**.

**R4-2011862 Email discussion summary for [96e][122] R16\_UE\_ feature**

*Type: other For: discussion  
 Source: Moderator (CMCC)*

(Replaces R4-2011555)

**Discussion:**

The contribution summarized email discussion thread [96e][122] R16\_UE\_ feature. The email thread was moderated by Xiaoran Zhang (China Mobile Com. Corporation) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **noted**.

**R4-2011679 LS on Rel-16 RAN4 UE features lists for NR and LTE**

*Type: LS out For: Approval  
 to RAN2, cc RAN1  
 Source: RAN4*

**Discussion:**

The contribution was discussed during email thread [96e][122] R16\_UE\_ feature. The discussion was recorded in R4-2011862.

**Decision:** The document was **approved**.

**R4-2011680 RAN4 UE features list for Rel-16**

*Type: discussion For: discussion  
 Source: CMCC*

**Discussion:**

The contribution was discussed during email thread [96e][122] R16\_UE\_ feature. The discussion was recorded in R4-2011862.

**Decision:** The document was **approved**.

**R4-2011929 LS on updated Rel-16 RAN4 UE features lists for NR and LTE**

*Type: LS out For: Approval  
 to RAN2, cc RAN1  
 Source: RAN4*

**Discussion:**

The contribution was discussed during email thread [96e][122] R16\_UE\_ feature. The discussion was recorded in R4-2011862.

**Decision:** The document was **approved**.

Attachments to this outgoing LS: R4-2011930

**R4-2011930 Updated RAN4 UE features list for Rel-16**

*Type: discussion For: Approval  
 Source: CMCC*

**Discussion:**

The contribution was discussed during email thread [96e][122] R16\_UE\_ feature. The discussion was recorded in R4-2011862.

The Chairmain commented that for FG "Simultaneous reception of intra-frequency CSI-RS and data of serving cell with mixed numerologies in FR1", RAN4 agreed to restrict the use case to the same numerology for intra-frequency CSI-RS and data of serving cell. As a result, this FG was no longer needed.

**Decision:** The document was **approved**.

**R4-2010050 On Rel-16 UE feature list**

*Type: discussion For: Discussion  
 38.133 v..  
 Source: Apple*

**Discussion:**

The contribution was discussed during email thread [96e][122] R16\_UE\_ feature. The discussion was recorded in R4-2011862.

**Decision:** The document was **noted**.

**R4-2010063 PC 1.5 in RAN4 UE features list for Rel-16**

*Type: discussion For: Approval  
 Source: T-Mobile USA*

**Discussion:**

The contribution was discussed during email thread [96e][122] R16\_UE\_ feature. The discussion was recorded in R4-2011862.

**Decision:** The document was **noted**.

**R4-2011467 Discussion on Rel-16 feature list**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Abstract:**

In this paper, we share our view on the feature list for Rel-16.

**Discussion:**

The contribution was discussed during email thread [96e][122] R16\_UE\_ feature. The discussion was recorded in R4-2011862.

**Decision:** The document was **noted**.

**R4-2009759 Views on Rel-16 UE feature list**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][122] R16\_UE\_ feature. The discussion was recorded in R4-2011862.

**Decision:** The document was **noted**.

**R4-2013032 Offline discussion for [96e][122] RAN4 UE features list for Rel-16**

*Type: other For: Information  
 Source: Moderator (CMCC)*

**Decision:** The document was **not treated**.

## 9 Rel-16 spectrum related Work Items for NR

### 9.1 29dBm UE Power Class for B41 and n41 [LTE\_NR\_B41\_Bn41\_PC29dBm]

#### 9.1.1 General [LTE\_NR\_B41\_Bn41\_PC29dBm]

**R4-2011556 Email discussion summary for [96e][123] LTE\_NR\_B41\_Bn41\_PC29dBm**

*Type: other For: discussion  
 Source: Moderator (T-Mobile USA)*

**Discussion:**

The contribution summarized email discussion thread [96e][123] LTE\_NR\_B41\_Bn41\_PC29dBm. The subject for discussion was . The email thread was moderated by Bill Shvodian (T-Mobile USA Inc.) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **revised to R4-2011863**.

**R4-2011863 Email discussion summary for [96e][123] LTE\_NR\_B41\_Bn41\_PC29dBm**

*Type: other For: discussion  
 Source: Moderator (T-Mobile USA)*

(Replaces R4-2011556)

**Discussion:**

The contribution summarized email discussion thread [96e][123] LTE\_NR\_B41\_Bn41\_PC29dBm. The subject for discussion was . The email thread was moderated by Bill Shvodian (T-Mobile USA Inc.) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **noted**.

#### 9.1.2 UE RF (36.101, 38.101-1, 38.101-3) [LTE\_NR\_B41\_Bn41\_PC29dBm]

**R4-2010060 CR for 38.101-1: Introduction of Power Class 1.5**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0432 Cat: B (Rel-16)  
  
 Source: T-Mobile USA*

**Abstract:**

Introduction of Power Class 1.5 (29 dBm) for UL MIMO and Transmit Diversity.

**Discussion:**

The contribution was discussed during email thread [96e][123] LTE\_NR\_B41\_Bn41\_PC29dBm. The discussion was recorded in R4-2011863.

**Decision:** The document was **revised to R4-2011783**.

**R4-2011783 CR for 38.101-1: Introduction of Power Class 1.5**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0432 rev 1 Cat: B (Rel-16)  
  
 Source: T-Mobile USA*

(Replaces R4-2010060)

**Abstract:**

Introduction of Power Class 1.5 (29 dBm) for UL MIMO and Transmit Diversity.

**Discussion:**

The contribution was discussed during email thread [96e][123] LTE\_NR\_B41\_Bn41\_PC29dBm. The discussion was recorded in R4-2011863.

**Decision:** The document was **agreed**.

**R4-2010061 CR for 38.307: Introduction of Power Class 1.5**

*Type: CR For: Agreement  
 38.307 v16.3.0 CR-0028 Cat: B (Rel-16)  
  
 Source: T-Mobile USA*

**Abstract:**

Introduction of Power Class 1.5 (29 dBm) for UL MIMO and Transmit Diversity.

**Discussion:**

The contribution was discussed during email thread [96e][123] LTE\_NR\_B41\_Bn41\_PC29dBm. The discussion was recorded in R4-2011863.

**Decision:** The document was **agreed**.

**R4-2011449 MPR and NS\_04 A-MPR for 29 dBm PC1.5**

*Type: discussion For: Approval  
 Source: T-Mobile USA Inc., Qorvo*

**Abstract:**

Proposal for MPR and NS\_04 A-MPR for PC1.5

**Discussion:**

The contribution was discussed during email thread [96e][123] LTE\_NR\_B41\_Bn41\_PC29dBm. The discussion was recorded in R4-2011863.

**Decision:** The document was **revised to R4-2011782**.

**R4-2011782 MPR and NS\_04 A-MPR for 29 dBm PC1.5**

*Type: discussion For: Approval  
 Source: T-Mobile USA Inc., Qorvo*

(Replaces R4-2011449)

**Discussion:**

The contribution was discussed during email thread [96e][123] LTE\_NR\_B41\_Bn41\_PC29dBm. The discussion was recorded in R4-2011863.

**Decision:** The document was **noted**.

**R4-2009943 PC1.5 UL MIMO MPR**

*Type: discussion For: Decision  
 Source: Apple Inc.*

**Discussion:**

The contribution was discussed during email thread [96e][123] LTE\_NR\_B41\_Bn41\_PC29dBm. The discussion was recorded in R4-2011863.

**Decision:** The document was **noted**.

#### 9.1.3 Others [LTE\_NR\_B41\_Bn41\_PC29dBm]

### 9.2 Power Class 2 UE for EN-DC (1 LTE FDD band +1 NR TDD band) [ENDC\_UE\_PC2\_FDD\_TDD-Core]

#### 9.2.1 General [ENDC\_UE\_PC2\_FDD\_TDD-Core]

**R4-2011557 Email discussion summary for [96e][124] ENDC\_UE\_PC2\_FDD\_TDD**

*Type: other For: discussion  
 Source: Moderator (China Unicom)*

**Discussion:**

The contribution summarized email discussion thread [96e][124] ENDC\_UE\_PC2\_FDD\_TDD. The subject for discussion was . The email thread was moderated by Basaier Jialade (China Unicom) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **revised to R4-2011864**.

**R4-2011864 Email discussion summary for [96e][124] ENDC\_UE\_PC2\_FDD\_TDD**

*Type: other For: discussion  
 Source: Moderator (China Unicom)*

(Replaces R4-2011557)

**Discussion:**

The contribution summarized email discussion thread [96e][124] ENDC\_UE\_PC2\_FDD\_TDD. The subject for discussion was . The email thread was moderated by Basaier Jialade (China Unicom) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **noted**.

**R4-2011784 WF on EN-DC FDD+TDD PC2 HPUE**

*Type: other For: discussion  
 Source: China Unicom*

**Discussion:**

The contribution was discussed during email thread [96e][124] ENDC\_UE\_PC2\_FDD\_TDD. The discussion was recorded in R4-2011864.

**Decision:** The document was **agreed**.

**R4-2011787 LS on UE capability for PC2 inter-band EN-DC (LTE FDD+NR TDD)**

*Type: LS out For: Approval  
 to RAN2  
 Source: RAN4*

**Discussion:**

The contribution was discussed during email thread [96e][124] ENDC\_UE\_PC2\_FDD\_TDD. The discussion was recorded in R4-2011864.

**Decision:** The document was **approved**.

**R4-2010016 Discussion on the remain issues for NSA high power UE**

*Type: other For: Approval  
 Source: Xiaomi*

**Discussion:**

The contribution was discussed during email thread [96e][124] ENDC\_UE\_PC2\_FDD\_TDD. The discussion was recorded in R4-2011864.

**Decision:** The document was **noted**.

**R4-2010088 CR to TS 38.101-3: PC2 band 3+band n78 ENDC**

*Type: CR For: Agreement  
 38.101-3 v16.4.0 CR-0324 Cat: B (Rel-16)  
  
 Source: China Unicom*

**Abstract:**

This CR aims to introduce PC2 band 3+band n78 ENDC into the spec, where the MSD values were agreed in R4-2002895.

**Discussion:**

The contribution was discussed during email thread [96e][124] ENDC\_UE\_PC2\_FDD\_TDD. The discussion was recorded in R4-2011864.

**Decision:** The document was **revised to R4-2011785**.

**R4-2011785 CR to TS 38.101-3: PC2 band 3+band n78 ENDC**

*Type: CR For: Agreement  
 38.101-3 v16.4.0 CR-0324 rev 1 Cat: B (Rel-16)  
  
 Source: China Unicom*

(Replaces R4-2010088)

**Abstract:**

This CR aims to introduce PC2 band 3+band n78 ENDC into the spec, where the MSD values were agreed in R4-2002895.

**Discussion:**

The contribution was discussed during email thread [96e][124] ENDC\_UE\_PC2\_FDD\_TDD. The discussion was recorded in R4-2011864.

**Decision:** The document was **revised to R4-2011923**.

**R4-2011923 CR to TS 38.101-3: PC2 band 3+band n78 ENDC**

*Type: CR For: Agreement  
 38.101-3 v16.4.0 CR-0324 rev 2 Cat: B (Rel-16)  
  
 Source: China Unicom*

(Replaces R4-2011785)

**Abstract:**

This CR aims to introduce PC2 band 3+band n78 ENDC into the spec, where the MSD values were agreed in R4-2002895.

**Discussion:**

The contribution was discussed during email thread [96e][124] ENDC\_UE\_PC2\_FDD\_TDD. The discussion was recorded in R4-2011864.

GTW session 28-08-2020

LGE commented that some of the values in the tables are incorrect. The Chairman proposed to revise the CR with new values and agree the revision unseen. T-Mobile was ready to agree this in Rel-16 but wanted to have control signalling in Rel-17 such that the network can control the UE behaviour based on the capabilities.

**Decision:** The document was **revised to R4-2011941**.

**R4-2011941 CR to TS 38.101-3: PC2 band 3+band n78 ENDC**

*Type: CR For: Agreement  
 38.101-3 v16.4.0 CR-0324 rev 3 Cat: B (Rel-16)  
  
 Source: China Unicom*

(Replaces R4-2011923)

**Abstract:**

This CR aims to introduce PC2 band 3+band n78 ENDC into the spec, where the MSD values were agreed in R4-2002895.

**Decision:** The document was **agreed**.

**R4-2010295 Rel-16 Power Class 2 for EN-DC FDD+TDD UE**

*Type: discussion For: Approval  
 Source: Verizon UK Ltd*

**Discussion:**

The contribution was discussed during email thread [96e][124] ENDC\_UE\_PC2\_FDD\_TDD. The discussion was recorded in R4-2011864.

**Decision:** The document was **noted**.

**R4-2010349 Feasibility of reporting: expected UE behaviour with duty-cycle reporting and PMPR method**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

This contribution concerns feasility of duty-cycle capability reporting from BS and UE perspectives. We make a proposal for completing the work item.

**Discussion:**

The contribution was discussed during email thread [96e][124] ENDC\_UE\_PC2\_FDD\_TDD. The discussion was recorded in R4-2011864.

**Decision:** The document was **noted**.

**R4-2010816 On FDD\_TDD EN-DC HPUE**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][124] ENDC\_UE\_PC2\_FDD\_TDD. The discussion was recorded in R4-2011864.

**Decision:** The document was **noted**.

**R4-2009719 Discussion on completion of EN-DC PC2 FDD+TDD HPUE**

*Type: LS out For: Approval  
 to RAN2  
 Source: China Unicom*

**Discussion:**

The contribution was discussed during email thread [96e][124] ENDC\_UE\_PC2\_FDD\_TDD. The discussion was recorded in R4-2011864.

**Decision:** The document was **noted**.

#### 9.2.2 UE RF requirement [ENDC\_UE\_PC2\_FDD\_TDD-Core]

**R4-2010350 Completing the WI including the**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

In this contribution we propose to use both the PMPR method and the "blind scheme" as baseline (default).

**Discussion:**

The contribution was discussed during email thread [96e][124] ENDC\_UE\_PC2\_FDD\_TDD. The discussion was recorded in R4-2011864.

**Decision:** The document was **noted**.

**R4-2010351 Introduction of EN-DC power class 2 for FDD-TDD band combinations**

*Type: CR For: Agreement  
 38.101-3 v16.4.0 CR-0331 Cat: B (Rel-16)  
  
 Source: Ericsson*

**Abstract:**

Introduce support for EN-DC power class 2 for FDD-TDD band combinations.

specification of the total EN-DC power PEN-DC for EN-DC power class 2

specification of a “fallback behavior” (a minimum value PEN-DC >23 dBm if PLTE < 23 dBm, minimum PEN-DC = 23 dBm otherwise)

specification of test cases EN-DC power class 2

**Discussion:**

The contribution was discussed during email thread [96e][124] ENDC\_UE\_PC2\_FDD\_TDD. The discussion was recorded in R4-2011864.

**Decision:** The document was **revised to R4-2011786**.

**R4-2011786 Introduction of EN-DC power class 2 for FDD-TDD band combinations**

*Type: CR For: Agreement  
 38.101-3 v16.4.0 CR-0331 rev 1 Cat: B (Rel-16)  
  
 Source: Ericsson*

(Replaces R4-2010351)

**Abstract:**

Introduce support for EN-DC power class 2 for FDD-TDD band combinations.

specification of the total EN-DC power PEN-DC for EN-DC power class 2

specification of an optional “fallback behavior” (a minimum value PEN-DC >23 dBm if PLTE < 23 dBm, minimum PEN-DC = 23 dBm otherwise)

specification of test cases EN-DC power class 2

specification of an optional duty-cycle reporting scheme

**Discussion:**

The contribution was discussed during email thread [96e][124] ENDC\_UE\_PC2\_FDD\_TDD. The discussion was recorded in R4-2011864.

**Decision:** The document was **not pursued**.

**R4-2010632 CR to TS 38.101-3: PC2 band 3+band n41 ENDC**

*Type: CR For: Agreement  
 38.101-3 v16.4.0 CR-0334 Cat: B (Rel-16)  
  
 Source: ZTE Corporation, CMCC, Xiaomi*

**Abstract:**

This CR aims to introduce PC2 band 3+band n41 ENDC into the spec, where the MSD values were agreed in R4-2008959.

**Discussion:**

The contribution was discussed during email thread [96e][124] ENDC\_UE\_PC2\_FDD\_TDD. The discussion was recorded in R4-2011864.

**Decision:** The document was **not pursued**.

**R4-2011788 CR to TS 38.101-3: PC2 band 3+band n41 ENDC**

*Type: CR For: Agreement  
 38.101-3 v16.4.0 CR-0334 rev 1 Cat: B (Rel-16)  
  
 Source: ZTE Corporation, CMCC, Xiaomi*

(Replaces R4-2010632)

**Abstract:**

This CR aims to introduce PC2 band 3+band n41 ENDC into the spec, where the MSD values were agreed in R4-2008959.

**Discussion:**

The contribution was discussed during email thread [96e][124] ENDC\_UE\_PC2\_FDD\_TDD. The discussion was recorded in R4-2011864.

**Decision:** The document was **revised to R4-2011924**.

**R4-2011924 CR to TS 38.101-3: PC2 band 3+band n41 ENDC**

*Type: CR For: Agreement  
 38.101-3 v16.4.0 CR-0334 rev 2 Cat: B (Rel-16)  
  
 Source: ZTE Corporation, CMCC, Xiaomi*

(Replaces R4-2011788)

**Abstract:**

This CR aims to introduce PC2 band 3+band n41 ENDC into the spec, where the MSD values were agreed in R4-2008959.

**Discussion:**

The contribution was discussed during email thread [96e][124] ENDC\_UE\_PC2\_FDD\_TDD. The discussion was recorded in R4-2011864.

**Decision:** The document was **endorsed**.

**R4-2010848 Discussion on EN-DC (FDD+TDD) HPUE fall back schemes**

*Type: discussion For: Discussion  
 Source: vivo*

**Discussion:**

The contribution was discussed during email thread [96e][124] ENDC\_UE\_PC2\_FDD\_TDD. The discussion was recorded in R4-2011864.

**Decision:** The document was **noted**.

**R4-2010849 CR for adding SAR solutions for FDD+TDD EN-DC PC2 UE**

*Type: CR For: Agreement  
 38.101-3 v16.4.0 CR-0343 Cat: B (Rel-16)  
  
 Source: vivo*

**Abstract:**

To capture the RF requirements for Power Class 2 UE for EN-DC (1 LTE FDD band +1 NR TDD band) as requested by the WID

**Discussion:**

The contribution was discussed during email thread [96e][124] ENDC\_UE\_PC2\_FDD\_TDD. The discussion was recorded in R4-2011864.

**Decision:** The document was **revised to R4-2011896**.

**R4-2011896 CR for adding SAR solutions for FDD+TDD EN-DC PC2 UE**

*Type: CR For: Agreement  
 38.101-3 v16.4.0 CR-0343 rev 1 Cat: B (Rel-16)  
  
 Source: vivo*

(Replaces R4-2010849)

**Discussion:**

The contribution was discussed during email thread [96e][124] ENDC\_UE\_PC2\_FDD\_TDD. The discussion was recorded in R4-2011864.

**Decision:** The document was **not pursued**.

**R4-2009952 Applicability of P-MPR to EN-DC PC2**

*Type: discussion For: Discussion  
 Source: Apple Inc.*

**Discussion:**

The contribution was discussed during email thread [96e][124] ENDC\_UE\_PC2\_FDD\_TDD. The discussion was recorded in R4-2011864.

**Decision:** The document was **noted**.

**R4-2010299 PC2 for the P-MPR solution: DC\_2\_n77, 5\_n77, 13\_n77 and 66\_n77 for TP for 38.717-11-11**

*Type: discussion For: Approval  
 Source: Verizon UK Ltd*

**Discussion:**

The contribution was discussed during email thread [96e][124] ENDC\_UE\_PC2\_FDD\_TDD. The discussion was recorded in R4-2011864.

**Decision:** The document was **noted**.

#### 9.2.3 Signaling [ENDC\_UE\_PC2\_FDD\_TDD-Core]

**R4-2010308 Discussion on completion of FDD-TDD EN-DC High Power UE**

*Type: discussion For: Approval  
 Source: CHTTL*

**Discussion:**

The contribution was discussed during email thread [96e][124] ENDC\_UE\_PC2\_FDD\_TDD. The discussion was recorded in R4-2011864.

**Decision:** The document was **noted**.

**R4-2010769 Discussion on FDD+TDD HPUE SAR solutions**

*Type: discussion For: Approval  
 Source: OPPO*

**Discussion:**

The contribution was discussed during email thread [96e][124] ENDC\_UE\_PC2\_FDD\_TDD. The discussion was recorded in R4-2011864.

**Decision:** The document was **noted**.

### 9.3 LTE/NR spectrum sharing in band 48/n48 frequency range [NR\_n48\_LTE\_48\_coex-Core]

#### 9.3.1 General [NR\_n48\_LTE\_48\_coex-Core]

**R4-2011558 Email discussion summary for [96e][125] NR\_n48\_LTE\_48\_coex**

*Type: other For: discussion  
 Source: Moderator (Apple)*

**Discussion:**

The contribution summarized email discussion thread [96e][125] NR\_n48\_LTE\_48\_coex. The email thread was moderated by Alexander Sayenko (Apple) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **revised to R4-2011865**.

**R4-2011865 Email discussion summary for [96e][125] NR\_n48\_LTE\_48\_coex**

*Type: other For: discussion  
 Source: Moderator (Apple)*

(Replaces R4-2011558)

**Discussion:**

The contribution summarized email discussion thread [96e][125] NR\_n48\_LTE\_48\_coex. The email thread was moderated by Alexander Sayenko (Apple) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **noted**.

**R4-2011746 LS on clarification for the UE behavior when UL shift is optional**

*Type: LS out For: Approval  
 to RAN2  
 Source: RAN4*

**Discussion:**

The contribution was discussed during email thread [96e][125] NR\_n48\_LTE\_48\_coex. The discussion was recorded in R4-2011865.

**Decision:** The document was **approved**.

#### 9.3.2 Channel raster, sync raster, and UL shift [NR\_n48\_LTE\_48\_coex-Core]

**R4-2010532 Views on band 48/n48 spectrum sharing**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

no raster change is required. new band is not recommended.

**Discussion:**

The contribution was discussed during email thread [96e][125] NR\_n48\_LTE\_48\_coex. The discussion was recorded in R4-2011865.

**Decision:** The document was **noted**.

**R4-2010778 Views on DSS in band 48/n48**

*Type: discussion For: Approval  
 Source: OPPO*

**Discussion:**

The contribution was discussed during email thread [96e][125] NR\_n48\_LTE\_48\_coex. The discussion was recorded in R4-2011865.

**Decision:** The document was **noted**.

**R4-2010936 LTE/NR spectrum sharing in band 48/n48**

*Type: other For: Approval  
 Source: Ericsson GmbH, Eurolab*

**Discussion:**

The contribution was discussed during email thread [96e][125] NR\_n48\_LTE\_48\_coex. The discussion was recorded in R4-2011865.

**Decision:** The document was **noted**.

**R4-2011422 Views on n48 DSS**

*Type: discussion For: Approval  
 Source: Google Inc.*

**Discussion:**

The contribution was discussed during email thread [96e][125] NR\_n48\_LTE\_48\_coex. The discussion was recorded in R4-2011865.

**Decision:** The document was **noted**.

**R4-2009935 LTE/NR spectrum sharing in band 48/n48 frequency range**

*Type: discussion For: Decision  
 Source: Apple Inc., Comcast*

**Discussion:**

The contribution was discussed during email thread [96e][125] NR\_n48\_LTE\_48\_coex. The discussion was recorded in R4-2011865.

**Decision:** The document was **revised to R4-2011532**.

**R4-2011532 LTE/NR spectrum sharing in band 48/n48 frequency range**

*Type: discussion For: Decision  
 Source: Apple Inc., Comcast*

(Replaces R4-2009935)

**Discussion:**

The contribution was discussed during email thread [96e][125] NR\_n48\_LTE\_48\_coex. The discussion was recorded in R4-2011865.

**Decision:** The document was **noted**.

**R4-2009936 Introduction of LTE/NR spectrum sharing in band 48/n48 frequency range**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0422 Cat: B (Rel-16)  
  
 Source: Apple Inc., Comcast*

**Abstract:**

To enable dynamic spectrum sharing between LTE and NR in band 48/n48 frequency range, DL and UL sub-carrier grids have to be aligned

**Discussion:**

The contribution was discussed during email thread [96e][125] NR\_n48\_LTE\_48\_coex. The discussion was recorded in R4-2011865.

**Decision:** The document was **revised to R4-2011925**.

**R4-2011925 Introduction of LTE/NR spectrum sharing in band 48/n48 frequency range**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0422 rev 1 Cat: B (Rel-16)  
  
 Source: Apple Inc., Comcast*

(Replaces R4-2009936)

**Abstract:**

To enable dynamic spectrum sharing between LTE and NR in band 48/n48 frequency range, DL and UL sub-carrier grids have to be aligned

**Discussion:**

The contribution was discussed during email thread [96e][125] NR\_n48\_LTE\_48\_coex. The discussion was recorded in R4-2011865.

**Decision:** The document was **agreed**.

**R4-2009937 Introduction of LTE/NR spectrum sharing in band 48/n48 frequency range**

*Type: CR For: Agreement  
 38.104 v16.4.0 CR-0220 Cat: B (Rel-16)  
  
 Source: Apple Inc., Comcast*

**Abstract:**

To enable dynamic spectrum sharing between LTE and NR in band 48/n48 frequency range, DL and UL sub-carrier grids have to be aligned.

**Discussion:**

The contribution was discussed during email thread [96e][125] NR\_n48\_LTE\_48\_coex. The discussion was recorded in R4-2011865.

**Decision:** The document was **revised to R4-2011926**.

**R4-2011926 Introduction of LTE/NR spectrum sharing in band 48/n48 frequency range**

*Type: CR For: Agreement  
 38.104 v16.4.0 CR-0220 rev 1 Cat: B (Rel-16)  
  
 Source: Apple Inc., Comcast*

(Replaces R4-2009937)

**Abstract:**

To enable dynamic spectrum sharing between LTE and NR in band 48/n48 frequency range, DL and UL sub-carrier grids have to be aligned.

**Discussion:**

The contribution was discussed during email thread [96e][125] NR\_n48\_LTE\_48\_coex. The discussion was recorded in R4-2011865.

**Decision:** The document was **agreed**.

## 10 Rel-17 spectrum related Work Items for NR

**R4-2010300 Release 17 FR2 bandwidth class**

*Type: discussion For: Approval  
 Source: Verizon UK Ltd*

**Decision:** The document was **noted**.

### 10.1 NR intra band Carrier Aggregation for xCC DL/yCC UL including contiguous and non-contiguous spectrum (x>=y) [NR\_CA\_R17\_intra]

**R4-2011559 Email discussion summary for [96e][126] NR\_Baskets\_Part\_1**

*Type: other For: discussion  
 Source: Moderator (Nokia)*

**Discussion:**

The contribution summarized email discussion thread [96e][126] NR\_Baskets\_Part\_1. The subject for discussion was . The email thread was moderated by Iwo Angelow (Nokia) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **noted**.

#### 10.1.1 Rapporteur Input (WID/TR/CR) [NR\_CA\_R17\_intra-Core /Perf]

**R4-2010672 Revised WID NR Intra-band Rel-17**

*Type: WID revised For: Information  
 Source: Ericsson*

**Abstract:**

Revised WID NR Intra-band Rel-17

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2010675 CR introduction completed band combinations 38.717-01-01 -**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0451 Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

CR introduction completed band combinations 38.717-01-01 -> 38.101-1

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2010676 CR introduction completed band combinations 38.717-01-01 -**

*Type: CR For: Agreement  
 38.101-2 v16.4.0 CR-0244 Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

CR introduction completed band combinations 38.717-01-01 -> 38.101-2

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2010680 TR skeleton 38.717-01-01 v0.0.1 Rel-17 NR Intra-band**

*Type: draft TR For: Agreement  
 38.717-01-01 v0.0.1  
 Source: Ericsson*

**Abstract:**

TR skeleton 38.717-01-01 v0.0.1 Rel-17 NR Intra-band

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **agreed**.

**R4-2011888 Draft TR 38.717-01-01 v0.1.0 Rel-17 NR Intra-band**

*Type: draft TR For: Agreement  
 Source: Ericsson*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

#### 10.1.2 UE RF for FR1 [NR\_CA\_R17\_intra-Core]

**R4-2010286 CR to 38.101-1: Introduce n48 intra-band CA configurations**

*Type: draftCR For: Endorsement  
 38.101-1 v16.4.0  
 Source: Verizon UK Ltd*

**Abstract:**

Introduce CA configurations for n48 band combianiton

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **revised to R4-2011597**.

**R4-2011597 CR to 38.101-1: Introduce n48 intra-band CA configurations**

*Type: draftCR For: Endorsement  
 38.101-1 v16.4.0  
 Source: Verizon UK Ltd*

(Replaces R4-2010286)

**Abstract:**

Introduce CA configurations for n48 band combianiton

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **endorsed**.

**R4-2010684 TP to TR 38.717-01-01 to include CA\_n71(2A)**

*Type: pCR For: Approval  
 38.717-01-01 v0.0.1  
 Source: Ericsson, T-Mobile US*

**Abstract:**

TP to TR 38.717-01-01 to include CA\_n71(2A)

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **revised to R4-2011619**.

**R4-2011619 TP to TR 38.717-01-01 to include CA\_n71(2A)**

*Type: pCR For: Approval  
 38.717-01-01 v0.0.1  
 Source: Ericsson, T-Mobile US*

(Replaces R4-2010684)

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010903 DraftCR for 38.101-1 to add BCS1 for CA\_n66(2A)**

*Type: draftCR For: Endorsement  
 38.101-1 v16.4.0  
 Source: Huawei, HiSilicon*

**Abstract:**

Based on the operator’s request, BCS1 for CA\_n66(2A) need to be added.

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **revised to R4-2011625**.

**R4-2011625 DraftCR for 38.101-1 to add BCS1 for CA\_n66(2A)**

*Type: draftCR For: Endorsement  
 38.101-1 v16.4.0  
 Source: Huawei, HiSilicon*

(Replaces R4-2010903)

**Abstract:**

Based on the operator’s request, BCS1 for CA\_n66(2A) need to be added.

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **endorsed**.

**R4-2009977 TP for TR 38.717-01-01: CA\_3DL\_n77(3A)\_1UL\_n77A**

*Type: pCR For: Approval  
 38.717-01-01 v0.0.1  
 Source: SoftBank Corp.*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **noted**.

**R4-2011591 TP for TR 38.717-01-01: CA\_3DL\_n77(3A)\_1UL\_n77A**

*Type: pCR For: Approval  
 38.717-01-01 v0.0.1  
 Source: SoftBank Corp.*

**Decision:** The document was **withdrawn**.

#### 10.1.3 UE RF for FR2 [NR\_CA\_R17\_intra-Core]

**R4-2010294 CR to 38.101-2: Introduce mmWave intra-band CA configurations**

*Type: draftCR For: Endorsement  
 38.101-2 v16.4.0  
 Source: Verizon UK Ltd*

**Abstract:**

Introduce CA\_n261(A-L) and CA\_n261(G-J) configurations for FR2band combianiton

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **revised to R4-2011598**.

**R4-2011598 CR to 38.101-2: Introduce mmWave intra-band CA configurations**

*Type: draftCR For: Endorsement  
 38.101-2 v16.4.0  
 Source: Verizon UK Ltd*

(Replaces R4-2010294)

**Abstract:**

Introduce CA\_n261(A-L) and CA\_n261(G-J) configurations for FR2band combianiton

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **endorsed**.

### 10.2 NR inter-band Carrier Aggregation/Dual Connectivity for 2 bands DL with x bands UL (x=1, 2) [NR\_CADC\_R17\_2BDL\_xBUL]

**R4-2011560 Email discussion summary for [96e][127] NR\_Baskets\_Part\_2**

*Type: other For: discussion  
 Source: Moderator (Nokia)*

**Discussion:**

The contribution summarized email discussion thread [96e][127] NR\_Baskets\_Part\_2. The subject for discussion was . The email thread was moderated by Johannes Hejselbaek (Nokia) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **noted**.

#### 10.2.1 Rapporteur Input (WID/TR/CR) [NR\_CADC\_R17\_2BDL\_xBUL-Core/Perf]

**R4-2010650 Revised WID on Rel-17 NR Inter-band CA\_DC xUL\_2DL (x=1,2)**

*Type: WID revised For: Information  
 Source: ZTE Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **not concluded**.

**R4-2010651 Draft CR to reflect the completed NR inter band CA DC combinations for 2 bands DL with up to 2 bands UL into TS 38.101-1**

*Type: draftCR For: Endorsement  
 38.101-1 v16.4.0  
 Source: ZTE Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **not concluded**.

**R4-2010652 Draft CR to reflect the completed NR inter band CA DC combinations for 2 bands DL with up to 2 bands UL into TS 38.101-3**

*Type: draftCR For: Endorsement  
 38.101-3 v16.4.0  
 Source: ZTE Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **not concluded**.

**R4-2010790 TR 38.717-02-01 v0.0.1**

*Type: draft TR For: Agreement  
 38.717-02-01 v0.0.1  
 Source: ZTE Wistron Telecom AB*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **revised to R4-2011626**.

**R4-2011626 TR 38.717-02-01 v0.0.1**

*Type: draft TR For: Agreement  
 38.717-02-01 v0.0.1  
 Source: ZTE Wistron Telecom AB*

(Replaces R4-2010790)

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **agreed**.

**R4-2010792 TR 38.717-02-01 v0.1.0**

*Type: draft TR For: Agreement  
 38.717-02-01 v0.1.0  
 Source: ZTE Wistron Telecom AB*

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

#### 10.2.2 NR inter band CA without any FR2 band(s) [NR\_CADC\_R17\_2BDL\_xBUL-Core]

**R4-2010006 Draft CR for TS 38.101-1: Support of DC\_n3-n77 and DC\_n28\_n77**

*Type: draftCR For: Endorsement  
 38.101-1 v16.4.0  
 Source: SoftBank Corp.*

**Abstract:**

DC combos of n3-n77 and n28-n77 are added.

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **revised to R4-2011627**.

**R4-2011627 Draft CR for TS 38.101-1: Support of DC\_n3-n77 and DC\_n28\_n77**

*Type: draftCR For: Endorsement  
 38.101-1 v16.4.0  
 Source: SoftBank Corp.*

(Replaces R4-2010006)

**Abstract:**

DC combos of n3-n77 and n28-n77 are added.

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **endorsed**.

**R4-2010248 TP for TR 38.717-02-01 CA\_n3-n77(2A) \_UL\_n77(2A)**

*Type: pCR For: Approval  
 38.717-02-01 v0.0.1  
 Source: Samsung, KDDI*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **revised to R4-2011628**.

**R4-2011628 TP for TR 38.717-02-01 CA\_n3-n77(2A) \_UL\_n77(2A)**

*Type: pCR For: Approval  
 38.717-02-01 v0.0.1  
 Source: Samsung, KDDI*

(Replaces R4-2010248)

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2010249 TP for TR 38.717-02-01 CA\_n3-n78(2A) \_UL\_n78(2A)**

*Type: pCR For: Approval  
 38.717-02-01 v0.0.1  
 Source: Samsung, KDDI*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **revised to R4-2011629**.

**R4-2011629 TP for TR 38.717-02-01 CA\_n3-n78(2A) \_UL\_n78(2A)**

*Type: pCR For: Approval  
 38.717-02-01 v0.0.1  
 Source: Samsung, KDDI*

(Replaces R4-2010249)

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2010250 TP for TR 38.717-02-01 CA\_n28-n77(2A) \_UL\_n77(2A)**

*Type: pCR For: Approval  
 38.717-02-01 v0.0.1  
 Source: Samsung, KDDI*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **revised to R4-2011630**.

**R4-2011630 TP for TR 38.717-02-01 CA\_n28-n77(2A) \_UL\_n77(2A)**

*Type: pCR For: Approval  
 38.717-02-01 v0.0.1  
 Source: Samsung, KDDI*

(Replaces R4-2010250)

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2010251 TP for TR 38.717-02-01 CA\_n28-n78(2A) \_UL\_n78(2A)**

*Type: pCR For: Approval  
 38.717-02-01 v0.0.1  
 Source: Samsung, KDDI*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **revised to R4-2011631**.

**R4-2011631 TP for TR 38.717-02-01 CA\_n28-n78(2A) \_UL\_n78(2A)**

*Type: pCR For: Approval  
 38.717-02-01 v0.0.1  
 Source: Samsung, KDDI*

(Replaces R4-2010251)

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2010272 Draft CR to 38.101-1: Introduce CA\_n2-n48, CA\_n2-n77, CA\_n5-n77, CA\_n66-n77 CA configurations**

*Type: draftCR For: Endorsement  
 38.101-1 v16.4.0  
 Source: Verizon UK Ltd*

**Abstract:**

Introduce inter-band CA configurations for CA\_n2-n48, CA\_n2-n77, CA\_n5-n77, CA\_n66-n77 band combianiton

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **revised to R4-2011632**.

**R4-2011632 Draft CR to 38.101-1: Introduce CA\_n2-n48, CA\_n2-n77, CA\_n5-n77, CA\_n66-n77 CA configurations**

*Type: draftCR For: Endorsement  
 38.101-1 v16.4.0  
 Source: Verizon UK Ltd*

(Replaces R4-2010272)

**Abstract:**

Introduce inter-band CA and DC configurations, UE maximum output power and OOB exceptions requirements for CA\_n2-n48, CA\_n2-n77, CA\_n5-n77, CA\_n66-n77 band combianitons

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2010297 The P-MPR based solution for CA\_n2-n77, CA\_n5-n77, CA\_n66-n77 for TP for 38.717-02-01**

*Type: discussion For: Approval  
 38.717-02-01 v..  
 Source: Verizon UK Ltd*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **noted**.

**R4-2010329 TP for 38.717-02-01: CA\_n66-n77 and DC\_n66-n77**

*Type: discussion For: Approval  
 Source: Verizon UK Ltd*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **revised to R4-2011633**.

**R4-2011633 TP for 38.717-02-01: CA\_n66-n77 and DC\_n66-n77**

*Type: discussion For: Approval  
 Source: Verizon UK Ltd*

(Replaces R4-2010329)

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **noted**.

**R4-2010339 TP for 38.717-02-01: CA\_n5-n77 and DC\_n5-n77**

*Type: discussion For: Approval  
 Source: Verizon UK Ltd*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **revised to R4-2011634**.

**R4-2011634 TP for 38.717-02-01: CA\_n5-n77 and DC\_n5-n77**

*Type: discussion For: Approval  
 Source: Verizon UK Ltd*

(Replaces R4-2010339)

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **noted**.

**R4-2010353 TP for 38.717-02-01: CA\_n2-n77 and DC\_n2-n77**

*Type: discussion For: Approval  
 Source: Verizon UK Ltd*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **revised to R4-2011635**.

**R4-2011635 TP for 38.717-02-01: CA\_n2-n77 and DC\_n2-n77**

*Type: discussion For: Approval  
 Source: Verizon UK Ltd*

(Replaces R4-2010353)

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **noted**.

**R4-2010354 TP for 38.717-02-01: CA\_n2-n48 and DC\_n2-n48**

*Type: discussion For: Approval  
 Source: Verizon UK Ltd*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **revised to R4-2011636**.

**R4-2011636 TP for 38.717-02-01: CA\_n2-n48 and DC\_n2-n48**

*Type: discussion For: Approval  
 Source: Verizon UK Ltd*

(Replaces R4-2010354)

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **noted**.

**R4-2010506 TP for TR 38.717-02-01: CA\_n5-n25**

*Type: pCR For: Approval  
 38.717-02-01 v0.0.1  
 Source: Huawei, HiSilicon, Bell Mobility, Telus*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **revised to R4-2011637**.

**R4-2011637 TP for TR 38.717-02-01: CA\_n5-n25**

*Type: pCR For: Approval  
 38.717-02-01 v0.0.1  
 Source: Huawei, HiSilicon, Bell Mobility, Telus*

(Replaces R4-2010506)

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2010507 Draft CR for 38.101-1: CA\_n5-n66**

*Type: draftCR For: Endorsement  
 38.101-1 v16.4.0  
 Source: Huawei, HiSilicon, Bell Mobility, Telus*

**Abstract:**

CA\_n5A-n66A BS 0 is supported in Rel-16, hence CA\_n5A-n66A BCS1 and CA\_ n5A-n66(2A) can be added by a draft CR.

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **endorsed**.

**R4-2010508 Draft CR for 38.101-1: CA\_n5A-n78(2A)**

*Type: draftCR For: Endorsement  
 38.101-1 v16.4.0  
 Source: Huawei, HiSilicon, Bell Mobility, Telus*

**Abstract:**

CA\_n5A-n78A and CA\_n5A-n78C are supported in Rel-16, hence CA\_ n5A-n78(2A) can be added by a draft CR.

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **endorsed**.

**R4-2010509 TP for TR 38.717-02-01: CA\_n71-n78**

*Type: pCR For: Approval  
 38.717-02-01 v0.0.1  
 Source: Huawei, HiSilicon, Bell Mobility, Telus*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **revised to R4-2011638**.

**R4-2011638 TP for TR 38.717-02-01: CA\_n71-n78**

*Type: pCR For: Approval  
 38.717-02-01 v0.0.1  
 Source: Huawei, HiSilicon, Bell Mobility, Telus*

(Replaces R4-2010509)

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2010526 TP to TR 38.717-02-01: CA\_n7-n66**

*Type: pCR For: Approval  
 38.717-02-01 v0.0.1  
 Source: Nokia, Bell Mobility*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **revised to R4-2011639**.

**R4-2011639 TP to TR 38.717-02-01: CA\_n7-n66**

*Type: pCR For: Approval  
 38.717-02-01 v0.0.1  
 Source: Nokia, Bell Mobility*

(Replaces R4-2010526)

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2010527 TP to TR 38.717-02-00: CA\_n25-n38**

*Type: pCR For: Approval  
 38.717-02-01 v0.0.0  
 Source: Nokia, Bell Mobility*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **revised to R4-2011640**.

**R4-2011640 TP to TR 38.717-02-00: CA\_n25-n38**

*Type: pCR For: Approval  
 38.717-02-01 v0.0.1  
 Source: Nokia, Bell Mobility*

(Replaces R4-2010527)

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2010539 TP for CA 2DL2UL n1-n77 for TR 38.717-02-01**

*Type: pCR For: Approval  
 38.717-02-01 v0.0.1  
 Source: NTT DOCOMO INC.*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2011641 TP for CA 2DL2UL n1-n77 for TR 38.717-02-01**

*Type: pCR For: Approval  
 38.717-02-01 v0.0.1  
 Source: NTT DOCOMO INC.*

**Decision:** The document was **withdrawn**.

**R4-2010560 TP for CA 2DL2UL n77-n79 for TR 38.717-02-01**

*Type: pCR For: Approval  
 38.717-02-01 v0.0.1  
 Source: NTT DOCOMO INC.*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2011642 TP for CA 2DL2UL n77-n79 for TR 38.717-02-01**

*Type: pCR For: Approval  
 38.717-02-01 v0.0.1  
 Source: NTT DOCOMO INC.*

**Decision:** The document was **withdrawn**.

**R4-2010574 TP for CA 2DL2UL n78-n79 for TR 38.717-02-01**

*Type: pCR For: Approval  
 38.717-02-01 v0.0.1  
 Source: NTT DOCOMO INC.*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **revised to R4-2011643**.

**R4-2011643 TP for CA 2DL2UL n78-n79 for TR 38.717-02-01**

*Type: pCR For: Approval  
 38.717-02-01 v0.0.1  
 Source: NTT DOCOMO INC.*

(Replaces R4-2010574)

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2010637 Draft CR to TS38.101-1: CA\_n28A-n41A**

*Type: draftCR For: Endorsement  
 38.101-1 v16.4.0  
 Source: ZTE Corporation, CMCC*

**Abstract:**

Introduction of CA n28A-n41A\_BCS1

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **endorsed**.

**R4-2010638 Draft CR to TS38.101-1: CA\_n40A-n41C**

*Type: draftCR For: Endorsement  
 38.101-1 v16.4.0  
 Source: ZTE Corporation, CMCC*

**Abstract:**

Introduction of CA\_n40A-n41C\_BCS0

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **endorsed**.

**R4-2010683 draft CR to 38.101-1 to add new configuration and BCSs**

*Type: pCR For: Approval  
 38.717-02-01 v0.0.1  
 Source: Ericsson*

**Abstract:**

draft CR to 38.101-1 to add new configuration and BCSs

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **revised to R4-2011644**.

**R4-2011644 draft CR to 38.101-1 to add new configuration and BCSs**

*Type: pCR For: Approval  
 38.717-02-01 v0.0.1  
 Source: Ericsson*

(Replaces R4-2010683)

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **endorsed**.

**R4-2010685 draft CR 38.101-1 to add CA\_n25A-n71(2A), CA\_n41A-n71(2A), CA\_n66A-n71(2A)**

*Type: pCR For: Approval  
 38.717-02-01 v0.0.1  
 Source: Ericsson, T-Mobile US*

**Abstract:**

draft CR 38.101-1 to add CA\_n25A-n71(2A), CA\_n41A-n71(2A), CA\_n66A-n71(2A)

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **endorsed**.

**R4-2010686 TP for TR 38.717-02-00 to include CA\_n25A-n48A, CA\_n25A-n48(2A), CA\_n25A-n48C**

*Type: pCR For: Approval  
 38.717-02-01 v0.0.1  
 Source: Ericsson, T-Mobile US*

**Abstract:**

TP for TR 38.717-02-00 to include CA\_n25A-n48A, CA\_n25A-n48(2A), CA\_n25A-n48C

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **revised to R4-2011645**.

**R4-2011645 TP for TR 38.717-02-00 to include CA\_n25A-n48A, CA\_n25A-n48(2A), CA\_n25A-n48C**

*Type: pCR For: Approval  
 38.717-02-01 v0.0.1  
 Source: Ericsson, T-Mobile US*

(Replaces R4-2010686)

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2010901 DraftCR for 38.101-1 to add BCS1 for CA\_n28A-n78A**

*Type: draftCR For: Endorsement  
 38.101-1 v16.4.0  
 Source: Huawei, HiSilicon,CBN*

**Abstract:**

Based on the operator’s request, BCS1 for CA\_n28A-n78A need to be added.

The harmonic exception for 25MHz, 30MHz and 70MHz are needed.

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **endorsed**.

**R4-2010902 TP for TR 38.717-02-01: CA\_n28A-n79A**

*Type: pCR For: Approval  
 38.717-02-01 v0.0.1  
 Source: Huawei, HiSilicon,CBN*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **revised to R4-2011646**.

**R4-2011646 TP for TR 38.717-02-01: CA\_n28A-n79A**

*Type: pCR For: Approval  
 38.717-02-01 v0.0.1  
 Source: Huawei, HiSilicon,CBN*

(Replaces R4-2010902)

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2009720 Draft CR on introducing CA\_n1A-n78A**

*Type: draftCR For: Endorsement  
 38.101-1 v16.4.0  
 Source: China Unicom*

**Abstract:**

Introducing CA\_n1A-n78A with maximum support of 40MHz for n1 into 38.101-1.

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **endorsed**.

#### 10.2.3 NR inter band CA with at least one FR2 band [NR\_CADC\_R17\_2BDL\_xBUL-Core]

**R4-2010275 CR to 38.101-3: Introduce CA configurations for CA\_n5-n260, n5-n261, n66-n260, n66-n261 n77-n261**

*Type: draftCR For: Endorsement  
 38.101-3 v16.4.0  
 Source: Verizon UK Ltd*

**Abstract:**

Introduce new CA configurations for CA\_n5-n260, n5-n261, n66-n260, n66-n261 n77-n261combos

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **revised to R4-2011647**.

**R4-2011647 CR to 38.101-3: Introduce CA configurations for CA FR1+FR2 combos**

*Type: draftCR For: Endorsement  
 38.101-3 v16.4.0  
 Source: Verizon UK Ltd*

(Replaces R4-2010275)

**Abstract:**

Introduce new CA configurations for CA\_n2-n260, CA\_n2-261, CA\_n5-n260, CA\_n5-n261, CA\_n48-n261, CA\_n66-n260, CA\_n66-n261 CA\_n77-n260 and CA\_n77-n261

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **revised to R4-2011912**.

**R4-2011912 CR to 38.101-3: Introduce CA configurations for CA FR1+FR2 combos**

*Type: draftCR For: Endorsement  
 38.101-3 v16.4.0  
 Source: Verizon UK Ltd*

(Replaces R4-2011647)

**Abstract:**

Introduce new CA configurations for CA\_n2-n260, CA\_n2-261, CA\_n5-n260, CA\_n5-n261, CA\_n48-n261, CA\_n66-n260, CA\_n66-n261 CA\_n77-n260 and CA\_n77-n261

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **endorsed**.

**R4-2010355 draft CR for CA\_n1-n257D/E/F and CA\_n1-n257J/K/L/M**

*Type: draftCR For: Endorsement  
 38.101-3 v16.4.0  
 Source: CHTTL*

**Abstract:**

To specify CA configuration specific requirements based on the approved WID (RP-200672) in RAN#88-e.

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **endorsed**.

**R4-2010356 TP for TR 38.717-02-01: CA\_n77-n260 and DC\_n77-n260**

*Type: discussion For: Approval  
 Source: Verizon UK Ltd*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **revised to R4-2011648**.

**R4-2011648 TP for TR 38.717-02-01: CA\_n77-n260 and DC\_n77-n260**

*Type: discussion For: Approval  
 Source: Verizon UK Ltd*

(Replaces R4-2010356)

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **noted**.

**R4-2010358 TP for 38.717-02-01: CA\_n48-n261 and DC\_n48-n261**

*Type: discussion For: Approval  
 Source: Verizon UK Ltd*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **revised to R4-2011649**.

**R4-2011649 TP for 38.717-02-01: CA\_n48-n261 and DC\_n48-n261**

*Type: discussion For: Approval  
 Source: Verizon UK Ltd*

(Replaces R4-2010358)

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **noted**.

**R4-2010366 TP for 38.717-02-01: CA\_n2-n261 and DC\_n2-n261**

*Type: discussion For: Approval  
 Source: Verizon UK Ltd*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **revised to R4-2011650**.

**R4-2011650 TP for 38.717-02-01: CA\_n2-n261 and DC\_n2-n261**

*Type: discussion For: Approval  
 Source: Verizon UK Ltd*

(Replaces R4-2010366)

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **noted**.

**R4-2010368 TP for 38.717-02-01: CA\_n2-n260 and DC\_n2-n260**

*Type: discussion For: Approval  
 Source: Verizon UK Ltd*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **revised to R4-2011651**.

**R4-2011651 TP for 38.717-02-01: CA\_n2-n260 and DC\_n2-n260**

*Type: discussion For: Approval  
 Source: Verizon UK Ltd*

(Replaces R4-2010368)

**Decision:** The document was **noted**.

**R4-2010383 Draft CR for NR CA including FR1 and FR2 with 2DL and xUL**

*Type: draftCR For: Endorsement  
 38.101-3 v16.4.0  
 Source: NTT DOCOMO INC.*

**Abstract:**

Base on the agreements in RP-181126, the below NR CA combinations should be proposed by draft CR since the fundamental NR CA configuration for the proposed NR CA has already existed in TS 38.101-3

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **revised to R4-2011652**.

**R4-2011652 Draft CR for NR CA including FR1 and FR2 with 2DL and xUL**

*Type: draftCR For: Endorsement  
 38.101-3 v16.4.0  
 Source: NTT DOCOMO INC.*

(Replaces R4-2010383)

**Abstract:**

Base on the agreements in RP-181126, the below NR CA combinations should be proposed by draft CR since the fundamental NR CA configuration for the proposed NR CA has already existed in TS 38.101-3

**Decision:** The document was **endorsed**.

**R4-2010401 draftCR to introduce CADC\_n25-n260 to 38.101-3**

*Type: draftCR For: Endorsement  
 38.101-3 v16.4.0  
 Source: Nokia, T-Mobile*

**Abstract:**

Introduction of new combinations due to operator request.

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **revised to R4-2011653**.

**R4-2011653 draftCR to introduce CADC\_n25-n260 to 38.101-3**

*Type: draftCR For: Endorsement  
 38.101-3 v16.4.0  
 Source: Nokia, T-Mobile*

(Replaces R4-2010401)

**Abstract:**

Introduction of new combinations due to operator request.

**Decision:** The document was **endorsed**.

**R4-2010402 draftCR to introduce CADC\_n41-n260 to 38.101-3**

*Type: draftCR For: Endorsement  
 38.101-3 v16.4.0  
 Source: Nokia, T-Mobile*

**Abstract:**

Introduction of new combinations due to operator request.

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **endorsed**.

**R4-2010403 draftCR to introduce CADC\_n66-n260 to 38.101-3**

*Type: draftCR For: Endorsement  
 38.101-3 v16.4.0  
 Source: Nokia, T-Mobile*

**Abstract:**

Introduction of new combinations due to operator request.

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **not pursued**.

**R4-2010689 draft CR 38.101-3 to add CADC\_n41-n258**

*Type: pCR For: Approval  
 38.717-02-01 v0.0.1  
 Source: Ericsson, T-Mobile US*

**Abstract:**

draft CR 38.101-3 to add CADC\_n41-n258

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **endorsed**.

**R4-2010690 draft CR 38.101-3 to add CADC\_n66-n258**

*Type: pCR For: Approval  
 38.717-02-01 v0.0.1  
 Source: Ericsson, T-Mobile US*

**Abstract:**

draft CR 38.101-3 to add CADC\_n66-n258

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **endorsed**.

**R4-2010691 draft CR 38.101-3 to add CADC\_n25-n258**

*Type: pCR For: Approval  
 38.717-02-01 v0.0.1  
 Source: Ericsson, T-Mobile US*

**Abstract:**

draft CR 38.101-3 to add CADC\_n25-n258

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **endorsed**.

**R4-2010692 draft CR 38.101-3 to add CADC\_n41-n261**

*Type: pCR For: Approval  
 38.717-02-01 v0.0.1  
 Source: Ericsson, T-Mobile US*

**Abstract:**

draft CR 38.101-3 to add CADC\_n41-n261

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **endorsed**.

**R4-2010693 draft CR 38.101-3 to add DC\_n66-n260**

*Type: pCR For: Approval  
 38.717-02-01 v0.0.1  
 Source: Ericsson, T-Mobile US*

**Abstract:**

draft CR 38.101-3 to add DC\_n66-n260

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **not pursued**.

**R4-2010694 draft CR 38.101-3 to add DC\_n66-n261**

*Type: pCR For: Approval  
 38.717-02-01 v0.0.1  
 Source: Ericsson, T-Mobile US*

**Abstract:**

draft CR 38.101-3 to add DC\_n66-n261

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **not pursued**.

**R4-2010695 draft CR 38.101-3 to add CADC\_n25-n261**

*Type: pCR For: Approval  
 38.717-02-01 v0.0.1  
 Source: Ericsson, T-Mobile US*

**Abstract:**

draft CR 38.101-3 to add CADC\_n25-n261

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **endorsed**.

**R4-2010696 draft CR 38.101-3 to add CADC\_n25-n260**

*Type: pCR For: Approval  
 38.717-02-01 v0.0.1  
 Source: Ericsson, T-Mobile US*

**Abstract:**

draft CR 38.101-3 to add CADC\_n25-n260

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **not pursued**.

### 10.3 DC of 1 LTE band and 1 NR band [DC\_R17\_1BLTE\_1BNR\_2DL2UL]

#### 10.3.1 Rapporteur Input (WID/TR/CR) [DC\_R17\_1BLTE\_1BNR\_2DL2UL-Core/Perf]

**R4-2010367 TR skeleton for TR 37.717-11-11 Rel-17 Dual Connectivity (DC) of 1 LTE band (1DL/1UL) and 1 NR band (1DL/1UL)**

*Type: draft TR For: Agreement  
 37.717-11-11 v0.0.0  
 Source: CHTTL*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **agreed**.

**R4-2010369 TR 37.717-11-11 v0.1.0 Rel-17 Dual Connectivity (DC) of 1 LTE band (1DL/1UL) and 1 NR band (1DL/1UL)**

*Type: draft TR For: Agreement  
 37.717-11-11 v0.0.0  
 Source: CHTTL*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2010393 Revised WID for Rel-17 Dual Connectivity (DC) of 1 LTE band (1DL/1UL) and 1 NR band (1DL/1UL)**

*Type: WID revised For: Information  
 Source: CHTTL*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2010395 draft big CR for Rel-17 Dual Connectivity (DC) of 1 LTE band (1DL/1UL) and 1 NR band (1DL/1UL)**

*Type: draftCR For: Endorsement  
 38.101-3 v16.4.0  
 Source: CHTTL*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

#### 10.3.2 EN-DC without FR2 band [DC\_R17\_1BLTE\_1BNR\_2DL2UL-Core]

**R4-2010236 TP for TR 37.717-11-11: DC\_8A\_n7A**

*Type: pCR For: Approval  
 37.717-11-11 v0.0.1  
 Source: Nokia*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **revised to R4-2011595**.

**R4-2011595 TP for TR 37.717-11-11: DC\_8A\_n7A**

*Type: pCR For: Approval  
 37.717-11-11 v0.0.0  
 Source: Nokia*

(Replaces R4-2010236)

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010257 Draft CR for 38.101-3 to introduce new inter-band NE-DC (1NR band +1LTE band) within FR1**

*Type: draftCR For: Endorsement  
 38.101-3 v16.4.0  
 Source: Samsung, SK Telecom, KT, LGU*

**Abstract:**

Specify new combinations for inter-band NE-DC within FR1.

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **endorsed**.

**R4-2010304 TP for TR 37.717-11-11 for DC\_66\_n77**

*Type: discussion For: Approval  
 Source: Verizon UK Ltd*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **revised to R4-2011599**.

**R4-2011599 TP for TR 37.717-11-11 for DC\_66\_n77**

*Type: discussion For: Approval  
 Source: Verizon UK Ltd*

(Replaces R4-2010304)

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010305 TP for TR 37.717-11-11 for DC\_13\_n77**

*Type: discussion For: Approval  
 Source: Verizon UK Ltd*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **revised to R4-2011600**.

**R4-2011600 TP for TR 37.717-11-11 for DC\_13\_n77**

*Type: discussion For: Approval  
 Source: Verizon UK Ltd*

(Replaces R4-2010305)

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010306 TP for TR 37.717-11-11 for DC\_5\_n77**

*Type: discussion For: Approval  
 Source: Verizon UK Ltd*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **revised to R4-2011601**.

**R4-2011601 TP for TR 37.717-11-11 for DC\_5\_n77**

*Type: discussion For: Approval  
 Source: Verizon UK Ltd*

(Replaces R4-2010306)

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010307 TP for TR 37.717-11-11 for DC\_2\_n77**

*Type: discussion For: Approval  
 Source: Verizon UK Ltd*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **revised to R4-2011602**.

**R4-2011602 TP for TR 37.717-11-11 for DC\_2\_n77**

*Type: discussion For: Approval  
 Source: Verizon UK Ltd*

(Replaces R4-2010307)

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010384 TP for DC\_19\_n1 for TR 37.717-11-11**

*Type: pCR For: Approval  
 37.717-11-11 v0.0.1  
 Source: NTT DOCOMO INC.*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010394 TP for DC\_21\_n1 for TR 37.717-11-11**

*Type: pCR For: Approval  
 37.717-11-11 v0.0.1  
 Source: NTT DOCOMO INC.*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010396 TP for DC\_42\_n1 for TR 37.717-11-11**

*Type: pCR For: Approval  
 37.717-11-11 v0.0.1  
 Source: NTT DOCOMO INC.*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2011603 TP for DC\_42\_n1 for TR 37.717-11-11**

*Type: pCR For: Approval  
 37.717-11-11 v0.0.1  
 Source: NTT DOCOMO INC.*

**Decision:** The document was **withdrawn**.

**R4-2010404 draftCR to introduce DC\_2A-48C\_n66 and 2A-48D\_n66 in DL to 38.101-3**

*Type: draftCR For: Endorsement  
 38.101-3 v16.4.0  
 Source: Nokia, T-Mobile*

**Abstract:**

Introduction of new combinations due to operator request.

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **endorsed**.

**R4-2010405 draftCR to introduce DC\_48C\_n66 and 48D\_n66 in DL to 38.101-3**

*Type: draftCR For: Endorsement  
 38.101-3 v16.4.0  
 Source: Nokia, T-Mobile*

**Abstract:**

Introduction of new combinations due to operator request.

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **endorsed**.

**R4-2010406 TP for 37.717-11-11 to introduce DC\_48\_n25A**

*Type: pCR For: Approval  
 37.717-11-11 v0.0.1  
 Source: Nokia, T-Mobile*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **revised to R4-2011604**.

**R4-2011604 TP for 37.717-11-11 to introduce DC\_48\_n25A**

*Type: pCR For: Approval  
 37.717-11-11 v0.0.1  
 Source: Nokia, T-Mobile*

(Replaces R4-2010406)

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010418 TP for 37.717-11-11 to introduce DC\_28A\_n1A**

*Type: pCR For: Approval  
 37.717-11-11 v0.0.1  
 Source: Nokia*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **noted**.

**R4-2010436 TP for 37.717-11-11 to introduce DC\_28A\_n2A and DC\_2A\_n28A**

*Type: pCR For: Approval  
 37.717-11-11 v0.0.1  
 Source: Nokia*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **revised to R4-2011611**.

**R4-2011611 TP for 37.717-11-11 to introduce DC\_28A\_n2A and DC\_2A\_n28A**

*Type: pCR For: Approval  
 37.717-11-11 v0.0.1  
 Source: Nokia*

(Replaces R4-2010436)

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010511 TP for TR 37.717-11-11: DC\_4A\_n2A**

*Type: pCR For: Approval  
 37.717-11-11 v0.0.1  
 Source: Huawei, HiSilicon, Bell Mobility, Telus*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **revised to R4-2011615**.

**R4-2011615 TP for TR 37.717-11-11: DC\_4A\_n2A**

*Type: pCR For: Approval  
 37.717-11-11 v0.0.1  
 Source: Huawei, HiSilicon, Bell Mobility, Telus*

(Replaces R4-2010511)

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010554 TP to TR 37.717-11-11 DC\_4A\_n5A**

*Type: pCR For: Approval  
 37.717-11-11 v0.0.1  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **revised to R4-2011617**.

**R4-2011617 TP to TR 37.717-11-11 DC\_4A\_n5A**

*Type: pCR For: Approval  
 37.717-11-11 v0.0.1  
 Source: Huawei, HiSilicon*

(Replaces R4-2010554)

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010555 TP to TR 37.717-11-11 DC\_4A\_n7A**

*Type: pCR For: Approval  
 37.717-11-11 v0.0.1  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010641 Draft CR to TS 38.101-3: introduction of DC\_40A\_n79C**

*Type: draftCR For: Endorsement  
 38.101-3 v16.4.0  
 Source: ZTE Corporation*

**Abstract:**

This CR aims to introduce ENDC DC\_40A\_n79C into the spec.

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **endorsed**.

**R4-2010877 TP for TR 37.717-11-11: DC\_28A\_n66A**

*Type: pCR For: Approval  
 37.717-11-11 v0.0.1  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010878 TP for TR 37.717-11-11: DC\_4A\_n28A**

*Type: pCR For: Approval  
 37.717-11-11 v0.0.1  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **revised to R4-2011622**.

**R4-2011622 TP for TR 37.717-11-11: DC\_4A\_n28A**

*Type: pCR For: Approval  
 37.717-11-11 v0.0.1  
 Source: Huawei, HiSilicon*

(Replaces R4-2010878)

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010879 TP for TR 37.717-11-11: DC\_66A\_n28A**

*Type: pCR For: Approval  
 37.717-11-11 v0.0.1  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **revised to R4-2011623**.

**R4-2011623 TP for TR 37.717-11-11: DC\_66A\_n28A**

*Type: pCR For: Approval  
 37.717-11-11 v0.0.1  
 Source: Huawei, HiSilicon*

(Replaces R4-2010879)

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010880 TP for TR 37.717-11-11: DC\_28A\_n1A**

*Type: pCR For: Approval  
 37.717-11-11 v0.0.1  
 Source: Huawei, HiSilicon, Nokia*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **revised to R4-2011882**.

**R4-2011882 TP for TR 37.717-11-11: DC\_28A\_n1A**

*Type: pCR For: Approval  
 37.717-11-11 v0.0.1  
 Source: Huawei, HiSilicon, Nokia*

(Replaces R4-2010880)

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010881 DraftCR for 38.101-3 to add configuration DC\_40C\_n1A**

*Type: draftCR For: Endorsement  
 38.101-3 v16.4.0  
 Source: Huawei, HiSilicon*

**Abstract:**

To add ENDC configuration DC\_40C\_n1A.

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **endorsed**.

**R4-2010882 DraftCR for 38.101-3 to add UL configuration DC\_3C\_n78A**

*Type: draftCR For: Endorsement  
 38.101-3 v16.4.0  
 Source: Huawei, HiSilicon*

**Abstract:**

To add ENDC UL configuration DC\_3C\_n78A.

To specify the MOP for DC\_3C\_n78A.

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **endorsed**.

**R4-2009930 TP for TR 37.717-11-11 for DC\_2A\_n28A**

*Type: pCR For: Approval  
 37.717-11-11 v0.0.1  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **noted**.

**R4-2011589 TP for TR 37.717-11-11 for DC\_2A\_n28A**

*Type: pCR For: Approval  
 37.717-11-11 v0.0.1  
 Source: Huawei, HiSilicon*

**Decision:** The document was **withdrawn**.

**R4-2009931 TP for 37.717-11-11 for DC\_28A\_n2A**

*Type: pCR For: Approval  
 37.717-11-11 v0.0.1  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **noted**.

**R4-2011590 TP for 37.717-11-11 for DC\_28A\_n2A**

*Type: pCR For: Approval  
 37.717-11-11 v0.0.1  
 Source: Huawei, HiSilicon*

**Decision:** The document was **withdrawn**.

**R4-2009978 TP for TR 37.717-11-11: DC\_42\_n3**

*Type: pCR For: Approval  
 37.717-11-11 v0.0.1  
 Source: SoftBank Corp.*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **revised to R4-2011592**.

**R4-2011592 TP for TR 37.717-11-11: DC\_42\_n3**

*Type: pCR For: Approval  
 37.717-11-11 v0.0.1  
 Source: SoftBank Corp.*

(Replaces R4-2009978)

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

#### 10.3.3 EN-DC with FR2 band [DC\_R17\_1BLTE\_1BNR\_2DL2UL-Core]

**R4-2010258 Draft CR for 38.101-3 to introduce new inter-band NE-DC (1NR band +1LTE band) including FR2**

*Type: draftCR For: Endorsement  
 38.101-3 v16.4.0  
 Source: Samsung, SK Telecom, KT, LGU*

**Abstract:**

Specify new band combinations and requirements for inter-band NE-DC including FR2.

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **revised to R4-2011596**.

**R4-2011596 Draft CR for 38.101-3 to introduce new inter-band NE-DC (1NR band +1LTE band) including FR2**

*Type: draftCR For: Endorsement  
 38.101-3 v16.4.0  
 Source: Samsung, SK Telecom, KT, LGU*

(Replaces R4-2010258)

**Abstract:**

Specify new band combinations and requirements for inter-band NE-DC including FR2.

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **endorsed**.

**R4-2010309 CR to 38.101-3: Introduce CA configurations for DC\_2\_n26, DC\_5\_n261, DC\_13\_n261, DC\_48\_n261 and DC\_66\_n261**

*Type: draftCR For: Endorsement  
 38.101-3 v16.4.0  
 Source: Verizon UK Ltd*

**Abstract:**

Introduce new CA configurations for DC\_2\_n26, DC\_5\_n261, DC\_13\_n261, DC\_48\_n261 and DC\_66\_n261 band combinations

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **endorsed**.

**R4-2010317 TP for TR 37.717-11-11 for DC\_66\_n261**

*Type: discussion For: Approval  
 Source: Verizon UK Ltd*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010319 TP for TR 37.717-11-11 for DC\_48\_n261**

*Type: discussion For: Approval  
 Source: Verizon UK Ltd*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010325 TP for TR 37.717-11-11 for DC\_13\_n261**

*Type: discussion For: Approval  
 Source: Verizon UK Ltd*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010327 TP for TR 37.717-11-11 for DC\_5\_n261**

*Type: discussion For: Approval  
 Source: Verizon UK Ltd*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010328 TP for TR 37.717-11-11 for DC\_2\_n261**

*Type: discussion For: Approval  
 Source: Verizon UK Ltd*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010640 Draft CR to TS 38.101-3: ENDC 41+n258 configurations**

*Type: draftCR For: Endorsement  
 38.101-3 v16.4.0  
 Source: ZTE Corporation*

**Abstract:**

This CR aims to introduce ENDC 41+n258 configurations into the spec.

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **endorsed**.

### 10.4 DC of 2 LTE band and 1 NR band [DC\_R17\_2BLTE\_1BNR\_3DL2UL]

**R4-2009714 TP for TR 37.717-21-11: DC\_1-32\_n28**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: VODAFONE Group Plc*

**Abstract:**

This contribution is a text proposal for TR 37.717-21-11 to include DC\_1-32\_n28.

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **revised to R4-2011584**.

**R4-2011584 TP for TR 37.717-21-11: DC\_1-32\_n28**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: VODAFONE Group Plc*

(Replaces R4-2009714)

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2009715 TP for TR 37.717-21-11: DC\_7-32\_n28**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: VODAFONE Group Plc*

**Abstract:**

This contribution is a text proposal for TR 37.717-21-11 to include DC\_7-32\_n28.

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **revised to R4-2011585**.

**R4-2011585 TP for TR 37.717-21-11: DC\_7-32\_n28**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: VODAFONE Group Plc*

(Replaces R4-2009715)

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2009716 TP for TR 37.717-21-11: DC\_7-32\_n78**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: VODAFONE Group Plc*

**Abstract:**

This contribution is a text proposal for TR 37.717-21-11 to include DC\_7-32\_n78.

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2009717 TP for TR 37.717-21-11: DC\_20-32\_n28**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: VODAFONE Group Plc*

**Abstract:**

This contribution is a text proposal for TR 37.717-21-11 to include DC\_20-32\_n28.

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **revised to R4-2011586**.

**R4-2011586 TP for TR 37.717-21-11: DC\_20-32\_n28**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: VODAFONE Group Plc*

(Replaces R4-2009717)

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

#### 10.4.1 Rapporteur Input (WID/TR/CR) [DC\_R17\_2BLTE\_1BNR\_3DL2UL-Core/Perf]

**R4-2010371 TR skeleton of TR 37.717-21-11**

*Type: draft TR For: Agreement  
 37.717-21-11 v0.0.1  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **agreed**.

**R4-2011889 Draft TR of TR 37.717-21-11 v0.1.0**

*Type: draft TR For: Agreement  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2010372 Revised WID: Rel-17 Dual Connectivity of 2 bands LTE inter-band CA and 1 NR band**

*Type: WID revised For: Information  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2010373 draft CR on introduction of completed EN-DC of 2 bands LTE and 1 band NR from RAN4#96-e into TS 38.101-3**

*Type: draftCR For: Endorsement  
 38.101-3 v16.4.0  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

#### 10.4.2 EN-DC without FR2 band [DC\_R17\_2BLTE\_1BNR\_3DL2UL-Core]

**R4-2010007 Draft CR for TS 38.101-3: Support of n77(2A) for DC\_41-42\_n77**

*Type: draftCR For: Endorsement  
 38.101-3 v16.4.0  
 Source: SoftBank Corp.*

**Abstract:**

DC combos of DC\_41-42\_n77 is updated to add DL n77(2A).

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **revised to R4-2011594**.

**R4-2011594 Draft CR for TS 38.101-3: Support of n77(2A) for DC\_41-42\_n77**

*Type: draftCR For: Endorsement  
 38.101-3 v16.4.0  
 Source: SoftBank Corp.*

(Replaces R4-2010007)

**Abstract:**

DC combos of DC\_41-42\_n77 is updated to add DL n77(2A).

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **endorsed**.

**R4-2010232 TP for TR 37.717.21-11: DC\_2A-48A\_n5A**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: Nokia*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010233 TP for TR 37.717.21-11: DC\_5A-48A\_n12A**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: Nokia*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010234 TP for TR 37.717.21-11: DC\_5A-48A\_n71A**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: Nokia*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010235 TP for TR 37.717.21-11: DC\_12A-48A\_n5A**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: Nokia*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010245 TP for TR 37.717-21-11 DC\_3A\_(n)41AA**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: Samsung, KDDI*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010259 Draft CR for 38.101-3 to introduce new inter-band NE-DC (1NR band +2LTE bands) within FR1**

*Type: draftCR For: Endorsement  
 38.101-3 v16.4.0  
 Source: Samsung, SK Telecom, KT, LGU*

**Abstract:**

Specify new combinations for inter-band NE-DC within FR1.

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **endorsed**.

**R4-2010407 TP for 37.717-21-11 to introduce DC\_2A-48A\_n48A**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: Nokia, T-Mobile*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **revised to R4-2011605**.

**R4-2011605 TP for 37.717-21-11 to introduce DC\_2A-48A\_n48A**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: Nokia, T-Mobile*

(Replaces R4-2010407)

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010408 TP for 37.717-21-11 to introduce DC\_2A-71A\_n71A and DC\_66A-71A\_n71A**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: Nokia, T-Mobile*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **noted**.

**R4-2011606 TP for 37.717-21-11 to introduce DC\_2A-71A\_n71A and DC\_66A-71A\_n71A**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: Nokia, T-Mobile*

(Replaces R4-2010408)

**Decision:** The document was **withdrawn**.

**R4-2010409 TP for 37.717-21-11 to introduce DC\_48-66A\_n25A**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: Nokia, T-Mobile*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **revised to R4-2011607**.

**R4-2011607 TP for 37.717-21-11 to introduce DC\_48-66A\_n25A**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: Nokia, T-Mobile*

(Replaces R4-2010409)

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010410 TP for 37.717-21-11 to introduce DC\_48A-66A\_n48A**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: Nokia, T-Mobile*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010419 TP for 37.717-21-11 to introduce DC\_3A-8A\_n40A**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: Nokia*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **revised to R4-2011608**.

**R4-2011608 TP for 37.717-21-11 to introduce DC\_3A-8A\_n40A**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: Nokia*

(Replaces R4-2010419)

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010420 TP for 37.717-21-11 to introduce DC\_3A-28A\_n1A**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: Nokia*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **revised to R4-2011609**.

**R4-2011609 TP for 37.717-21-11 to introduce DC\_3A-28A\_n1A**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: Nokia*

(Replaces R4-2010420)

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010421 TP for 37.717-21-11 to introduce DC\_7A-8A\_n40A**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: Nokia*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010422 TP for 37.717-21-11 to introduce DC\_7A-28A\_n1A**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: Nokia*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **revised to R4-2011610**.

**R4-2011610 TP for 37.717-21-11 to introduce DC\_7A-28A\_n1A**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: Nokia*

(Replaces R4-2010422)

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010439 TP for DC\_3-19\_n1 for TR 37.717-21-11**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: NTT DOCOMO INC.*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010452 TP for DC\_3-21\_n1 for TR 37.717-21-11**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: NTT DOCOMO INC.*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **revised to R4-2011612**.

**R4-2011612 TP for DC\_3-21\_n1 for TR 37.717-21-11**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: NTT DOCOMO INC.*

(Replaces R4-2010452)

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010453 TP for DC\_3-42\_n1 for TR 37.717-21-11**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: NTT DOCOMO INC.*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010454 TP for DC\_19-21\_n1 for TR 37.717-21-11**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: NTT DOCOMO INC.*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010456 TP for DC\_19-42\_n1 for TR 37.717-21-11**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: NTT DOCOMO INC.*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **revised to R4-2011613**.

**R4-2011613 TP for DC\_19-42\_n1 for TR 37.717-21-11**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: NTT DOCOMO INC.*

(Replaces R4-2010456)

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010458 TP for DC\_21-42\_n1 for TR 37.717-21-11**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: NTT DOCOMO INC.*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **revised to R4-2011614**.

**R4-2011614 TP for DC\_21-42\_n1 for TR 37.717-21-11**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: NTT DOCOMO INC.*

(Replaces R4-2010458)

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010512 TP for TR 37.717-21-11: DC\_7-66\_n5**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: Huawei, HiSilicon, Bell Mobility, Telus*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **revised to R4-2011616**.

**R4-2011616 TP for TR 37.717-21-11: DC\_7-66\_n5**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: Huawei, HiSilicon, Bell Mobility, Telus*

(Replaces R4-2010512)

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010513 TP for TR 37.717-21-11: DC\_2-7\_n5**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: Huawei, HiSilicon, Bell Mobility, Telus*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010556 TP to TR 37.717-21-11 DC\_1A-40A\_n78A**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010557 TP to TR 37.717-21-11 DC\_3A-40A\_n78A**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010558 TP to TR 37.717-21-11 DC\_7A-40A\_n78A**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010559 TP to TR 37.717-21-11 DC\_8A-40A\_n78A**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **revised to R4-2011618**.

**R4-2011618 TP to TR 37.717-21-11 DC\_8A-40A\_n78A**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: Huawei, HiSilicon*

(Replaces R4-2010559)

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010697 TP for TR 37.717-21-11 to include DC\_2A-12A\_n5A**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: Ericsson, US Cellular*

**Abstract:**

TP for TR 37.717-21-11 to include DC\_2A-12A\_n5A

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **revised to R4-2011620**.

**R4-2011620 TP for TR 37.717-21-11 to include DC\_2A-12A\_n5A**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: Ericsson, US Cellular*

(Replaces R4-2010697)

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010698 TP for TR 37.717-21-11 to include DC\_2A-5A\_n12A**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: Ericsson, US Cellular*

**Abstract:**

TP for TR 37.717-21-11 to include DC\_2A-5A\_n12A

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **revised to R4-2011621**.

**R4-2011621 TP for TR 37.717-21-11 to include DC\_2A-5A\_n12A**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: Ericsson, US Cellular*

(Replaces R4-2010698)

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010699 TP for TR 37.717-21-11 to include DC\_5A-66A\_n12A**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: Ericsson, US Cellular*

**Abstract:**

TP for TR 37.717-21-11 to include DC\_5A-66A\_n12A

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010700 TP for TR 37.717-21-11 to include DC\_66A\_(n)5AA**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: Ericsson, US Cellular*

**Abstract:**

TP for TR 37.717-21-11 to include DC\_66A\_(n)5AA

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010701 TP for TR 37.717-21-11 to include DC\_12A-66A\_n5A**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: Ericsson, US Cellular*

**Abstract:**

TP for TR 37.717-21-11 to include DC\_12A-66A\_n5A

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010883 TP for TR 37.717-21-11: DC\_7A-8A\_n28A**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010884 TP for TR 37.717-21-11: DC\_20A-28A\_n3A**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010885 TP for TR 37.717-21-11: DC\_28A-66A\_n66A**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010886 TP for TR 37.717-21-11: DC\_7A-28A\_n66A / DC\_7C-28A\_n66A**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010887 TP for TR 37.717-21-11: DC\_2A-28A\_n66A**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010888 TP for TR 37.717-21-11: DC\_3A-28A\_n1A**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010889 TP for TR 37.717-21-11: DC\_7A-28A\_n1A**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010890 TP for TR 37.717-21-11: DC\_8A-40A\_n1A / DC\_8A-40C\_n1A**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010891 DraftCR for 38.101-3 to add configuration DC\_3A-40C\_n1A**

*Type: draftCR For: Endorsement  
 38.101-3 v16.4.0  
 Source: Huawei, HiSilicon*

**Abstract:**

To add ENDC configuration DC\_3A-40C\_n1A.

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **endorsed**.

**R4-2010892 DraftCR for 38.101-3 to add configuration DC\_7A-40C\_n1A**

*Type: draftCR For: Endorsement  
 38.101-3 v16.4.0  
 Source: Huawei, HiSilicon*

**Abstract:**

To add ENDC configuration DC\_7A-40C\_n1A.

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **endorsed**.

**R4-2010893 DraftCR for 38.101-3 to add UL configuration DC\_3C\_n78A for DC\_3C-20A\_n78A**

*Type: draftCR For: Endorsement  
 38.101-3 v16.4.0  
 Source: Huawei, HiSilicon*

**Abstract:**

To add UL configuration DC\_3C\_n78A for DC\_3C-20A\_n78A.

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **endorsed**.

**R4-2010894 TP for TR 37.717-21-11: DC\_1A-32A\_n3A**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: Huawei, HiSilicon, CKH IOD UK*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010895 TP for TR 37.717-21-11: DC\_3A-32A\_n1A**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: Huawei, HiSilicon, CKH IOD UK*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2009924 TP for TR 37.717-21-11 for DC\_2A-4A\_n28A**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2009925 TP for TR 37.717-21-11 for DC\_2A-7A\_n28A**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2009926 TP for TR 37.717-21-11 for DC\_2A-66A\_n28A**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2009927 TP for TR 37.717-21-11 for DC\_4A-7A\_n28A**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2009928 TP for TR 37.717-21-11 for DC\_5-7\_n66**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2009929 TP for TR 37.717-21-11 for DC\_7A-66A\_n28A**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2009992 TP for TR 37.717-21-11: EN-DC\_1-11\_n28**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: SoftBank Corp.*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2009993 TP for TR 37.716-21-11: EN-DC\_3-11\_n28**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: SoftBank Corp.*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2009994 TP for TR 37.717-21-11: EN-DC\_8-11\_n28**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: SoftBank Corp.*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2009995 TP for TR 37.717-21-11: EN-DC\_3-11\_n77**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: SoftBank Corp.*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **revised to R4-2011593**.

**R4-2011593 TP for TR 37.717-21-11: EN-DC\_3-11\_n77**

*Type: pCR For: Approval  
 37.717-21-11 v0.0.1  
 Source: SoftBank Corp.*

(Replaces R4-2009995)

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

#### 10.4.3 EN-DC with FR2 band [DC\_R17\_2BLTE\_1BNR\_3DL2UL-Core]

**R4-2010352 Draft CR for 38.101-3 to introduce new inter-band NE-DC (1NR band +2LTE bands) including FR2**

*Type: draftCR For: Endorsement  
 38.101-3 v16.4.0  
 Source: Samsung, SK Telecom, KT, LGU*

**Abstract:**

Specify new band combinations for inter-band NE-DC including FR2.

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **endorsed**.

### 10.5 DC of 3 LTE band and 1 NR band [DC\_R17\_3BLTE\_1BNR\_4DL2UL]

**R4-2009770 TP for TR 37.717-31-11: DC\_1-7-32\_n28**

*Type: pCR For: Approval  
 37.717-31-11 v0.0.1  
 Source: VODAFONE Group Plc*

**Abstract:**

This contribution is a text proposal for TR 37.717-31-11 to include DC\_1-7-32\_n28.

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2009771 TP for TR 37.717-31-11: DC\_1-7-32\_n78**

*Type: pCR For: Approval  
 37.717-31-11 v0.0.1  
 Source: VODAFONE Group Plc*

**Abstract:**

This contribution is a text proposal for TR 37.717-31-11 to include DC\_1-7-32\_n78.

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2009772 TP for TR 37.717-31-11: DC\_1-20-32\_n28**

*Type: pCR For: Approval  
 37.717-31-11 v0.0.1  
 Source: VODAFONE Group Plc*

**Abstract:**

This contribution is a text proposal for TR 37.717-31-11 to include DC\_1-20-32\_n28.

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2009774 TP for TR 37.717-31-11: DC\_1-20-32\_n78**

*Type: pCR For: Approval  
 37.717-31-11 v0.0.1  
 Source: VODAFONE Group Plc*

**Abstract:**

This contribution is a text proposal for TR 37.717-31-11 to include DC\_1-20-32\_n78.

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2009775 TP for TR 37.717-31-11: DC\_3-7-32\_n78**

*Type: pCR For: Approval  
 37.717-31-11 v0.0.1  
 Source: VODAFONE Group Plc*

**Abstract:**

This contribution is a text proposal for TR 37.717-31-11 to include DC\_3-7-32\_n78.

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2009776 TP for TR 37.717-31-11: DC\_3-20-32\_n78**

*Type: pCR For: Approval  
 37.717-31-11 v0.0.1  
 Source: VODAFONE Group Plc*

**Abstract:**

This contribution is a text proposal for TR 37.717-31-11 to include DC\_3-20-32\_n78.

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2011587 TP for TR 37.717-31-11: DC\_3-20-32\_n78**

*Type: pCR For: Approval  
 37.717-31-11 v0.0.1  
 Source: VODAFONE Group Plc*

**Decision:** The document was **withdrawn**.

**R4-2009777 TP for TR 37.717-31-11: DC\_7-20-32\_n1**

*Type: pCR For: Approval  
 37.717-31-11 v0.0.1  
 Source: VODAFONE Group Plc*

**Abstract:**

This contribution is a text proposal for TR 37.717-31-11 to include DC\_7-20-32\_n1.

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2011588 TP for TR 37.717-31-11: DC\_7-20-32\_n1**

*Type: pCR For: Approval  
 37.717-31-11 v0.0.1  
 Source: VODAFONE Group Plc*

**Decision:** The document was **withdrawn**.

**R4-2009778 TP for TR 37.717-31-11: DC\_7-20-32\_n28**

*Type: pCR For: Approval  
 37.717-31-11 v0.0.1  
 Source: VODAFONE Group Plc*

**Abstract:**

This contribution is a text proposal for TR 37.717-31-11 to include DC\_7-20-32\_n28.

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

#### 10.5.1 Rapporteur Input (WID/TR/CR) [DC\_R17\_3BLTE\_1BNR\_4DL2UL-Core/Perf]

**R4-2010673 Revised WID LTE 3DL and one NR band Rel-17**

*Type: WID revised For: Information  
 Source: Ericsson*

**Abstract:**

Revised WID LTE 3DL and one NR band Rel-17

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2010677 CR introduction completed band combinations 37.717-31-11 -**

*Type: CR For: Agreement  
 38.101-3 v16.4.0 CR-0336 Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

CR introduction completed band combinations 37.717-31-11 -> 38.101-3

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2010681 TR skeleton 37.717-31-11 v0.0.1 Rel-17 DC combinations LTE 3DL and one NR band**

*Type: draft TR For: Agreement  
 37.717-31-11 v0.0.1  
 Source: Ericsson*

**Abstract:**

TR skeleton 37.717-31-11 v0.0.1 Rel-17 DC combinations LTE 3DL and one NR band

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **agreed**.

**R4-2011890 Draft TR 37.717-31-11 v0.1.0 Rel-17 DC combinations LTE 3DL and one NR band**

*Type: draft TR For: Agreement  
 Source: Ericsson*

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

#### 10.5.2 EN-DC without FR2 band [DC\_R17\_3BLTE\_1BNR\_4DL2UL-Core]

**R4-2010008 Draft CR for TS 38.101-3: Support of n77(2A) for DC\_1-3-42\_n77, DC\_1-41-42\_n77 and DC\_3-41-42\_n77**

*Type: draftCR For: Endorsement  
 38.101-3 v16.4.0  
 Source: SoftBank Corp.*

**Abstract:**

DC combos of DC\_1-3-42\_n77, DC\_1-41-42\_n77 and DC\_3-41-42\_n77 are updated to add DL n77(2A).

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **endorsed**.

**R4-2010246 TP for TR 37.717-31-11 DC\_1-3\_(n)41**

*Type: pCR For: Approval  
 37.717-31-11 v0.0.1  
 Source: Samsung, KDDI*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010247 TP for TR 37.717-31-11 DC\_1-3-41\_n28**

*Type: pCR For: Approval  
 37.717-31-11 v0.0.1  
 Source: Samsung, KDDI*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010260 Draft CR for 38.101-3 to introduce new inter-band NE-DC (1NR band +3LTE bands) within FR1**

*Type: draftCR For: Endorsement  
 38.101-3 v16.4.0  
 Source: Samsung, SK Telecom, KT, LGU*

**Abstract:**

Specify new combinations for inter-band NE-DC within FR1.

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **endorsed**.

**R4-2010417 TP for 37.717-31-11 to introduce DC\_2A-66A-71A\_n71A**

*Type: pCR For: Approval  
 37.717-31-11 v0.0.1  
 Source: Nokia, T-Mobile*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **noted**.

**R4-2010434 TP for 37.717-31-11 to introduce DC\_3A-7A-8A\_n40A**

*Type: pCR For: Approval  
 37.717-31-11 v0.0.1  
 Source: Nokia*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010435 TP for 37.717-31-11 to introduce DC\_3A-7A-28A\_n1A**

*Type: pCR For: Approval  
 37.717-31-11 v0.0.1  
 Source: Nokia*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010437 TP for 37.717-31-11 to introduce DC\_5A-7-66A\_n66A**

*Type: pCR For: Approval  
 37.717-31-11 v0.0.1  
 Source: Nokia*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010514 TP for DC\_3-19-42\_n1 for TR 37.717-31-11**

*Type: pCR For: Approval  
 37.717-31-11 v0.0.1  
 Source: NTT DOCOMO INC.*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010515 TP for DC\_3-21-42\_n1 for TR 37.717-31-11**

*Type: pCR For: Approval  
 37.717-31-11 v0.0.1  
 Source: NTT DOCOMO INC.*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010516 TP for DC\_19-21-42\_n1 for TR 37.717-31-11**

*Type: pCR For: Approval  
 37.717-31-11 v0.0.1  
 Source: NTT DOCOMO INC.*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010896 TP for TR 37.717-31-11: DC\_2A-28A-66A\_n66A**

*Type: pCR For: Approval  
 37.717-31-11 v0.0.1  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010897 TP for TR 37.717-31-11: DC\_7A-28A-66A\_n66A / DC\_7C-28A-66A\_n66A**

*Type: pCR For: Approval  
 37.717-31-11 v0.0.1  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010898 TP for TR 37.717-31-11: DC\_2A-7A-28A\_n66A / DC\_2A-7C-28A\_n66A**

*Type: pCR For: Approval  
 37.717-31-11 v0.0.1  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2010899 TP for TR 37.717-31-11: DC\_3A-7A-28A\_n1A**

*Type: pCR For: Approval  
 37.717-31-11 v0.0.1  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2009996 TP for TR 37.717-31-11: EN-DC\_1-8-11\_n3**

*Type: pCR For: Approval  
 37.717-31-11 v0.0.1  
 Source: SoftBank Corp.*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2009997 TP for TR 37.717-31-11: EN-DC\_1-8-42\_n28**

*Type: pCR For: Approval  
 37.717-31-11 v0.0.1  
 Source: SoftBank Corp.*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

#### 10.5.3 EN-DC with FR2 band [DC\_R17\_3BLTE\_1BNR\_4DL2UL-Core]

**R4-2010261 Draft CR for 38.101-3 to introduce new inter-band NE-DC (1NR band +3LTE bands) including FR2**

*Type: draftCR For: Endorsement  
 38.101-3 v16.4.0  
 Source: Samsung, SK Telecom, KT, LGU*

**Abstract:**

Specify new band combinations for inter-band NE-DC including FR2.

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **endorsed**.

### 10.6 DC of 4 LTE band and 1 NR band [DC\_R17\_4BLTE\_1BNR\_5DL2UL]

**R4-2009860 TP for TR 37.717-41-11: DC\_1-7-20-32\_n28**

*Type: pCR For: Approval  
 37.717-41-11 v0.0.1  
 Source: VODAFONE Group Plc*

**Abstract:**

This contribution is a text proposal for TR 37.717-41-11 to include DC\_1-7-20-32\_n28.

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2009861 TP for TR 37.717-41-11: DC\_1-7-20-32\_n78**

*Type: pCR For: Approval  
 37.717-41-11 v0.0.1  
 Source: VODAFONE Group Plc*

**Abstract:**

This contribution is a text proposal for TR 37.717-41-11 to include DC\_1-7-20-32\_n78.

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

**R4-2009862 TP for TR 37.717-41-11: DC\_3-7-20-32\_n78**

*Type: pCR For: Approval  
 37.717-41-11 v0.0.1  
 Source: VODAFONE Group Plc*

**Abstract:**

This contribution is a text proposal for TR 37.717-41-11 to include DC\_3-7-20-32\_n78.

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

#### 10.6.1 Rapporteur Input (WID/TR/CR) [DC\_R17\_4BLTE\_1BNR\_5DL2UL-Core/Perf]

**R4-2010397 Revised Rel-17 WID on DC of 4 bands LTE inter-band CA (4DL1UL) and 1 NR band (1DL1UL)**

*Type: WID revised For: Information  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Inclusion of requests provided at RAN4#96

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2010398 CR to introduce new combinations of LTE 4band + NR 1band for TS 38.101-3**

*Type: CR For: Agreement  
 38.101-3 v16.4.0 CR-0332 Cat: B (Rel-17)  
  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Inclusion of approved combinations provided at RAN4#96

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2010399 draftTR 37.717-41-11 v0.0.1**

*Type: draft TR For: Agreement  
 37.717-41-11 v0.0.1  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Draft skeleton

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **agreed**.

**R4-2010400 draftTR 37.717-41-11 v0.1.0**

*Type: draft TR For: Agreement  
 37.717-41-11 v0.0.1  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Inclusion of TPs provided at RAN4#96

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

#### 10.6.2 EN-DC without FR2 band [DC\_R17\_4BLTE\_1BNR\_5DL2UL-Core]

**R4-2010009 Draft CR for TS 38.101-3: Support of n77(2A) for DC\_1-3-41-42\_n77**

*Type: draftCR For: Endorsement  
 38.101-3 v16.4.0  
 Source: SoftBank Corp.*

**Abstract:**

DC combos of DC\_1-3-41-42\_n77 is updated to add DL n77(2A).

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **endorsed**.

**R4-2010262 Draft CR for 38.101-3 to introduce new inter-band NE-DC (1NR band +4LTE bands) within FR1**

*Type: draftCR For: Endorsement  
 38.101-3 v16.4.0  
 Source: Samsung, SK Telecom, KT, LGU*

**Abstract:**

Specify new combinations for inter-band NE-DC within FR1.

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **endorsed**.

**R4-2010900 TP for TR 37.717-41-11: DC\_2A-7A-28A-66A\_n66A / DC\_2A-7C-28A-66A\_n66A**

*Type: pCR For: Approval  
 37.717-41-11 v0.0.1  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **revised to R4-2011624**.

**R4-2011624 TP for TR 37.717-41-11: DC\_2A-7A-28A-66A\_n66A / DC\_2A-7C-28A-66A\_n66A**

*Type: pCR For: Approval  
 37.717-41-11 v0.0.1  
 Source: Huawei, HiSilicon*

(Replaces R4-2010900)

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **approved**.

#### 10.6.3 EN-DC with FR2 band [DC\_R17\_4BLTE\_1BNR\_5DL2UL-Core]

**R4-2010263 Draft CR for 38.101-3 to introduce new inter-band NE-DC (1NR band +4LTE bands) including FR2**

*Type: draftCR For: Endorsement  
 38.101-3 v16.4.0  
 Source: Samsung, SK Telecom, KT, LGU*

**Abstract:**

Specify new band combinations for inter-band NE-DC including FR2.

**Discussion:**

The contribution was discussed during email thread [96e][126] NR\_Baskets\_Part\_1. The discussion was recorded in R4-2011559.

**Decision:** The document was **endorsed**.

### 10.7 DC of x bands (x=1,2, 3, 4) LTE inter-band CA and 2 bands NR inter-band CA [DC\_R17\_xBLTE\_2BNR\_yDL2UL]

#### 10.7.1 Rapporteur Input (WID/TR/CR) [DC\_R17\_xBLTE\_2BNR\_yDL2UL-Core/Per] 10.7.2 EN-DC including NR inter CA without FR2 band [DC\_R17\_xBLTE\_2BNR\_yDL2UL-Core]

**R4-2010130 TR 37.717-11-21 v0.0.1 TR skeleton: LTE(xDL/1UL)+ NR(2DL/1UL) DC in Rel-17**

*Type: draft TR For: Agreement  
 37.717-11-21 v0.0.1  
 Source: LG Electronics Polska*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **agreed**.

**R4-2011885 TR 37.717-11-21 v0.1.0 TR skeleton: LTE(xDL/1UL)+ NR(2DL/1UL) DC in Rel-17**

*Type: draft TR For: Agreement  
 Source: LG Electronics Polska*

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2010131 Revised WID on LTE (xDL/UL x=1.2,3,4) with NR 2 bands (2DL/1UL) EN DC in Rel-17**

*Type: WID revised For: Information  
 Source: LG Electronics Polska*

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2010132 Introducing CR on new EN-DC LTE(xDL/1UL)+ NR(2DL/1UL) DC in Rel-17**

*Type: CR For: Agreement  
 38.101-3 v16.4.0 CR-0328 Cat: B (Rel-17)  
  
 Source: LG Electronics Polska*

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

#### 10.7.2 EN-DC including NR inter CA without FR2 band [DC\_R17\_xBLTE\_2BNR\_yDL2UL-Core]

**R4-2010000 TP for TR 37.717-11-21: EN-DC\_11\_n3-n77**

*Type: pCR For: Approval  
 37.717-11-21 v0.0.1  
 Source: SoftBank Corp.*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **noted**.

**R4-2010001 TP for TR 37.717-11-21: EN-DC\_11\_n3-n28**

*Type: pCR For: Approval  
 37.717-11-21 v0.0.1  
 Source: SoftBank Corp.*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **revised to R4-2011656**.

**R4-2011656 TP for TR 37.717-11-21: EN-DC\_11\_n3-n28**

*Type: pCR For: Approval  
 37.717-11-21 v0.0.1  
 Source: SoftBank Corp.*

(Replaces R4-2010001)

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2010002 TP for TR 37.717-11-21: EN-DC\_1-42\_n28-n77**

*Type: pCR For: Approval  
 37.717-11-21 v0.0.1  
 Source: SoftBank Corp.*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **revised to R4-2011657**.

**R4-2011657 TP for TR 37.717-11-21: EN-DC\_1-42\_n28-n77**

*Type: pCR For: Approval  
 37.717-11-21 v0.0.1  
 Source: SoftBank Corp.*

(Replaces R4-2010002)

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2010003 TP for TR 37.717-11-21: EN-DC\_3-42\_n28-n77**

*Type: pCR For: Approval  
 37.717-11-21 v0.0.1  
 Source: SoftBank Corp.*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **revised to R4-2011658**.

**R4-2011658 TP for TR 37.717-11-21: EN-DC\_3-42\_n28-n77**

*Type: pCR For: Approval  
 37.717-11-21 v0.0.1  
 Source: SoftBank Corp.*

(Replaces R4-2010003)

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2010004 TP for TR 37.717-11-21: EN-DC\_8-42\_n28-n77**

*Type: pCR For: Approval  
 37.717-11-21 v0.0.1  
 Source: SoftBank Corp.*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **revised to R4-2011659**.

**R4-2011659 TP for TR 37.717-11-21: EN-DC\_8-42\_n28-n77**

*Type: pCR For: Approval  
 37.717-11-21 v0.0.1  
 Source: SoftBank Corp.*

(Replaces R4-2010004)

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2010005 TP for TR 37.717-11-21: EN-DC\_1-3-8\_n28-n77**

*Type: pCR For: Approval  
 37.717-11-21 v0.0.1  
 Source: SoftBank Corp.*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **revised to R4-2011660**.

**R4-2011660 TP for TR 37.717-11-21: EN-DC\_1-3-8\_n28-n77**

*Type: pCR For: Approval  
 37.717-11-21 v0.0.1  
 Source: SoftBank Corp.*

(Replaces R4-2010005)

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2010242 TP for TR 37.717-11-21 DC\_1A\_n28A-n41A**

*Type: pCR For: Approval  
 37.717-11-21 v0.0.1  
 Source: Samsung, KDDI*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **revised to R4-2011661**.

**R4-2011661 TP for TR 37.717-11-21 DC\_1A\_n28A-n41A**

*Type: pCR For: Approval  
 37.717-11-21 v0.0.1  
 Source: Samsung, KDDI*

(Replaces R4-2010242)

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2010243 TP for TR 37.717-11-21 DC\_1A-3A\_n28A-n41A**

*Type: pCR For: Approval  
 37.717-11-21 v0.0.1  
 Source: Samsung, KDDI*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2010244 TP for TR 37.717-11-21 DC\_3A\_n28A-n41A**

*Type: pCR For: Approval  
 37.717-11-21 v0.0.1  
 Source: Samsung, KDDI*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2010411 TP for 37.717-11-21 to introduce DC\_2A\_n48A-n66A**

*Type: pCR For: Approval  
 37.717-11-21 v0.0.1  
 Source: Nokia, T-Mobile*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2010412 TP for 37.717-11-21 to introduce DC\_2A-48A\_n48A-n66A**

*Type: pCR For: Approval  
 37.717-11-21 v0.0.1  
 Source: Nokia, T-Mobile*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2010413 TP for 37.717-11-21 to introduce DC\_48A\_n25A-n48A**

*Type: pCR For: Approval  
 37.717-11-21 v0.0.1  
 Source: Nokia, T-Mobile*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **revised to R4-2011662**.

**R4-2011662 TP for 37.717-11-21 to introduce DC\_48A\_n25A-n48A**

*Type: pCR For: Approval  
 37.717-11-21 v0.0.1  
 Source: Nokia, T-Mobile*

(Replaces R4-2010413)

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2010414 TP for 37.717-11-21 to introduce DC\_48A\_n48A-n66A**

*Type: pCR For: Approval  
 37.717-11-21 v0.0.1  
 Source: Nokia, T-Mobile*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **revised to R4-2011663**.

**R4-2011663 TP for 37.717-11-21 to introduce DC\_48A\_n48A-n66A**

*Type: pCR For: Approval  
 37.717-11-21 v0.0.1  
 Source: Nokia, T-Mobile*

(Replaces R4-2010414)

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2010415 TP for 37.717-11-21 to introduce DC\_48A-66A\_n25A-n48A**

*Type: pCR For: Approval  
 37.717-11-21 v0.0.1  
 Source: Nokia, T-Mobile*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2010416 TP for 37.717-11-21 to introduce DC\_66A\_n25A-n48A**

*Type: pCR For: Approval  
 37.717-11-21 v0.0.1  
 Source: Nokia, T-Mobile*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **revised to R4-2011664**.

**R4-2011664 TP for 37.717-11-21 to introduce DC\_66A\_n25A-n48A**

*Type: pCR For: Approval  
 37.717-11-21 v0.0.1  
 Source: Nokia, T-Mobile*

(Replaces R4-2010416)

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **revised to R4-2011883**.

**R4-2011883 TP for 37.717-11-21 to introduce DC\_66A\_n25A-n48A**

*Type: pCR For: Approval  
 37.717-11-21 v0.0.1  
 Source: Nokia, T-Mobile*

(Replaces R4-2011664)

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2010423 TP for 37.717-11-21 to introduce DC\_1A-8A\_n40A-n78A**

*Type: pCR For: Approval  
 37.717-11-21 v0.0.1  
 Source: Nokia*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2010424 TP for 37.717-11-21 to introduce DC\_3A-7A\_n1A-n40A**

*Type: pCR For: Approval  
 37.717-11-21 v0.0.1  
 Source: Nokia*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2010425 TP for 37.717-11-21 to introduce DC\_3A-7A-8A\_n40A-n78A**

*Type: pCR For: Approval  
 37.717-11-21 v0.0.1  
 Source: Nokia*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2010426 TP for 37.717-11-21 to introduce DC\_3A-7A-28A\_n1A-n40A**

*Type: pCR For: Approval  
 37.717-11-21 v0.0.1  
 Source: Nokia*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2010427 TP for 37.717-11-21 to introduce DC\_3A-8A\_n40A-n78A**

*Type: pCR For: Approval  
 37.717-11-21 v0.0.1  
 Source: Nokia*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2010428 TP for 37.717-11-21 to introduce DC\_3A-28A\_n1A-n40A**

*Type: pCR For: Approval  
 37.717-11-21 v0.0.1  
 Source: Nokia*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2010429 TP for 37.717-11-21 to introduce DC\_7A\_n40A-n78A**

*Type: pCR For: Approval  
 37.717-11-21 v0.0.1  
 Source: Nokia*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **revised to R4-2011665**.

**R4-2011665 TP for 37.717-11-21 to introduce DC\_7A\_n40A-n78A**

*Type: pCR For: Approval  
 37.717-11-21 v0.0.1  
 Source: Nokia*

(Replaces R4-2010429)

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2010430 TP for 37.717-11-21 to introduce DC\_7A-8A\_n40A-n78A**

*Type: pCR For: Approval  
 37.717-11-21 v0.0.1  
 Source: Nokia*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2010431 TP for 37.717-11-21 to introduce DC\_7A-28A\_n1A-n40A**

*Type: pCR For: Approval  
 37.717-11-21 v0.0.1  
 Source: Nokia*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2010432 TP for 37.717-11-21 to introduce DC\_8A\_n40A-n78A**

*Type: pCR For: Approval  
 37.717-11-21 v0.0.1  
 Source: Nokia*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **revised to R4-2011666**.

**R4-2011666 TP for 37.717-11-21 to introduce DC\_8A\_n40A-n78A**

*Type: pCR For: Approval  
 37.717-11-21 v0.0.1  
 Source: Nokia*

(Replaces R4-2010432)

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **revised to R4-2011884**.

**R4-2011884 TP for 37.717-11-21 to introduce DC\_8A\_n40A-n78A**

*Type: pCR For: Approval  
 37.717-11-21 v0.0.1  
 Source: Nokia*

(Replaces R4-2011666)

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2010433 TP for 37.717-11-21 to introduce DC\_28A\_n1A-n40A**

*Type: pCR For: Approval  
 37.717-11-21 v0.0.1  
 Source: Nokia*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **revised to R4-2011667**.

**R4-2011667 TP for 37.717-11-21 to introduce DC\_28A\_n1A-n40A**

*Type: pCR For: Approval  
 37.717-11-21 v0.0.1  
 Source: Nokia*

(Replaces R4-2010433)

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2009998 TP for TR 37.717-11-21: EN-DC\_1\_n3-n77**

*Type: pCR For: Approval  
 37.717-11-21 v0.0.1  
 Source: SoftBank Corp.*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **revised to R4-2011654**.

**R4-2011654 TP for TR 37.717-11-21: EN-DC\_1\_n3-n77**

*Type: pCR For: Approval  
 37.717-11-21 v0.0.1  
 Source: SoftBank Corp.*

(Replaces R4-2009998)

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2009999 TP for TR 37.717-11-21: EN-DC\_8\_n3-n77**

*Type: pCR For: Approval  
 37.717-11-21 v0.0.1  
 Source: SoftBank Corp.*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **revised to R4-2011655**.

**R4-2011655 TP for TR 37.717-11-21: EN-DC\_8\_n3-n77**

*Type: pCR For: Approval  
 37.717-11-21 v0.0.1  
 Source: SoftBank Corp.*

(Replaces R4-2009999)

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

#### 10.7.3 EN-DC including NR inter CA with FR2 band [DC\_R17\_xBLTE\_2BNR\_yDL2UL-Core]

**R4-2010133 TP on initial summary of self-interference analysis for new EN-DC LTE(xDL/1UL)+ NR(2DL/1UL) DC in Rel-17**

*Type: pCR For: Approval  
 37.717-11-21 v0.0.1  
 Source: LG Electronics Polska*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2010318 TP for TR 37.717-11-21: support of DC\_3\_n1-n257, DC\_3-3\_n1-n257, DC\_7\_n1-n257, DC\_7-7\_n1-n257 with 257D to 257M**

*Type: pCR For: Approval  
 37.717-11-21 v0.0.1  
 Source: CHTTL*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2010338 TP for TR 37.717-11-21: support of DC\_3-7\_n1-n257, DC\_3-3-7\_n1-n257, DC\_3-7-7\_n1-n257, DC\_3-3-7-7\_n1-n257 with 257D to 257M**

*Type: pCR For: Approval  
 37.717-11-21 v0.0.1  
 Source: CHTTL*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

### 10.8 Band combinations for SA NR supplementary uplink (SUL), NSA NR SUL, NSA NR SUL with UL sharing from the UE perspective (ULSUP) [NR\_SUL\_combos\_R17]

#### 10.8.1 Rapporteur Input (WID/TR/CR) [NR\_SUL\_combos\_R17-Core/Per]

**R4-2011222 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: Information  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2011223 TR 37.717-00-00 v0.0.1**

*Type: draft TR For: Agreement  
 37.717-00-00 v0.0.1  
 Source: Huawei, HiSilicon*

**Abstract:**

TR skeleton

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **agreed**.

**R4-2011224 TR 37.717-00-00 v0.1.0**

*Type: draft TR For: Agreement  
 37.717-00-00 v0.1.0  
 Source: Huawei, HiSilicon*

**Abstract:**

To capture the approved TPs in this meeting

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2011225 Draft CR on Introduction of completed SUL band combinations into TS 38.101-1**

*Type: draftCR For: Endorsement  
 38.101-1 v16.4.0  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2011226 Draft CR on Introduction of completed SUL band combinations into TS 38.101-3**

*Type: draftCR For: Endorsement  
 38.101-3 v16.4.0  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

#### 10.8.2 UE RF [NR\_SUL\_combos\_R17-Core]

**R4-2010547 TP to TR 37.717-00-00 SUL\_n41A-n83A**

*Type: pCR For: Approval  
 37.717-00-00 v0.0.1  
 Source: Huawei, HiSilicon, Etisalat, CMCC*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **revised to R4-2011668**.

**R4-2011668 TP to TR 37.717-00-00 SUL\_n41A-n83A**

*Type: pCR For: Approval  
 37.717-00-00 v0.0.1  
 Source: Huawei, HiSilicon, Etisalat, CMCC*

(Replaces R4-2010547)

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2010548 TP to TR 37.717-00-00 SUL\_n79A-n83A**

*Type: pCR For: Approval  
 37.717-00-00 v0.0.1  
 Source: Huawei, CBN, CMCC, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **revised to R4-2011669**.

**R4-2011669 TP to TR 37.717-00-00 SUL\_n79A-n83A**

*Type: pCR For: Approval  
 37.717-00-00 v0.0.1  
 Source: Huawei, CBN, CMCC, HiSilicon, ABS*

(Replaces R4-2010548)

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2010549 DraftCR to 38101-1 on CA\_n78C\_SUL\_n78A-n80A**

*Type: draftCR For: Endorsement  
 38.101-1 v16.4.0  
 Source: Huawei, HiSilicon, CKH IOD UK, MediaTek, Spreadtrum*

**Abstract:**

This draftCR is to introduce the band combination of CA\_n78C\_SUL\_n78A-n80A according to operators’ requests.

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **endorsed**.

**R4-2010550 DraftCR to 38101-1 on CA\_n78C\_SUL\_n78A-n84A**

*Type: draftCR For: Endorsement  
 38.101-1 v16.4.0  
 Source: Huawei, HiSilicon, CKH IOD UK, MediaTek, Spreadtrum*

**Abstract:**

This draftCR is to introduce the band combination of CA\_n78C\_SUL\_n78A-n84A according to operators’ requests.

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **revised to R4-2011670**.

**R4-2011670 DraftCR to 38101-1 on CA\_n78C\_SUL\_n78A-n84A**

*Type: draftCR For: Endorsement  
 38.101-1 v16.4.0  
 Source: Huawei, HiSilicon, CKH IOD UK, MediaTek, Spreadtrum*

(Replaces R4-2010550)

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2010551 DraftCR to 38101-1 on CA\_n79C\_SUL\_n79A-n80A**

*Type: draftCR For: Endorsement  
 38.101-1 v16.4.0  
 Source: Huawei, CMCC, HiSilicon, MediaTek, Spreadtrum*

**Abstract:**

This draftCR is to introduce the band combination of CA\_n79C\_SUL\_n79A-n80A according to operators’ requests.

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **endorsed**.

**R4-2010552 DraftCR to 38101-1 on CA\_n41C\_SUL\_n41A-n80A**

*Type: draftCR For: Endorsement  
 38.101-1 v16.4.0  
 Source: Huawei, CMCC, HiSilicon, MediaTek, Spreadtrum*

**Abstract:**

This draftCR is to introduce the band combination of CA\_n41C\_SUL\_n41A-n80A according to operators’ requests.

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **endorsed**.

**R4-2010553 TP to TR 37.717-00-00 DC\_28A\_SUL\_n41A-n83A**

*Type: pCR For: Approval  
 37.717-00-00 v0.0.1  
 Source: Huawei, HiSilicon, Etisalat, CMCC*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **revised to R4-2011671**.

**R4-2011671 TP to TR 37.717-00-00 DC\_28A\_SUL\_n41A-n83A**

*Type: pCR For: Approval  
 37.717-00-00 v0.0.1  
 Source: Huawei, HiSilicon, Etisalat, CMCC*

(Replaces R4-2010553)

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2010919 TP for TR 37.717-00-00 for CA\_n28A-n41A\_SUL\_n41A-n83A**

*Type: pCR For: Approval  
 37.717-00-00 v0.0.1  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **revised to R4-2011672**.

**R4-2011672 TP for TR 37.717-00-00 for CA\_n28A-n41A\_SUL\_n41A-n83A**

*Type: pCR For: Approval  
 37.717-00-00 v0.0.1  
 Source: Huawei, HiSilicon*

(Replaces R4-2010919)

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2010920 TP for TR 37.717-00-00 for CA\_n28A-n79A\_SUL\_n79A-n83A**

*Type: pCR For: Approval  
 37.717-00-00 v0.0.1  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **revised to R4-2011673**.

**R4-2011673 TP for TR 37.717-00-00 for CA\_n28A-n79A\_SUL\_n79A-n83A**

*Type: pCR For: Approval  
 37.717-00-00 v0.0.1  
 Source: Huawei, HiSilicon, CBN, ABS*

(Replaces R4-2010920)

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

### 10.9 NR Inter-band Carrier Aggregation for 3 bands DL with 1 band UL [NR\_CA\_R17\_3BDL\_1BUL]

#### 10.9.1 Rapporteur Input (WID/TR/CR) [NR\_CA\_R17\_3BDL\_1BUL-Core/Per]

**R4-2009812 TR 38.717-03-01 on Rel-17 NR inter-band Carrier Aggregation (CA) for**

*Type: pCR For: Approval  
 38.717-03-01 v0.0.1  
 Source: CATT*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **agreed**.

**R4-2011886 TR 38.717-03-01 on Rel-17 NR inter-band Carrier Aggregation (CA) for 3 Down Link (DL) / 1 Up Link (UL)**

*Type: pCR For: Approval  
 Source: CATT*

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2009815 Revised WID on Rel-17 NR inter-band CA of 3DL bands and 1UL band**

*Type: WID revised For: Information  
 Source: CATT*

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

#### 10.9.2 UE RF [NR\_CA\_R17\_3BDL\_1BUL-Core]

**R4-2010252 TP for TR 38.717-03-01 CA\_n3A-n28A-n41A**

*Type: pCR For: Approval  
 38.717-03-01 v0.0.1  
 Source: Samsung, KDDI*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2010253 TP for TR 38.717-03-01 CA\_n3A-n41A-n78A**

*Type: pCR For: Approval  
 38.717-03-01 v0.0.1  
 Source: Samsung, KDDI*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2010528 TP to TR 38.717-03-01: CA\_n5-n25-n66**

*Type: pCR For: Approval  
 38.717-03-01 v0.0.1  
 Source: Nokia, Bell Mobility*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2010530 TP to TR 38.717-03-01: CA\_n5-n25-n78**

*Type: pCR For: Approval  
 38.717-03-01 v0.0.1  
 Source: Nokia, Bell Mobility*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2010575 TP for CA 3DL1UL n1-n77-n79 for TR 38.717-03-01**

*Type: pCR For: Approval  
 38.717-03-01 v0.0.1  
 Source: NTT DOCOMO INC.*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **revised to R4-2011674**.

**R4-2011674 TP for CA 3DL1UL n1-n77-n79 for TR 38.717-03-01**

*Type: pCR For: Approval  
 38.717-03-01 v0.0.1  
 Source: NTT DOCOMO INC.*

(Replaces R4-2010575)

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2010579 TP for CA 3DL1UL n1-n78-n79 for TR 38.717-03-01**

*Type: pCR For: Approval  
 38.717-03-01 v0.0.1  
 Source: NTT DOCOMO INC.*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **revised to R4-2011675**.

**R4-2011675 TP for CA 3DL1UL n1-n78-n79 for TR 38.717-03-01**

*Type: pCR For: Approval  
 38.717-03-01 v0.0.1  
 Source: NTT DOCOMO INC.*

(Replaces R4-2010579)

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2010642 TP for TR38.717-03-01\_CA\_n39A-n40A-n79A**

*Type: pCR For: Approval  
 38.717-03-01 v0.0.1  
 Source: ZTE Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2010643 TP for TR38.717-03-01\_CA\_n39A-n40A-n41A**

*Type: pCR For: Approval  
 38.717-03-01 v0.0.1  
 Source: ZTE Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2010687 TP to add CA\_n25A-n48A-n66A, CA\_n25A-n48(2A)-n66A, CA\_n25A-n48C-n66A**

*Type: pCR For: Approval  
 38.717-03-01 v0.0.1  
 Source: Ericsson, T-Mobile US*

**Abstract:**

TP to add CA\_n25A-n48A-n66A, CA\_n25A-n48(2A)-n66A, CA\_n25A-n48C-n66A

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2009687 TP for CA\_n1-n77-n257 3DL/1UL for TR38.717-03-01**

*Type: pCR For: Approval  
 38.717-03-01 v0.0.1  
 Source: NTT DOCOMO, INC.*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2009688 TP for CA\_n1-n78-n257 3DL/1DL for TR38.717-03-01**

*Type: pCR For: Approval  
 38.717-03-01 v0.0.1  
 Source: NTT DOCOMO, INC.*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2009689 TP for CA\_n1-n79-n257 3UL/1DL for TR38.717-03-01**

*Type: pCR For: Approval  
 38.717-03-01 v0.0.1  
 Source: NTT DOCOMO, INC.*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2009813 Draft big CR on Introducing NR inter-band CA for 3DL Bands and 1UL band for 38.101-1**

*Type: draftCR For: Endorsement  
 38.101-1 v16.4.0  
 Source: CATT*

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2009814 Draft big CR on Introducing NR inter-band CA for 3DL Bands and 1UL band for 38.101-3**

*Type: draftCR For: Endorsement  
 38.101-3 v16.4.0  
 Source: CATT*

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

### 10.10 NR Inter-band Carrier Aggregation for 4 bands DL with 1 band UL [NR\_CA\_R17\_4BDL\_1BUL]

#### 10.10.1 Rapporteur Input (WID/TR/CR) [NR\_CA\_R17\_4BDL\_1BUL-Core/Per]

**R4-2010674 Revised WID 4 bands NR CA Rel-17**

*Type: WID revised For: Information  
 Source: Ericsson*

**Abstract:**

Revised WID 4 bands NR CA Rel-17

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2010678 CR introduction completed band combinations 38.717-04-01 -**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0452 Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

CR introduction completed band combinations 38.717-04-01 -> 38.101-1

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2010679 CR introduction completed band combinations 38.717-04-01 -**

*Type: CR For: Agreement  
 38.101-3 v16.4.0 CR-0337 Cat: B (Rel-17)  
  
 Source: Ericsson*

**Abstract:**

CR introduction completed band combinations 38.717-04-01 -> 38.101-3

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2010682 TR skeleton 38.717-04-01 v0.0.1 Rel-17 NR Inter-band 4 bands CA**

*Type: draft TR For: Agreement  
 38.717-04-01 v0.0.1  
 Source: Ericsson*

**Abstract:**

TR skeleton 38.717-04-01 v0.0.1 Rel-17 NR Inter-band 4 bands CA

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **agreed**.

**R4-2011887 Draft TR 38.717-04-01 v0.1.0 Rel-17 NR Inter-band 4 bands CA**

*Type: draft TR For: Agreement  
 Source: Ericsson*

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

#### 10.10.2 UE RF [NR\_CA\_R17\_4BDL\_1BUL-Core]

**R4-2010254 TP for TR 38.717-04-01 CA\_n3A-n28A-n41A-n78A**

*Type: pCR For: Approval  
 38.717-04-01 v0.0.1  
 Source: Samsung, KDDI*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2010688 TP to add CA\_n25A-n41A-n66A-n71A, CA\_n25A-n41(2A)-n66A-n71A, CA\_n25A-n41C-n66A-n71A**

*Type: pCR For: Approval  
 38.717-04-01 v0.0.1  
 Source: Ericsson, T-Mobile US*

**Abstract:**

TP to add CA\_n25A-n41A-n66A-n71A, CA\_n25A-n41(2A)-n66A-n71A, CA\_n25A-n41C-n66A-n71A

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **revised to R4-2011676**.

**R4-2011676 TP to add CA\_n25A-n41A-n66A-n71A, CA\_n25A-n41(2A)-n66A-n71A, CA\_n25A-n41C-n66A-n71A**

*Type: pCR For: Approval  
 38.717-04-01 v0.0.1  
 Source: Ericsson, T-Mobile US*

(Replaces R4-2010688)

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

### 10.11 NR Inter-band Carrier Aggregation/Dual connectivity for 3 bands DL with 2 bands UL [NR\_CADC\_R17\_3BDL\_2BUL]

#### 10.11.1 Rapporteur Input (WID/TR/CR) [NR\_CADC\_R17\_3BDL\_2BUL-Core/Per]

**R4-2010653 Revised WID on Rel-17 NR Inter-band Carrier AggregationDual Connectivity for 3 bands DL with 2 bands UL**

*Type: WID revised For: Information  
 Source: ZTE Corporation*

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2010654 Draft CR to reflect the completed NR inter band CA DC combinations for 3 bands DL with 2 bands UL into TS 38.101-1**

*Type: draftCR For: Endorsement  
 38.101-1 v16.4.0  
 Source: ZTE Corporation*

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2010655 Draft CR to reflect the completed NR inter band CA DC combinations for 3 bands DL with 2 bands UL into TS 38.101-3**

*Type: draftCR For: Endorsement  
 38.101-3 v16.4.0  
 Source: ZTE Corporation*

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2010791 TR 38.717-03-02 v0.0.1**

*Type: draft TR For: Agreement  
 38.717-03-02 v0.0.1  
 Source: ZTE Wistron Telecom AB*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **agreed**.

**R4-2010793 TR 38.717-03-02 v0.1.0**

*Type: draft TR For: Agreement  
 38.717-03-02 v0.1.0  
 Source: ZTE Wistron Telecom AB*

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

#### 10.11.2 UE RF [NR\_CADC\_R17\_3BDL\_2BUL-Core]

**R4-2010510 Draft CR to 38.101-1 CA\_n7-n66-n78**

*Type: draftCR For: Endorsement  
 38.101-1 v16.4.0  
 Source: Huawei, HiSilicon, Bell Mobility, Telus*

**Abstract:**

CA\_n7A-n66A-n78A BCS 0supported in Rel-16, hence additional combinations for CA\_n7-n66-n78 can be added by a draft CR.

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **endorsed**.

**R4-2010529 TP to TR 38.717-03-02: CA\_n5-n25-n66**

*Type: pCR For: Approval  
 38.717-03-02 v0.0.1  
 Source: Nokia, Bell Mobility*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **revised to R4-2011677**.

**R4-2011677 TP to TR 38.717-03-02: CA\_n5-n25-n66**

*Type: pCR For: Approval  
 38.717-03-02 v0.0.1  
 Source: Nokia, Bell Mobility*

(Replaces R4-2010529)

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2010531 TP to TR 38.717-03-02: CA\_n5-n25-n78**

*Type: pCR For: Approval  
 38.717-03-02 v0.0.1  
 Source: Nokia, Bell Mobility*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2010580 TP for CA 3DL2UL n1-n77-n79 for TR 38.717-03-02**

*Type: pCR For: Approval  
 38.717-03-02 v0.0.1  
 Source: NTT DOCOMO INC.*

**Decision:** The document was **withdrawn**.

**R4-2010588 TP for CA 3DL2UL n1-n78-n79 for TR 38.717-03-02**

*Type: pCR For: Approval  
 38.717-03-02 v0.0.1  
 Source: NTT DOCOMO INC.*

**Decision:** The document was **withdrawn**.

**R4-2010644 TP for TR38.717-03-02\_CA\_n39A-n40A-n79A**

*Type: pCR For: Approval  
 38.717-03-02 v0.0.1  
 Source: ZTE Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2010645 TP for TR38.717-03-02\_CA\_n39A-n40A-n41A**

*Type: pCR For: Approval  
 38.717-03-02 v0.0.1  
 Source: ZTE Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2009690 TP for CA\_n1-n77-n257 3UL/2DL for TR38.717-03-02**

*Type: pCR For: Approval  
 38.717-03-02 v0.0.1  
 Source: NTT DOCOMO, INC.*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2009691 TP for CA\_n1-n78-n257 3UL/2DL for TR38.717-03-02**

*Type: pCR For: Approval  
 38.717-03-02 v0.0.1  
 Source: NTT DOCOMO, INC.*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2009692 TP for CA\_n1-n79-n257 3UL/2DL for TR38.717-03-02**

*Type: pCR For: Approval  
 38.717-03-02 v0.0.1  
 Source: NTT DOCOMO, INC.*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2009693 TP for CA\_n77-n79-n257 3UL/2DL for TR38.717-03-02**

*Type: pCR For: Approval  
 38.717-03-02 v0.0.1  
 Source: NTT DOCOMO, INC.*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2009694 TP for CA\_n78-n79-n257 3UL/2DL for TR38.717-03-02**

*Type: pCR For: Approval  
 38.717-03-02 v0.0.1  
 Source: NTT DOCOMO, INC.*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

### 10.12 DC of x bands (x=1,2) LTE inter-band CA (xDL/xUL) and y bands (y=3-x) NR inter-band CA [DC\_R17\_xBLTE\_yBNR\_3DL3UL]

#### 10.12.1 Rapporteur Input (WID/TR/CR) [DC\_R17\_xBLTE\_yBNR\_3DL3UL-Core/Per]

**R4-2010656 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: Information  
 Source: ZTE Corporation*

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2010657 Draft CR to reflect the completed ENDC combinations for 3 bands DL with 3 bands UL into TS 38.101-3**

*Type: draftCR For: Endorsement  
 38.101-3 v16.4.0  
 Source: ZTE Corporation*

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2010658 TR 37.717-33 v0.0.1**

*Type: draft TR For: Agreement  
 37.717-33 v0.0.1  
 Source: ZTE Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **agreed**.

**R4-2010659 TR 37.717-33 v0.1.0**

*Type: draft TR For: Agreement  
 37.717-33 v0.0.1  
 Source: ZTE Corporation*

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

#### 10.12.2 UE RF [DC\_R17\_xBLTE\_yBNR\_3DL3UL-Core]

**R4-2010646 TP for TR 37.717-33\_DC\_41A\_n79A-n258A**

*Type: pCR For: Approval  
 37.717-33 v0.0.1  
 Source: ZTE Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

### 10.13 DC of x bands (x=1,2,3) LTE inter-band CA (xDL/1UL) and 3 bands NR inter-band CA (3DL/1UL) [DC\_R17\_xBLTE\_3BNR\_yDL2UL]

#### 10.13.1 Rapporteur Input (WID/TR/CR) [DC\_R17\_xBLTE\_3BNR\_yDL2UL -Core/Per]

**R4-2010660 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: Information  
 Source: ZTE Corporation*

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2010661 TR 37.717-11-31\_v0.0.1**

*Type: draft TR For: Agreement  
 37.717-11-31 v0.0.1  
 Source: ZTE Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **agreed**.

**R4-2010662 TR 37.717-11-31\_v0.1.0**

*Type: draft TR For: Agreement  
 37.717-11-31 v0.0.1  
 Source: ZTE Corporation*

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

#### 10.13.2 UE RF [DC\_R17\_xBLTE\_3BNR\_yDL2UL-Core]

### 10.14 NR inter-band Carrier Aggregation and Dual connectivity for DL 4 bands and 2UL bands [NR\_CADC\_R17\_4BDL\_2BUL]

#### 10.14.1 Rapporteur Input (WID/TR/CR) [NR\_CADC\_R17\_4BDL\_2BUL -Core/Per]

**R4-2010143 Revised WID on NR CA/DC with 4DL/2UL**

*Type: WID revised For: Information  
 Source: Samsung*

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2010144 Draft CR on introduction for completed NR CA/DC combs with 4DL/2UL within FR1**

*Type: draftCR For: Endorsement  
 38.101-1 v16.4.0  
 Source: Samsung*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **withdrawn**.

**R4-2010145 Draft CR on introduction for completed NR CA/DC combs with 4DL/2UL including FR2**

*Type: draftCR For: Endorsement  
 38.101-3 v16.4.0  
 Source: Samsung*

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2010222 skeleton on TR38.717-04-02 for NR CA/DC with 4DL/2UL**

*Type: draft TR For: Agreement  
 38.717-04-02 v0.0.1  
 Source: Samsung*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **agreed**.

**R4-2011891 Draft TR38.717-04-02 for NR CA/DC with 4DL/2UL v0.1.0**

*Type: draft TR For: Agreement  
 Source: Samsung*

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

#### 10.14.2 UE RF [NR\_CADC\_R17\_4BDL\_2BUL -Core]

**R4-2010255 TP for TR 38.717-04-02 CA\_n3-n28-n77-n257 and DC\_n3-n28-n77-n257**

*Type: pCR For: Approval  
 38.717-04-02 v0.0.1  
 Source: Samsung, KDDI*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

**R4-2010256 TP for TR 38.717-04-02 CA\_n3-n28-n78-n257 and DC\_n3-n28-n78-n257**

*Type: pCR For: Approval  
 38.717-04-02 v0.0.1  
 Source: Samsung, KDDI*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

### 10.15 NR inter-band CA for 5 bands DL with x bands UL (x=1, 2) [NR\_CADC\_R17\_5BDL\_xBUL\_3DL3UL]

#### 10.15.1 Rapporteur Input (WID/TR/CR) [NR\_CADC\_R17\_5BDL\_xBUL -Core/Per]

**R4-2011227 Revised WID on NR inter-band CA for 5 bands DL with x bands UL (x=1, 2)**

*Type: WID revised For: Information  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2011228 TR 38.717-05-01 v0.0.1**

*Type: draft TR For: Agreement  
 38.717-05-01 v0.0.1  
 Source: Huawei, HiSilicon*

**Abstract:**

TR skeleton

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **agreed**.

**R4-2011229 TR 38.717-05-01 v0.1.0**

*Type: draft TR For: Agreement  
 38.717-05-01 v0.1.0  
 Source: Huawei, HiSilicon*

**Abstract:**

To capture the approved TPs in this meeting

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2011230 Draft CR on Introduction of completed 5 bands inter-band CA into TS 38.101-1**

*Type: draftCR For: Endorsement  
 38.101-1 v16.4.0  
 Source: Huawei, HiSilicon*

**Decision:** The document was **withdrawn**.

#### 10.15.2 UE RF [NR\_CADC\_R17\_5BDL\_xBUL -Core]

**R4-2011789 WF on UE PC2 for NR inter-band CA and SUL configurations**

*Type: other For: discussion  
 Source: China Telecom*

**Discussion:**

The contribution was discussed during email thread [96e][127] NR\_Baskets\_Part\_2. The discussion was recorded in R4-2011560.

**Decision:** The document was **approved**.

### 10.16 Power Class 2 UE for NR inter-band CA and SUL configurations with 2 bands UL [NR\_SAR\_PC2\_interB\_SUL\_2BUL]

**R4-2011561 Email discussion summary for [96e][128] NR\_SAR\_PC2\_interB\_SUL\_2BUL**

*Type: other For: discussion  
 Source: Moderator (China Telecom)*

**Discussion:**

The contribution summarized email discussion thread [96e][128] NR\_SAR\_PC2\_interB\_SUL\_2BUL. The email thread was moderated by Bo Liu (China Telecom Corporation Ltd.) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **revised to R4-2011866**.

**R4-2011866 Email discussion summary for [96e][128] NR\_SAR\_PC2\_interB\_SUL\_2BUL**

*Type: other For: discussion  
 Source: Moderator (China Telecom)*

(Replaces R4-2011561)

**Discussion:**

The contribution summarized email discussion thread [96e][128] NR\_SAR\_PC2\_interB\_SUL\_2BUL. The email thread was moderated by Bo Liu (China Telecom Corporation Ltd.) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **noted**.

#### 10.16.1 Rapporteur Input (WID/TR/CR) [NR\_SAR\_PC2\_interB\_SUL\_2BUL-Core/Per]

**R4-2010266 Revised WID: SAR schemes for UE power class 2 (PC2) for NR inter-band Carrier Aggregation and supplemental uplink (SUL) configurations with 2 bands UL**

*Type: WID revised For: Information  
 Source: China Telecom*

**Abstract:**

This revised WI is to focus on SAR scheme rather than band-combination reqirements according to MCC suggestion. The band-combination requirements will be captured in a new basket WI submitted in AI 17.2.1

**Discussion:**

The contribution was discussed during email thread [96e][128] NR\_SAR\_PC2\_interB\_SUL\_2BUL. The discussion was recorded in R4-2011866.

**Decision:** The document was **noted**.

**R4-2010268 Discussion on RAN procedure rules for UE power class 2 (PC2) WID**

*Type: other For: Approval  
 Source: China Telecom*

**Abstract:**

This contribution discusses how to split the CA&SUL PC2 WI RP-201337 according to MCC suggestion.

**Discussion:**

The contribution was discussed during email thread [96e][128] NR\_SAR\_PC2\_interB\_SUL\_2BUL. The discussion was recorded in R4-2011866.

**Decision:** The document was **noted**.

**R4-2010269 Work plan for SAR schemes for UE power class 2 NR inter-band CA and SUL with 2UL**

*Type: Work Plan For: Approval  
 Source: China Telecom*

**Discussion:**

The contribution was discussed during email thread [96e][128] NR\_SAR\_PC2\_interB\_SUL\_2BUL. The discussion was recorded in R4-2011866.

**Decision:** The document was **approved**.

#### 10.16.2 PC2 for inter-band CA [NR\_SAR\_PC2\_interB\_SUL\_2BUL-Core]

**R4-2010270 Discussion on SAR schemes for UE power class 2 NR inter-band CA with 2UL**

*Type: other For: Approval  
 Source: China Telecom*

**Discussion:**

The contribution was discussed during email thread [96e][128] NR\_SAR\_PC2\_interB\_SUL\_2BUL. The discussion was recorded in R4-2011866.

**Decision:** The document was **noted**.

**R4-2010634 Discussion on PC2 inter-band NR CA**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][128] NR\_SAR\_PC2\_interB\_SUL\_2BUL. The discussion was recorded in R4-2011866.

**Decision:** The document was **noted**.

**R4-2009796 Discussion on SAR solution for interband PC2 2UL CA**

*Type: discussion For: Discussion  
 Source: CATT*

**Discussion:**

The contribution was discussed during email thread [96e][128] NR\_SAR\_PC2\_interB\_SUL\_2BUL. The discussion was recorded in R4-2011866.

**Decision:** The document was **noted**.

#### 10.16.3 PC2 for SUL [NR\_SAR\_PC2\_interB\_SUL\_2BUL-Core]

**R4-2010546 Discussion on the SUL band combination PC2 SAR compliance**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][128] NR\_SAR\_PC2\_interB\_SUL\_2BUL. The discussion was recorded in R4-2011866.

**Decision:** The document was **noted**.

**R4-2010773 Discussion on SUL HPUE SAR**

*Type: discussion For: Approval  
 Source: OPPO*

**Discussion:**

The contribution was discussed during email thread [96e][128] NR\_SAR\_PC2\_interB\_SUL\_2BUL. The discussion was recorded in R4-2011866.

**Decision:** The document was **noted**.

**R4-2009797 Discussion on SAR solution for SUL PC2**

*Type: discussion For: Discussion  
 Source: CATT*

**Discussion:**

The contribution was discussed during email thread [96e][128] NR\_SAR\_PC2\_interB\_SUL\_2BUL. The discussion was recorded in R4-2011866.

**Decision:** The document was **noted**.

### 10.17 Adding channel bandwidth support to existing NR bands [NR\_BW\_Bands]

**R4-2011562 Email discussion summary for [96e][129] NR\_bands\_R17\_BWs**

*Type: other For: discussion  
 Source: Moderator (Ericsson)*

**Discussion:**

The contribution summarized email discussion thread [96e][129] NR\_bands\_R17\_BWs. The email thread was moderated by Dominique Evereare (Ericsson) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **revised to R4-2011867**.

**R4-2011867 Email discussion summary for [96e][129] NR\_bands\_R17\_BWs**

*Type: other For: discussion  
 Source: Moderator (Ericsson)*

(Replaces R4-2011562)

**Discussion:**

The contribution summarized email discussion thread [96e][129] NR\_bands\_R17\_BWs. The email thread was moderated by Dominique Evereare (Ericsson) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **noted**.

#### 10.17.1 General and Rapporteur Input (WID/TR/CR) [NR\_BW\_Bands -Core/Per]

**R4-2010440 Way of working - New basket WI adding channel BW to existing NR bands**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution reminds the agreed way of working with this new basket WI and could be use to answer any related question

**Discussion:**

The contribution was discussed during email thread [96e][129] NR\_bands\_R17\_BWs. The discussion was recorded in R4-2011867.

**Decision:** The document was **noted**.

**R4-2010545 Further on adding bandwidths for NR bands**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][129] NR\_bands\_R17\_BWs. The discussion was recorded in R4-2011867. The following two proposals were agreed:

Proposal 1: Supported channel bandwidths for SUL bands needs to be complete by adding the missing ones in Rel-17 bandwidth addition basket work item.

Proposal 2: RAN4 seeks to specify 90MHz and 100MHz UE channel bandwidth for n40 as optional channel bandwidths.

**Decision:** The document was **noted**.

**R4-2010618 Revised RP-201294 - Basket WID on adding channel bandwidth support to existing NR bands**

*Type: WID revised For: Information  
 Source: Ericsson*

**Abstract:**

This contribution is the revision of RP-201294 to include the new requests received before RAN4#96e meeting

**Discussion:**

The contribution was discussed during email thread [96e][129] NR\_bands\_R17\_BWs. The discussion was recorded in R4-2011867.

**Decision:** The document was **revised to R4-2011790**.

**R4-2011790 Revised RP-201294 - Basket WID on adding channel bandwidth support to existing NR bands**

*Type: WID revised For: Information  
 Source: Ericsson*

(Replaces R4-2010618)

**Discussion:**

The contribution was discussed during email thread [96e][129] NR\_bands\_R17\_BWs. The discussion was recorded in R4-2011867.

**Decision:** The document was **endorsed**.

#### 10.17.2 UE RF requirement [NR\_BW\_Bands -Core]

**R4-2010524 Including 70 MHz UE RF requirement to band n41 and n48**

*Type: draftCR For: Endorsement  
 38.101-1 v16.4.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Adding 70MHz UE requirement to TS 38.101-1.

**Discussion:**

The contribution was discussed during email thread [96e][129] NR\_bands\_R17\_BWs. The discussion was recorded in R4-2011867.

**Decision:** The document was **endorsed**.

**R4-2010540 Discussion on the addition of BWs for band n83 and n84**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][129] NR\_bands\_R17\_BWs. The discussion was recorded in R4-2011867.

**Decision:** The document was **noted**.

**R4-2010541 draftCR to 38101-1 to add 30MHz BW for band n83**

*Type: draftCR For: Endorsement  
 38.101-1 v16.4.0  
 Source: Huawei, HiSilicon*

**Abstract:**

This CR is to introduce UE RF requirements for adding 30MHz channel bandwidth for band n83.

**Discussion:**

The contribution was discussed during email thread [96e][129] NR\_bands\_R17\_BWs. The discussion was recorded in R4-2011867.

**Decision:** The document was **endorsed**.

**R4-2010543 draftCR to 38101-1 to add 25, 30, 40, 50MHz BW for band n84**

*Type: draftCR For: Endorsement  
 38.101-1 v16.4.0  
 Source: Huawei, HiSilicon*

**Abstract:**

This CR is to introduce UE RF requirements for adding 25, 30, 40 and 50MHz channel bandwidth for band n84.

**Discussion:**

The contribution was discussed during email thread [96e][129] NR\_bands\_R17\_BWs. The discussion was recorded in R4-2011867.

**Decision:** The document was **endorsed**.

##### 10.17.2.1 Reference sensitivity [NR\_BW\_Bands -Core]

##### 10.17.2.2 MPR/A-MPR/NS signaling [NR\_BW\_Bands -Core]

##### 10.17.2.3 others [NR\_BW\_Bands -Core]

**R4-2010441 Bands n41 and n48 - Add 70MH CBW**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

Thiis tdoc explains the needed changes to add support for 70MHz CBW in bands n41 and n48

**Discussion:**

The contribution was discussed during email thread [96e][129] NR\_bands\_R17\_BWs. The discussion was recorded in R4-2011867.

**Decision:** The document was **noted**.

**R4-2010442 Draft CR to 38.101-1 Band n41 - Additional 70MHz Channel BW**

*Type: draftCR For: Endorsement  
 38.101-1 v16.4.0  
 Source: Ericsson*

**Abstract:**

Add 70MHz channel BW support in band n41

**Discussion:**

The contribution was discussed during email thread [96e][129] NR\_bands\_R17\_BWs. The discussion was recorded in R4-2011867.

**Decision:** The document was **not pursued**.

**R4-2010443 Draft CR to 38.101-1 Band n48 - Additional 70MHz Channel BW**

*Type: draftCR For: Endorsement  
 38.101-1 v16.4.0  
 Source: Ericsson*

**Abstract:**

Add 70MHz channel BW support in band n48

**Discussion:**

The contribution was discussed during email thread [96e][129] NR\_bands\_R17\_BWs. The discussion was recorded in R4-2011867.

**Decision:** The document was **not pursued**.

**R4-2010777 Adding New CBW to existing NR bands**

*Type: discussion For: Approval  
 Source: OPPO*

**Discussion:**

The contribution was discussed during email thread [96e][129] NR\_bands\_R17\_BWs. The discussion was recorded in R4-2011867.

**Decision:** The document was **noted**.

#### 10.17.3 BS RF requirement [NR\_BW\_Bands -Core]

**R4-2010444 Draft CR to 38.104 Band n48 - Additional 70MHz Channel BW**

*Type: draftCR For: Endorsement  
 38.104 v16.4.0  
 Source: Ericsson*

**Abstract:**

Add 70 MHz channel BW support in band n48

**Discussion:**

The contribution was discussed during email thread [96e][129] NR\_bands\_R17\_BWs. The discussion was recorded in R4-2011867.

**Decision:** The document was **not pursued**.

**R4-2010525 Including 70 MHz B RF requirement to band n48**

*Type: draftCR For: Endorsement  
 38.104 v16.4.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Adding 70MHz BS requirement to TS 38.104.

**Discussion:**

The contribution was discussed during email thread [96e][129] NR\_bands\_R17\_BWs. The discussion was recorded in R4-2011867.

**Decision:** The document was **endorsed**.

**R4-2010542 draftCR to 38104 to add 30MHz BW for band n83**

*Type: draftCR For: Endorsement  
 38.104 v16.4.0  
 Source: Huawei, HiSilicon*

**Abstract:**

This CR is to introduce 30MHz channel bandwidth for band n83.

**Discussion:**

The contribution was discussed during email thread [96e][129] NR\_bands\_R17\_BWs. The discussion was recorded in R4-2011867.

**Decision:** The document was **endorsed**.

**R4-2010544 draftCR to 38104 to add 25, 30, 40, 50MHz BW for band n84**

*Type: draftCR For: Endorsement  
 38.104 v16.4.0  
 Source: Huawei, HiSilicon*

**Abstract:**

This CR is to introduce 25, 30,40 and 50MHz channel bandwidths for band n84.

**Discussion:**

The contribution was discussed during email thread [96e][129] NR\_bands\_R17\_BWs. The discussion was recorded in R4-2011867.

**Decision:** The document was **endorsed**.

### 10.18 Introduction of channel bandwidths 35MHz and 45MHz for NR [NR\_FR1\_35MHz\_45MHz\_BW]

**R4-2011563 Email discussion summary for [96e][130] NR\_FR1\_35MHz\_45MHz\_BW**

*Type: other For: discussion  
 Source: Moderator (Huawei)*

**Discussion:**

The contribution summarized email discussion thread [96e][130] NR\_FR1\_35MHz\_45MHz\_BW. The email thread was moderated by Liehai Liu (Huawei Tech.(UK) Co., Ltd) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **revised to R4-2011868**.

**R4-2011868 Email discussion summary for [96e][130] NR\_FR1\_35MHz\_45MHz\_BW**

*Type: other For: discussion  
 Source: Moderator (Huawei)*

(Replaces R4-2011563)

**Discussion:**

The contribution summarized email discussion thread [96e][130] NR\_FR1\_35MHz\_45MHz\_BW. The email thread was moderated by Liehai Liu (Huawei Tech.(UK) Co., Ltd) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **noted**.

**R4-2011791 WF on release independence and signalling for 35 MHz and 45 MHz**

*Type: other For: discussion  
 Source: Huawei*

**Discussion:**

The contribution was discussed during email thread [96e][130] NR\_FR1\_35MHz\_45MHz\_BW. The discussion was recorded in R4-2011868.

**Decision:** The document was **approved**.

**R4-2011792 WF on Spectrum utilization for 35 MHz and 45 MHz**

*Type: other For: discussion  
 Source: ZTE*

**Discussion:**

The contribution was discussed during email thread [96e][130] NR\_FR1\_35MHz\_45MHz\_BW. The discussion was recorded in R4-2011868.

**Decision:** The document was **approved**.

**R4-2011793 WF on UE RF requirements**

*Type: other For: discussion  
 Source: Skyworks*

**Discussion:**

The contribution was discussed during email thread [96e][130] NR\_FR1\_35MHz\_45MHz\_BW. The discussion was recorded in R4-2011868.

**Decision:** The document was **approved**.

#### 10.18.1 General and Rapporteur Input (WID/TR/CR) [NR\_FR1\_35MHz\_45MHz\_BW-Core/Per]

**R4-2010501 Work plan on introduction of channel bandwidths 35MHz and 45MHz**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][130] NR\_FR1\_35MHz\_45MHz\_BW. The discussion was recorded in R4-2011868.

**Decision:** The document was **approved**.

**R4-2010502 WID revision on introduction of channel bandwidths 35MHz and 45MHz**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][130] NR\_FR1\_35MHz\_45MHz\_BW. The discussion was recorded in R4-2011868.

**Decision:** The document was **noted**.

#### 10.18.2 Spectrum utilization [NR\_FR1\_35MHz\_45MHz\_BW-Core]

**R4-2010265 Spectrum Utilization for 35MHz and 45MHz Channels in FR1 and their Support**

*Type: discussion For: Approval  
 38.101-1 v..  
 Source: Skyworks Solutions Inc.*

**Abstract:**

In this contribution, we provide our input on spectrum utilization and support of these new 35 and 45MHz channel bandwidths.

**Discussion:**

The contribution was discussed during email thread [96e][130] NR\_FR1\_35MHz\_45MHz\_BW. The discussion was recorded in R4-2011868.

**Decision:** The document was **noted**.

**R4-2010503 Spectrum utilization for 35MHz and 45MHz**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][130] NR\_FR1\_35MHz\_45MHz\_BW. The discussion was recorded in R4-2011868.

**Decision:** The document was **noted**.

**R4-2010635 On spectrum utilization for new channel bandwidth of 35MHz and 45MHz**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][130] NR\_FR1\_35MHz\_45MHz\_BW. The discussion was recorded in R4-2011868.

**Decision:** The document was **noted**.

#### 10.18.3 UE RF requirements [NR\_FR1\_35MHz\_45MHz\_BW-Core]

**R4-2011907 LS on New 35 and 45 MHz channel bandwidths**

*Type: other For: Approval  
 Source: T-Mobile USA*

**Decision:** The document was **withdrawn**.

**R4-2010241 UE Requirements for 35MHz and 45MHz channels in FR1**

*Type: discussion For: Approval  
 38.101-1 v..  
 Source: Skyworks Solutions Inc.*

**Abstract:**

In this contribution, we provide our input on UE requirements based on our proposed spectrum utilization for 35 and 45 MHz CH BW

**Discussion:**

The contribution was discussed during email thread [96e][130] NR\_FR1\_35MHz\_45MHz\_BW. The discussion was recorded in R4-2011868.

**Decision:** The document was **noted**.

**R4-2010504 Overview on introduction of channel bandwidths 35MHz and 45MHz for UE**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][130] NR\_FR1\_35MHz\_45MHz\_BW. The discussion was recorded in R4-2011868.

**Decision:** The document was **noted**.

**R4-2010636 Discussion on UE RF requirement for new channel bandwidth of 35MHz and 45MHz**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][130] NR\_FR1\_35MHz\_45MHz\_BW. The discussion was recorded in R4-2011868.

**Decision:** The document was **noted**.

#### 10.18.4 BS RF requirements [NR\_FR1\_35MHz\_45MHz\_BW-Core]

**R4-2010505 Overview on introduction of channel bandwidths 35MHz and 45MHz for BS**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][130] NR\_FR1\_35MHz\_45MHz\_BW. The discussion was recorded in R4-2011868.

**Decision:** The document was **noted**.

**R4-2010948 Discussion on BS RF requirement for new channel bandwidth of 35MHz and 45MHz**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][130] NR\_FR1\_35MHz\_45MHz\_BW. The discussion was recorded in R4-2011868.

**Decision:** The document was **noted**.

#### 10.18.5 Others [NR\_FR1\_35MHz\_45MHz\_BW-Core]

**R4-2010947 Discussion on signalling for brand new channel bandwidth**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][130] NR\_FR1\_35MHz\_45MHz\_BW. The discussion was recorded in R4-2011868.

**Decision:** The document was **noted**.

### 10.19 Band combinations for Uu and V2X con-current operation [NR\_LTE\_V2X\_PC5\_combos]

**R4-2011564 Email discussion summary for [96e][131] NR\_LTE\_V2X\_PC5\_combos**

*Type: other For: discussion  
 Source: Moderator (CATT)*

**Discussion:**

The contribution summarized email discussion thread [96e][131] NR\_LTE\_V2X\_PC5\_combos. The email thread was moderated by Yuan Gao (CATT) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **revised to R4-2011869**.

**R4-2011869 Email discussion summary for [96e][131] NR\_LTE\_V2X\_PC5\_combos**

*Type: other For: discussion  
 Source: Moderator (CATT)*

(Replaces R4-2011564)

**Discussion:**

The contribution summarized email discussion thread [96e][131] NR\_LTE\_V2X\_PC5\_combos. The email thread was moderated by Yuan Gao (CATT) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **noted**.

**R4-2011794 WF on new band combinations for V2X con-current operation**

*Type: other For: discussion  
 Source: CATT*

**Discussion:**

The contribution was discussed during email thread [96e][131] NR\_LTE\_V2X\_PC5\_combos. The discussion was recorded in R4-2011869.

**Decision:** The document was **approved**.

**R4-2011797 CR for TS 38.101-1, Introduce new band combination of V2X\_n39A\_n47A**

*Type: draftCR For: Agreement  
 38.101-1 v16.4.0  
 Source: CATT*

**Abstract:**

The con-current operation of V2X\_n39A-n47A should be introduced based on request.

**Discussion:**

The contribution was discussed during email thread [96e][131] NR\_LTE\_V2X\_PC5\_combos. The discussion was recorded in R4-2011869.

**Decision:** The document was **not pursued**.

**R4-2011798 CR for TS 38.101-3, Introduce new band combination of V2X\_39A\_n47A and V2X\_n39A\_47A**

*Type: draftCR For: Agreement  
 38.101-3 v16.4.0  
 Source: CATT*

**Abstract:**

The con-current operation of V2X\_39A\_n47A and V2X\_n39A\_47A should be introduced based on request.

**Discussion:**

The contribution was discussed during email thread [96e][131] NR\_LTE\_V2X\_PC5\_combos. The discussion was recorded in R4-2011869.

**Decision:** The document was **not pursued**.

#### 10.19.1 General and Rapporteur Input (WID/TR/CR) [NR\_LTE\_V2X\_PC5\_combos-Core/Per]

**R4-2010931 General discussion about Rel-17 band combinations for Uu and V2X con-current operation**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][131] NR\_LTE\_V2X\_PC5\_combos. The discussion was recorded in R4-2011869.

**Decision:** The document was **noted**.

**R4-2009832 Revised basket WID for V2X band combination**

*Type: discussion For: Discussion  
 Source: CATT*

**Discussion:**

The contribution was discussed during email thread [96e][131] NR\_LTE\_V2X\_PC5\_combos. The discussion was recorded in R4-2011869.

**Decision:** The document was **endorsed**.

**R4-2009833 TR 37 8xx skeleton for V2X new band combinations**

*Type: WID revised For: Information  
 Source: CATT*

**Discussion:**

The contribution was discussed during email thread [96e][131] NR\_LTE\_V2X\_PC5\_combos. The discussion was recorded in R4-2011869.

**Decision:** The document was **revised to R4-2011795**.

**R4-2011795 TR 37.875 skeleton for V2X new band combinations**

*Type: draft TR For: Agreement  
 37.875 v0.0.0  
 Source: CATT*

(Replaces R4-2009833)

**Discussion:**

The contribution was discussed during email thread [96e][131] NR\_LTE\_V2X\_PC5\_combos. The discussion was recorded in R4-2011869.

**Decision:** The document was **agreed**.

#### 10.19.2 UE RF requirement for concurrent operation between NR Uu band and NR PC5 band [NR\_LTE\_V2X\_PC5\_combos-Core]

**R4-2009834 TP on harmonics and IMD analysis for V2X\_(n)39A\_(n)47A con-current operation**

*Type: other For: Approval  
 Source: CATT*

**Discussion:**

The contribution was discussed during email thread [96e][131] NR\_LTE\_V2X\_PC5\_combos. The discussion was recorded in R4-2011869.

**Decision:** The document was **revised to R4-2011796**.

**R4-2011796 TP on harmonics and IMD analysis for V2X\_(n)39A\_(n)47A con-current operation**

*Type: other For: Approval  
 Source: CATT*

(Replaces R4-2009834)

**Discussion:**

The contribution was discussed during email thread [96e][131] NR\_LTE\_V2X\_PC5\_combos. The discussion was recorded in R4-2011869.

**Decision:** The document was **approved**.

#### 10.19.3 UE RF requirement for concurrent operation between LTE Uu band and NR PC5 band [NR\_LTE\_V2X\_PC5\_combos-Core]

#### 10.19.4 UE RF requirement for concurrent operation between NR Uu band and LTE PC5 band [NR\_LTE\_V2X\_PC5\_combos-Core]

#### 10.19.5 UE RF requirement for concurrent operation of LTE/NR CA/DC band combinations + PC5 V2X [NR\_LTE\_V2X\_PC5\_combos-Core]

### 10.20 Introduction of FR2 FWA UE with maximum TRP of 23dBm for band n257 and n258 [NR\_FR2\_FWA\_Bn257\_Bn258]

**R4-2012062 Email discussion summary for [96e][231] NR\_FR2\_FWA\_Bn257\_Bn258\_RRM**

*Type: other For: discussion  
 Source: Moderator (Huawei)*

**Discussion:**

The contribution summarized email discussion thread [96e][231] NR\_FR2\_FWA\_Bn257\_Bn258\_RRM. The topic areas for discussion were RRM requirements. The email thread was moderated by Li Hong (HiSilicon Technologies Co. Ltd). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **revised to R4-2012231**.

**R4-2012231 Email discussion summary for [96e][231] NR\_FR2\_FWA\_Bn257\_Bn258\_RRM**

*Type: other For: discussion  
 Source: Moderator (Huawei)*

(Replaces R4-2012062)

**Discussion:**

The contribution summarized email discussion thread [96e][231] NR\_FR2\_FWA\_Bn257\_Bn258\_RRM. The topic areas for discussion were RRM requirements. The email thread was moderated by Li Hong (HiSilicon Technologies Co. Ltd). All contributions discussed in the thread were treated during RRM session chaired by Andrey Chervyakov (Intel).

**Decision:** The document was **noted**.

**R4-2012199 WF on FR2 new FWA UE RRM requirements**

*Type: other For: discussion  
 Source: Huawei*

**Decision:** The document was **approved**.

#### 10.20.1 UE RF (38.101-2) [NR\_FR2\_FWA\_Bn257\_Bn258-Core]

**R4-2011565 Email discussion summary for [96e][132] NR\_FR2\_FWA\_Bn257\_Bn258**

*Type: other For: discussion  
 Source: Moderator (SoftBank)*

**Discussion:**

The contribution summarized email discussion thread [96e][132] NR\_FR2\_FWA\_Bn257\_Bn258. The email thread was moderated by Masashi Fushiki (SoftBank Corp.) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **revised to R4-2011870**.

**R4-2011870 Email discussion summary for [96e][132] NR\_FR2\_FWA\_Bn257\_Bn258**

*Type: other For: discussion  
 Source: Moderator (SoftBank)*

(Replaces R4-2011565)

**Discussion:**

The contribution summarized email discussion thread [96e][132] NR\_FR2\_FWA\_Bn257\_Bn258. The email thread was moderated by Masashi Fushiki (SoftBank Corp.) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **noted**.

**R4-2011799 Draft CR for FR2 FWA RF requirements**

*Type: draftCR For: Endorsement  
 38.101-2 v16.4.0  
 Source: Huawei*

**Abstract:**

Power class 5 is introduced in Rel-17 for FWA usage.

**Discussion:**

The contribution was discussed during email thread [96e][132] NR\_FR2\_FWA\_Bn257\_Bn258. The discussion was recorded in R4-2011870.

**Decision:** The document was **not pursued**.

**R4-2011800 LS to RAN2 on FR2 FWA options**

*Type: LS out For: Approval  
 to RAN2  
 Source: SoftBank*

**Discussion:**

The contribution was discussed during email thread [96e][132] NR\_FR2\_FWA\_Bn257\_Bn258. The discussion was recorded in R4-2011870.

**Decision:** The document was **noted**.

**R4-2010533 Open issues on FR2 FWA UE RF requirement**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

hihger MBR and MPR than PC3 is not recommended.

**Discussion:**

The contribution was discussed during email thread [96e][132] NR\_FR2\_FWA\_Bn257\_Bn258. The discussion was recorded in R4-2011870.

**Decision:** The document was **noted**.

**R4-2011417 Views on RF requirement for FWA**

*Type: other For: Approval  
 Source: Sony, Ericsson*

**Discussion:**

The contribution was discussed during email thread [96e][132] NR\_FR2\_FWA\_Bn257\_Bn258. The discussion was recorded in R4-2011870.

**Decision:** The document was **noted**.

**R4-2011458 On Japan FWA EIRP requirement**

*Type: other For: Approval  
 38.101-2 v..  
 Source: Qualcomm Incorporated*

**Abstract:**

Network simulation suggest UL tput strongly limited by UL EIRP

**Discussion:**

The contribution was discussed during email thread [96e][132] NR\_FR2\_FWA\_Bn257\_Bn258. The discussion was recorded in R4-2011870.

**Decision:** The document was **noted**.

**R4-2011488 on new FR2 FWA UE RF requirement+LS RAN2**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][132] NR\_FR2\_FWA\_Bn257\_Bn258. The discussion was recorded in R4-2011870.

**Decision:** The document was **noted**.

**R4-2009561 Views on RF requirement for FWA**

*Type: other For: Discussion  
 Source: Sony*

**Discussion:**

The contribution was discussed during email thread [96e][132] NR\_FR2\_FWA\_Bn257\_Bn258. The discussion was recorded in R4-2011870.

**Decision:** The document was **noted**.

**R4-2009629 Views on FR2 FWA UE with maximum TRP of 23dBm**

*Type: discussion For: Approval  
 Source: MediaTek Beijing Inc.*

**Abstract:**

Proposal1: Define power class 5 for FR2 FWA UE with maximum TRP of 23dBm.

Proposal2: Peak EIRP is 26 dBm for FR2 FWA UE with maximum TRP of 23dBm.

Proposal3: REFSENS for 50MHz channel BW is -90.5 dBm for FR2 FWA UE with maximum TRP of 23dBm.

Proposal4: “A

**Discussion:**

The contribution was discussed during email thread [96e][132] NR\_FR2\_FWA\_Bn257\_Bn258. The discussion was recorded in R4-2011870.

**Decision:** The document was **noted**.

**R4-2009706 Views on new power class for FWA UE**

*Type: discussion For: Approval  
 Source: Samsung*

**Discussion:**

The contribution was discussed during email thread [96e][132] NR\_FR2\_FWA\_Bn257\_Bn258. The discussion was recorded in R4-2011870.

**Decision:** The document was **noted**.

#### 10.20.2 RRM Core requirements (38.133) [NR\_FR2\_FWA\_Bn257\_Bn258-Core]

**R4-2012295 Draft Big CR on FR2 new FWA UE RRM requirements in 38.133**

*Type: draftCR For: Endorsement  
 Source: Huawei*

**Discussion:**

The contribution was discussed during email thread [96e][231] NR\_FR2\_FWA\_Bn257\_Bn258\_RRM. The discussion was recorded in R4-2012231.

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2012296 Draft Big CR on FR2 new FWA UE RRM requirements in 36.133**

*Type: draftCR For: Endorsement  
 Source: Ericsson*

**Discussion:**

The contribution was discussed during email thread [96e][231] NR\_FR2\_FWA\_Bn257\_Bn258\_RRM. The discussion was recorded in R4-2012231.

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2011066 Discussion on RRM core requirements for FR2 FWA UE**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][231] NR\_FR2\_FWA\_Bn257\_Bn258\_RRM. The discussion was recorded in R4-2012231.

**Decision:** The document was **noted**.

**R4-2011067 CR on RRM requirements for new FR2 FWA UE**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1040 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

**Abstract:**

New FR2 FWA UE has been introduced for bands n257 and n258. It has been agreed that the existing RRM requirements for UE supporting PC1 can be reused, which has not been clarified in TS38.133.

**Discussion:**

The contribution was discussed during email thread [96e][231] NR\_FR2\_FWA\_Bn257\_Bn258\_RRM. The discussion was recorded in R4-2012231.

**Decision:** The document was **revised to R4-2012200**.

**R4-2012200 CR on RRM requirements for new FR2 FWA UE**

*Type: CR For: Endorsement  
 38.133 v16.4.0 CR-1040 rev 1 Cat: B (Rel-16)  
  
 Source: Huawei, HiSilicon*

(Replaces R4-2011067)

**Abstract:**

New FR2 FWA UE has been introduced for bands n257 and n258. It has been agreed that the existing RRM requirements for UE supporting PC1 can be reused, which has not been clarified in TS38.133.

**Discussion:**

The contribution was discussed during email thread [96e][231] NR\_FR2\_FWA\_Bn257\_Bn258\_RRM. The discussion was recorded in R4-2012231.

**Decision:** The document was **endorsed**.

**R4-2011252 Analysis of RRM core requirements for FR2 FWA UE power class**

*Type: other For: Discussion  
 Source: Ericsson, SoftBank*

**Abstract:**

This document analysis RRM requirements for new FR2 FWA UE power class of 23 dBm max TRP

**Discussion:**

The contribution was discussed during email thread [96e][231] NR\_FR2\_FWA\_Bn257\_Bn258\_RRM. The discussion was recorded in R4-2012231.

**Decision:** The document was **noted**.

**R4-2011253 RRM core requirements for FR2 FWA UE power class in 38.133**

*Type: CR For: Agreement  
 38.133 v16.4.0 CR-1093 Cat: B (Rel-16)  
  
 Source: Ericsson, SoftBank*

**Abstract:**

To specify RRM requirements for FR2 FWA UE power class.

**Discussion:**

The contribution was discussed during email thread [96e][231] NR\_FR2\_FWA\_Bn257\_Bn258\_RRM. The discussion was recorded in R4-2012231.

**Decision:** The document was **merged**.

**R4-2011254 RRM core requirements for FR2 FWA UE power class in 38.133**

*Type: CR For: Agreement  
 36.133 v16.6.0 CR-6958 Cat: B (Rel-16)  
  
 Source: Ericsson, SoftBank*

**Abstract:**

To specify inter-RAT RRM requirements for FR2 FWA UE power class.

**Discussion:**

The contribution was discussed during email thread [96e][231] NR\_FR2\_FWA\_Bn257\_Bn258\_RRM. The discussion was recorded in R4-2012231.

**Decision:** The document was **revised to R4-2012201**.

**R4-2012201 RRM core requirements for FR2 FWA UE power class in 36.133**

*Type: CR For: Endorsement  
 36.133 v16.6.0 CR-6958 rev 1 Cat: B (Rel-16)  
  
 Source: Ericsson, SoftBank*

(Replaces R4-2011254)

**Abstract:**

To specify inter-RAT RRM requirements for FR2 FWA UE power class.

**Discussion:**

The contribution was discussed during email thread [96e][231] NR\_FR2\_FWA\_Bn257\_Bn258\_RRM. The discussion was recorded in R4-2012231.

**Decision:** The document was **endorsed**.

#### 10.20.3 RRM Perf. requirements (38.133) [NR\_FR2\_FWA\_Bn257\_Bn258-Perf]

**R4-2011068 Discussion on RRM performance impacts for new FR2 FWA UE**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][231] NR\_FR2\_FWA\_Bn257\_Bn258\_RRM. The discussion was recorded in R4-2012231.

**Decision:** The document was **noted**.

#### 10.20.4 Others [NR\_FR2\_FWA\_Bn257\_Bn258-Core/Perf]

### 10.21 Introduction of NR band n13 [NR\_n13]

**R4-2011566 Email discussion summary for [96e][133] NR\_n13**

*Type: other For: discussion  
 Source: Moderator (Huawei)*

**Discussion:**

The contribution summarized email discussion thread [96e][133] NR\_n13. The email thread was moderated by Liehai Liu (Huawei Tech.(UK) Co., Ltd) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **revised to R4-2011871**.

**R4-2011871 Email discussion summary for [96e][133] NR\_n13**

*Type: other For: discussion  
 Source: Moderator (Huawei)*

(Replaces R4-2011566)

**Discussion:**

The contribution summarized email discussion thread [96e][133] NR\_n13. The email thread was moderated by Liehai Liu (Huawei Tech.(UK) Co., Ltd) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **noted**.

**R4-2011801 WF on A-MPR for n13**

*Type: other For: discussion  
 Source: Qualcomm*

**Discussion:**

The contribution was discussed during email thread [96e][133] NR\_n13. The discussion was recorded in R4-2011871.

**Decision:** The document was **approved**.

#### 10.21.1 UE RF (38.101-1) [NR\_n13-Core]

**R4-2010490 A-MPR for n13**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][133] NR\_n13. The discussion was recorded in R4-2011871.

**Decision:** The document was **noted**.

**R4-2010491 Draft CR for TS 38.10: introduction of NR band n13**

*Type: draftCR For: Endorsement  
 38.101-1 v16.4.0  
 Source: Huawei, HiSilicon*

**Abstract:**

Introduction of NR band n13 in TS 38.101-1.

**Discussion:**

The contribution was discussed during email thread [96e][133] NR\_n13. The discussion was recorded in R4-2011871.

**Decision:** The document was **revised to R4-2011802**.

**R4-2011802 Draft CR for TS 38.10: introduction of NR band n13**

*Type: draftCR For: Endorsement  
 38.101-1 v16.4.0  
 Source: Huawei, HiSilicon*

(Replaces R4-2010491)

**Abstract:**

Introduction of NR band n13 in TS 38.101-1.

**Discussion:**

The contribution was discussed during email thread [96e][133] NR\_n13. The discussion was recorded in R4-2011871.

**Decision:** The document was **endorsed**.

#### 10.21.2 BS RF (38.104) [NR\_n13-Core]

#### 10.21.3 RRM (38.133) [NR\_n13-Core]

#### 10.21.4 Others [NR\_n13-Core/Perf]

### 10.22 Introduction of 1880-1920MHz SUL band for NR [NR\_SUL\_band\_1880\_1920MHz]

**R4-2011567 Email discussion summary for [96e][134] NR\_SUL\_bands**

*Type: other For: discussion  
 Source: Moderator (CMCC)*

**Discussion:**

The contribution summarized email discussion thread [96e][134] NR\_SUL\_bands. The email thread was moderated by Zhe Shao (China Mobile Group Device Co.) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **revised to R4-2011872**.

**R4-2011872 Email discussion summary for [96e][134] NR\_SUL\_bands**

*Type: other For: discussion  
 Source: Moderator (CMCC)*

(Replaces R4-2011567)

**Discussion:**

The contribution summarized email discussion thread [96e][134] NR\_SUL\_bands. The email thread was moderated by Zhe Shao (China Mobile Group Device Co.) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **noted**.

**R4-2010151 Discussion on the new SUL band for 1880MHz - 1920MHz**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **noted**.

**R4-2009632 CR to 38101-1 on introducing new SUL band n96**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0413 Cat: B (Rel-17)  
  
 Source: Huawei, HiSilicon*

**Decision:** The document was **withdrawn**.

#### 10.22.1 UE RF (38.101-1) [NR\_SUL\_band\_1880\_1920MHz-Core]

**R4-2010152 draftCR to 38101-1 on introducing new SUL band n96**

*Type: draftCR For: Endorsement  
 38.101-1 v16.4.0  
 Source: Huawei, HiSilicon*

**Abstract:**

This draftCR is to introduce new SUL band for 1880 – 1920MHz in the UE RF spec.

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **not pursued**.

**R4-2009633 Introduction of 1880-1920MHz SUL band into Rel-17 TS 38.101-1**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0414 Cat: B (Rel-17)  
  
 Source: CMCC*

**Abstract:**

Introduction of 1880-1920MHz SUL band for NR into Rel-17 TS 38.101-1

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **revised to R4-2011803**.

**R4-2011803 Introduction of 1880-1920MHz SUL band into Rel-17 TS 38.101-1**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0414 rev 1 Cat: B (Rel-17)  
  
 Source: CMCC*

(Replaces R4-2009633)

**Abstract:**

Introduction of 1880-1920MHz SUL band for NR into Rel-17 TS 38.101-1

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **not pursued**.

#### 10.22.2 BS RF (38.104) [NR\_SUL\_band\_1880\_1920MHz -Core]

**R4-2010153 draftCR to 38104 on introducing new SUL band n96**

*Type: draftCR For: Endorsement  
 38.104 v16.4.0  
 Source: Huawei, HiSilicon*

**Abstract:**

This draftCR is to introduce new SUL band for 1880 – 1920MHz in 38.104 spec.

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **not pursued**.

**R4-2010154 draftCR to 38141-1 on introducing new SUL band n96**

*Type: draftCR For: Endorsement  
 38.141-1 v16.4.0  
 Source: Huawei, HiSilicon*

**Abstract:**

This draftCR is to introduce new SUL band for 1880 – 1920MHz in 38.141-1 spec.

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **not pursued**.

**R4-2010155 draftCR to 38141-2 on introducing new SUL band n96**

*Type: draftCR For: Endorsement  
 38.141-2 v16.4.0  
 Source: Huawei, HiSilicon*

**Abstract:**

This draftCR is to introduce new SUL band for 1880 – 1920MHz in 38.141-2 spec.

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **not pursued**.

**R4-2010156 draftCR to 36104 on introducing new SUL band n96**

*Type: draftCR For: Endorsement  
 36.104 v16.6.0  
 Source: Huawei, HiSilicon*

**Abstract:**

This draftCR is to introduce new SUL band for 1880 – 1920MHz in 36.104 spec.

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **not pursued**.

**R4-2010157 draftCR to 36141 on introducing new SUL band n96**

*Type: draftCR For: Endorsement  
 36.141 v16.6.0  
 Source: Huawei, HiSilicon*

**Abstract:**

This draftCR is to introduce new SUL band for 1880 – 1920MHz in 36.141 spec.

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **not pursued**.

**R4-2010158 draftCR to 37104 on introducing new SUL band n96**

*Type: draftCR For: Endorsement  
 37.104 v16.6.0  
 Source: Huawei, HiSilicon*

**Abstract:**

This draftCR is to introduce new SUL band for 1880 – 1920MHz in 37.104 spec.

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **not pursued**.

**R4-2010159 draftCR to 37141 on introducing new SUL band n96**

*Type: draftCR For: Endorsement  
 37.141 v16.6.0  
 Source: Huawei, HiSilicon*

**Abstract:**

This draftCR is to introduce new SUL band for 1880 – 1920MHz in 37.141 spec.

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **not pursued**.

**R4-2010160 draftCR to 37105 on introducing new SUL band n96**

*Type: draftCR For: Endorsement  
 37.105 v16.4.0  
 Source: Huawei, HiSilicon*

**Abstract:**

This draftCR is to introduce new SUL band for 1880 – 1920MHz in 37.105 spec.

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **not pursued**.

**R4-2010161 draftCR to 37145-1 on introducing new SUL band n96**

*Type: draftCR For: Endorsement  
 37.145-1 v16.4.0  
 Source: Huawei, HiSilicon*

**Abstract:**

This draftCR is to introduce new SUL band for 1880 – 1920MHz in 37.145-1 spec.

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **not pursued**.

**R4-2010162 draftCR to 37145-2 on introducing new SUL band n96**

*Type: draftCR For: Endorsement  
 37.145-2 v16.4.0  
 Source: Huawei, HiSilicon*

**Abstract:**

This draftCR is to introduce new SUL band for 1880 – 1920MHz in 37.145-2 spec.

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **not pursued**.

**R4-2009634 Introduction of 1880-1920MHz SUL band into Rel-17 TS 38.104**

*Type: CR For: Agreement  
 38.104 v16.4.0 CR-0215 Cat: B (Rel-17)  
  
 Source: CMCC*

**Abstract:**

Introduction of 1880-1920MHz SUL (supplemental uplink) band for NR

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **revised to R4-2011804**.

**R4-2011804 Introduction of 1880-1920MHz SUL band into Rel-17 TS 38.104**

*Type: CR For: Agreement  
 38.104 v16.4.0 CR-0215 rev 1 Cat: B (Rel-17)  
  
 Source: CMCC*

(Replaces R4-2009634)

**Abstract:**

Introduction of 1880-1920MHz SUL (supplemental uplink) band for NR

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **not pursued**.

**R4-2009635 Introduction of 1880-1920MHz SUL band into Rel-16 TS 36.104**

*Type: CR For: Agreement  
 36.104 v16.6.0 CR-4903 Cat: B (Rel-17)  
  
 Source: CMCC*

**Abstract:**

Introduction of 1880-1920MHz SUL (supplemental uplink) band for NR

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **revised to R4-2011805**.

**R4-2011805 Introduction of 1880-1920MHz SUL band into Rel-16 TS 36.104**

*Type: CR For: Agreement  
 36.104 v16.6.0 CR-4903 rev 1 Cat: B (Rel-17)  
  
 Source: CMCC*

(Replaces R4-2009635)

**Abstract:**

Introduction of 1880-1920MHz SUL (supplemental uplink) band for NR

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **not pursued**.

**R4-2009636 Introduction of 1880-1920MHz SUL band into Rel-17 TS 36.141**

*Type: CR For: Agreement  
 36.141 v16.6.0 CR-1267 Cat: B (Rel-17)  
  
 Source: CMCC*

**Abstract:**

Introduction of 1880-1920MHz SUL (supplemental uplink) band for NR

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **revised to R4-2011806**.

**R4-2011806 Introduction of 1880-1920MHz SUL band into Rel-17 TS 36.141**

*Type: CR For: Agreement  
 36.141 v16.6.0 CR-1267 rev 1 Cat: B (Rel-17)  
  
 Source: CMCC*

(Replaces R4-2009636)

**Abstract:**

Introduction of 1880-1920MHz SUL (supplemental uplink) band for NR

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **not pursued**.

**R4-2009637 Introduction of 1880-1920MHz SUL band into Rel-17 TS 37.104**

*Type: CR For: Agreement  
 37.104 v16.6.0 CR-0904 Cat: B (Rel-17)  
  
 Source: CMCC*

**Abstract:**

Introduction of 1880-1920MHz SUL (supplemental uplink) band for NR

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **revised to R4-2011807**.

**R4-2011807 Introduction of 1880-1920MHz SUL band into Rel-17 TS 37.104**

*Type: CR For: Agreement  
 37.104 v16.6.0 CR-0904 rev 1 Cat: B (Rel-17)  
  
 Source: CMCC*

(Replaces R4-2009637)

**Abstract:**

Introduction of 1880-1920MHz SUL (supplemental uplink) band for NR

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **not pursued**.

**R4-2009638 Introduction of 1880-1920MHz SUL band into Rel-17 TS 37.105**

*Type: CR For: Agreement  
 37.105 v16.4.0 CR-0185 Cat: B (Rel-17)  
  
 Source: CMCC*

**Abstract:**

Introduction of 1880-1920MHz SUL (supplemental uplink) band for NR

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **revised to R4-2011808**.

**R4-2011808 Introduction of 1880-1920MHz SUL band into Rel-17 TS 37.105**

*Type: CR For: Agreement  
 37.105 v16.4.0 CR-0185 rev 1 Cat: B (Rel-17)  
  
 Source: CMCC*

(Replaces R4-2009638)

**Abstract:**

Introduction of 1880-1920MHz SUL (supplemental uplink) band for NR

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **not pursued**.

**R4-2009639 Introduction of 1880-1920MHz SUL band into Rel-17 TS 37.141**

*Type: CR For: Agreement  
 37.141 v16.6.0 CR-0941 Cat: B (Rel-17)  
  
 Source: CMCC*

**Abstract:**

Introduction of 1880-1920MHz SUL (supplemental uplink) band for NR

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **revised to R4-2011809**.

**R4-2011809 Introduction of 1880-1920MHz SUL band into Rel-17 TS 37.141**

*Type: CR For: Agreement  
 37.141 v16.6.0 CR-0941 rev 1 Cat: B (Rel-17)  
  
 Source: CMCC*

(Replaces R4-2009639)

**Abstract:**

Introduction of 1880-1920MHz SUL (supplemental uplink) band for NR

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **not pursued**.

**R4-2009640 Introduction of 1880-1920MHz SUL band into Rel-17 TS 37.145-1**

*Type: CR For: Agreement  
 37.145-1 v16.4.0 CR-0214 Cat: B (Rel-17)  
  
 Source: CMCC*

**Abstract:**

Introduction of 1880-1920MHz SUL (supplemental uplink) band for NR

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **revised to R4-2011810**.

**R4-2011810 Introduction of 1880-1920MHz SUL band into Rel-17 TS 37.145-1**

*Type: CR For: Agreement  
 37.145-1 v16.4.0 CR-0214 rev 1 Cat: B (Rel-17)  
  
 Source: CMCC*

(Replaces R4-2009640)

**Abstract:**

Introduction of 1880-1920MHz SUL (supplemental uplink) band for NR

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **not pursued**.

**R4-2009641 Introduction of 1880-1920MHz SUL band into Rel-17 TS 37.145-2**

*Type: CR For: Agreement  
 37.145-2 v16.4.0 CR-0233 Cat: B (Rel-17)  
  
 Source: CMCC*

**Abstract:**

Introduction of 1880-1920MHz SUL (supplemental uplink) band for NR

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **revised to R4-2011811**.

**R4-2011811 Introduction of 1880-1920MHz SUL band into Rel-17 TS 37.145-2**

*Type: CR For: Agreement  
 37.145-2 v16.4.0 CR-0233 rev 1 Cat: B (Rel-17)  
  
 Source: CMCC*

(Replaces R4-2009641)

**Abstract:**

Introduction of 1880-1920MHz SUL (supplemental uplink) band for NR

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **not pursued**.

**R4-2009642 Introduction of 1880-1920MHz SUL band into Rel-17 TS 38.141-1**

*Type: CR For: Agreement  
 38.141-1 v16.4.0 CR-0139 Cat: B (Rel-17)  
  
 Source: CMCC*

**Abstract:**

Introduction of 1880-1920MHz SUL (supplemental uplink) band for NR

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **revised to R4-2011812**.

**R4-2011812 Introduction of 1880-1920MHz SUL band into Rel-17 TS 38.141-1**

*Type: CR For: Agreement  
 38.141-1 v16.4.0 CR-0139 rev 1 Cat: B (Rel-17)  
  
 Source: CMCC*

(Replaces R4-2009642)

**Abstract:**

Introduction of 1880-1920MHz SUL (supplemental uplink) band for NR

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **not pursued**.

**R4-2009643 Introduction of 1880-1920MHz SUL band into Rel-17 TS 38.141-2**

*Type: CR For: Agreement  
 38.141-2 v16.4.0 CR-0199 Cat: B (Rel-17)  
  
 Source: CMCC*

**Abstract:**

Introduction of 1880-1920MHz SUL (supplemental uplink) band for NR

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **revised to R4-2011813**.

**R4-2011813 Introduction of 1880-1920MHz SUL band into Rel-17 TS 38.141-2**

*Type: CR For: Agreement  
 38.141-2 v16.4.0 CR-0199 rev 1 Cat: B (Rel-17)  
  
 Source: CMCC*

(Replaces R4-2009643)

**Abstract:**

Introduction of 1880-1920MHz SUL (supplemental uplink) band for NR

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **not pursued**.

#### 10.22.3 RRM (38.133) [NR\_SUL\_band\_1880\_1920MHz -Core]

#### 10.22.4 Others [NR\_SUL\_band\_1880\_1920MHz -Core/Perf]

### 10.23 Introduction of 2300-2400MHz SUL band for NR [NR\_SUL\_band\_2300\_2400MHz]

**R4-2010163 Discussion on the new SUL band for 2300MHz - 2400MHz**

*Type: discussion For: Discussion  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **noted**.

#### 10.23.1 UE RF (38.101-1) [NR\_SUL\_band\_2300\_2400MHz -Core]

**R4-2010164 draftCR to 38101-1 on introducing new SUL band n97**

*Type: draftCR For: Endorsement  
 38.101-1 v16.4.0  
 Source: Huawei, HiSilicon*

**Abstract:**

This draftCR is to introduce new SUL band for 2300 – 2400 MHz in the UE RF spec.

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **not pursued**.

**R4-2009644 introduction of 2300-2400MHz SUL band into Rel-17 TS 38.101-1**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0415 Cat: B (Rel-17)  
  
 Source: CMCC*

**Abstract:**

Introduction of 2300-2400MHz SUL band for NR into Rel-17 TS 38.101-1

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **revised to R4-2011814**.

**R4-2011814 introduction of 2300-2400MHz SUL band into Rel-17 TS 38.101-1**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0415 rev 1 Cat: B (Rel-17)  
  
 Source: CMCC*

(Replaces R4-2009644)

**Abstract:**

Introduction of 2300-2400MHz SUL band for NR into Rel-17 TS 38.101-1

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **not pursued**.

#### 10.23.2 BS RF (38.104) [NR\_SUL\_band\_2300\_2400MHz -Core]

**R4-2010165 draftCR to 38104 on introducing new SUL band n97**

*Type: draftCR For: Endorsement  
 38.104 v16.4.0  
 Source: Huawei, HiSilicon*

**Abstract:**

This draftCR is to introduce new SUL band for 2300 – 2400MHz in 38.104 spec.

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **not pursued**.

**R4-2010166 draftCR to 38141-1 on introducing new SUL band n97**

*Type: draftCR For: Endorsement  
 38.141-1 v16.4.0  
 Source: Huawei, HiSilicon*

**Abstract:**

This draftCR is to introduce new SUL band for 2300 – 2400MHz in 38.141-1 spec.

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **not pursued**.

**R4-2010167 draftCR to 38141-2 on introducing new SUL band n97**

*Type: draftCR For: Endorsement  
 38.141-2 v16.4.0  
 Source: Huawei, HiSilicon*

**Abstract:**

This draftCR is to introduce new SUL band for 2300 – 2400MHz in 38.141-2 spec.

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **not pursued**.

**R4-2010168 draftCR to 36104 on introducing new SUL band n97**

*Type: draftCR For: Endorsement  
 36.104 v16.6.0  
 Source: Huawei, HiSilicon*

**Abstract:**

This draftCR is to introduce new SUL band for 2300 – 2400MHz in 36.104 spec.

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **not pursued**.

**R4-2010169 draftCR to 36141 on introducing new SUL band n97**

*Type: draftCR For: Endorsement  
 36.141 v16.6.0  
 Source: Huawei, HiSilicon*

**Abstract:**

This draftCR is to introduce new SUL band for 2300 – 2400MHz in 36.141 spec.

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **not pursued**.

**R4-2010170 draftCR to 37104 on introducing new SUL band n97**

*Type: draftCR For: Endorsement  
 37.104 v16.6.0  
 Source: Huawei, HiSilicon*

**Abstract:**

This draftCR is to introduce new SUL band for 2300 – 2400MHz in 37.104 spec.

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **not pursued**.

**R4-2010171 draftCR to 37141 on introducing new SUL band n97**

*Type: draftCR For: Endorsement  
 37.141 v16.6.0  
 Source: Huawei, HiSilicon*

**Abstract:**

This draftCR is to introduce new SUL band for 2300 – 2400MHz in 37.141 spec.

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **not pursued**.

**R4-2010172 draftCR to 37105 on introducing new SUL band n97**

*Type: draftCR For: Endorsement  
 37.105 v16.4.0  
 Source: Huawei, HiSilicon*

**Abstract:**

This draftCR is to introduce new SUL band for 2300 – 2400MHz in 37.105 spec.

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **not pursued**.

**R4-2010173 draftCR to 37145-1 on introducing new SUL band n97**

*Type: draftCR For: Endorsement  
 37.145-1 v16.4.0  
 Source: Huawei, HiSilicon*

**Abstract:**

This draftCR is to introduce new SUL band for 2300 – 2400MHz in 37.145-1 spec.

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **not pursued**.

**R4-2010174 draftCR to 37145-2 on introducing new SUL band n97**

*Type: draftCR For: Endorsement  
 37.145-2 v16.4.0  
 Source: Huawei, HiSilicon*

**Abstract:**

This draftCR is to introduce new SUL band for 2300 – 2400MHz in 37.145-2 spec.

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **not pursued**.

**R4-2009645 Introduction of 2300-2400MHz SUL band into Rel-17 TS 38.104**

*Type: CR For: Agreement  
 38.104 v16.4.0 CR-0216 Cat: B (Rel-17)  
  
 Source: CMCC*

**Abstract:**

Introduction of 2300-2400MHz SUL (supplemental uplink) band for NR

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **revised to R4-2011815**.

**R4-2011815 Introduction of 2300-2400MHz SUL band into Rel-17 TS 38.104**

*Type: CR For: Agreement  
 38.104 v16.4.0 CR-0216 rev 1 Cat: B (Rel-17)  
  
 Source: CMCC*

(Replaces R4-2009645)

**Abstract:**

Introduction of 2300-2400MHz SUL (supplemental uplink) band for NR

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **not pursued**.

**R4-2009646 Introduction of 2300-2400MHz SUL band into Rel-16 TS 36.104**

*Type: CR For: Agreement  
 36.104 v16.6.0 CR-4904 Cat: B (Rel-17)  
  
 Source: CMCC*

**Abstract:**

Introduction of 2300-2400MHz SUL (supplemental uplink) band for NR

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **not pursued**.

**R4-2009647 Introduction of 2300-2400MHz SUL band into Rel-17 TS 36.141**

*Type: CR For: Agreement  
 36.141 v16.6.0 CR-1268 Cat: B (Rel-17)  
  
 Source: CMCC*

**Abstract:**

Introduction of 2300-2400MHz SUL (supplemental uplink) band for NR

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **not pursued**.

**R4-2009648 Introduction of 2300-2400MHz SUL band into Rel-17 TS 37.104**

*Type: CR For: Agreement  
 37.104 v16.6.0 CR-0905 Cat: B (Rel-17)  
  
 Source: CMCC*

**Abstract:**

Introduction of 2300-2400MHz SUL (supplemental uplink) band for NR

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **not pursued**.

**R4-2009649 Introduction of 2300-2400MHz SUL band into Rel-17 TS 37.105**

*Type: CR For: Agreement  
 37.105 v16.4.0 CR-0186 Cat: B (Rel-17)  
  
 Source: CMCC*

**Abstract:**

Introduction of 2300-2400MHz SUL (supplemental uplink) band for NR

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **not pursued**.

**R4-2009650 Introduction of 2300-2400MHz SUL band into Rel-17 TS 37.141**

*Type: CR For: Agreement  
 37.141 v16.6.0 CR-0942 Cat: B (Rel-17)  
  
 Source: CMCC*

**Abstract:**

Introduction of 2300-2400MHz SUL (supplemental uplink) band for NR

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **not pursued**.

**R4-2009651 Introduction of 2300-2400MHz SUL band into Rel-17 TS 37.145-1**

*Type: CR For: Agreement  
 37.145-1 v16.4.0 CR-0215 Cat: B (Rel-17)  
  
 Source: CMCC*

**Abstract:**

Introduction of 2300-2400MHz SUL (supplemental uplink) band for NR

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **not pursued**.

**R4-2009652 Introduction of 2300-2400MHz SUL band into Rel-17 TS 37.145-2**

*Type: CR For: Agreement  
 37.145-2 v16.4.0 CR-0234 Cat: B (Rel-17)  
  
 Source: CMCC*

**Abstract:**

Introduction of 2300-2400MHz SUL (supplemental uplink) band for NR

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **not pursued**.

**R4-2009653 Introduction of 2300-2400MHz SUL band into Rel-17 TS 38.141-1**

*Type: CR For: Agreement  
 38.141-1 v16.4.0 CR-0140 Cat: B (Rel-17)  
  
 Source: CMCC*

**Abstract:**

Introduction of 2300-2400MHz SUL (supplemental uplink) band for NR

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **not pursued**.

**R4-2009654 Introduction of 2300-2400MHz SUL band into Rel-17 TS 38.141-2**

*Type: CR For: Agreement  
 38.141-2 v16.4.0 CR-0200 Cat: B (Rel-17)  
  
 Source: CMCC*

**Abstract:**

Introduction of 2300-2400MHz SUL (supplemental uplink) band for NR

**Discussion:**

The contribution was discussed during email thread [96e][134] NR\_SUL\_bands. The discussion was recorded in R4-2011872.

**Decision:** The document was **not pursued**.

#### 10.23.3 RRM (38.133) [NR\_SUL\_band\_2300\_2400MHz -Core]

#### 10.23.4 Others [NR\_SUL\_band\_2300\_2400MHz -Core/Perf]

### 10.24 Introduction of NR 47 GHz band [NR\_47GHz\_Band]

**R4-2011568 Email discussion summary for [96e][135] NR\_47GHz\_Band**

*Type: other For: discussion  
 Source: Moderator (Nokia)*

**Discussion:**

The contribution summarized email discussion thread [96e][135] NR\_47GHz\_Band. The email thread was moderated by Hisashi Onozawa (Nokia Japan) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **revised to R4-2011873**.

**R4-2011873 Email discussion summary for [96e][135] NR\_47GHz\_Band**

*Type: other For: discussion  
 Source: Moderator (Nokia)*

(Replaces R4-2011568)

**Discussion:**

The contribution summarized email discussion thread [96e][135] NR\_47GHz\_Band. The email thread was moderated by Hisashi Onozawa (Nokia Japan) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **noted**.

**R4-2011816 WF on UE testability above 43.5 GHz**

*Type: other For: discussion  
 Source: R&S, Apple*

**Discussion:**

The contribution was discussed during email thread [96e][135] NR\_47GHz\_Band. The discussion was recorded in R4-2011873.

**Decision:** The document was **approved**.

**R4-2011817 WF on link budget parameters for Tx/Rx of n262**

*Type: other For: discussion  
 Source: Huawei, HiSilicon, Apple*

**Discussion:**

The contribution was discussed during email thread [96e][135] NR\_47GHz\_Band. The discussion was recorded in R4-2011873.

**Decision:** The document was **approved**.

**R4-2011818 WF on UE RF requirement for 47 GHz band**

*Type: other For: discussion  
 Source: Qualcomm*

**Discussion:**

The contribution was discussed during email thread [96e][135] NR\_47GHz\_Band. The discussion was recorded in R4-2011873.

**Decision:** The document was **approved**.

**R4-2010520 Workplan for Introduction of NR 47 GHz band**

*Type: Work Plan For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

work plan from rapporteur

**Discussion:**

The contribution was discussed during email thread [96e][135] NR\_47GHz\_Band. The discussion was recorded in R4-2011873.

**Decision:** The document was **approved**.

**R4-2010521 Regulatory Background of 47 GHz band**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

spectrum allocation and FCC rules are summarized

**Discussion:**

The contribution was discussed during email thread [96e][135] NR\_47GHz\_Band. The discussion was recorded in R4-2011873.

**Decision:** The document was **noted**.

#### 10.24.1 UE RF (38.101-2) [NR\_47GHz\_Band -Core]

**R4-2010523 UE RF requirements for 47 GHz band**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

summary of UE RF requirement.

**Discussion:**

The contribution was discussed during email thread [96e][135] NR\_47GHz\_Band. The discussion was recorded in R4-2011873.

**Decision:** The document was **noted**.

**R4-2011455 Discussion on 48G RF components**

*Type: other For: Discussion  
 38.101-2 v..  
 Source: Qualcomm Incorporated*

**Abstract:**

PA, LNA and antenna gain trends in existing FR2 bands

**Discussion:**

The contribution was discussed during email thread [96e][135] NR\_47GHz\_Band. The discussion was recorded in R4-2011873.

**Decision:** The document was **noted**.

**R4-2009957 Preliminary views on the new 47 GHz band**

*Type: discussion For: Discussion  
 Source: Apple Inc.*

**Discussion:**

The contribution was discussed during email thread [96e][135] NR\_47GHz\_Band. The discussion was recorded in R4-2011873.

**Decision:** The document was **noted**.

#### 10.24.2 BS RF (38.104) [NR\_47GHz\_Band -Core]

**R4-2010446 Requirement overview for 47 GHz frequency band**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

This contribution gives an overview of the requirements impact when specifying the new 47GHz band

**Discussion:**

The contribution was discussed during email thread [96e][135] NR\_47GHz\_Band. The discussion was recorded in R4-2011873.

**Decision:** The document was **noted**.

**R4-2011412 BS RF requirements for 47 GHz band**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

The contribution was discussed during email thread [96e][135] NR\_47GHz\_Band. The discussion was recorded in R4-2011873.

**Decision:** The document was **approved**.

#### 10.24.3 RRM (38.133) [NR\_47GHz\_Band -Core]

**R4-2010522 Band number and System parameters of 47 GHz band**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

n262 is proposed. System parameters are summarized

**Discussion:**

The contribution was discussed during email thread [96e][135] NR\_47GHz\_Band. The discussion was recorded in R4-2011873.

**Decision:** The document was **approved**.

#### 10.24.4 Others [NR\_47GHz\_Band -Core/Perf]

**R4-2010445 TR 38xxx Introduction of NR Band 26x (47Ghz band)**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

TR skeleton to capture the work done when specifying the new NR FR2 47GHz band

**Discussion:**

The contribution was discussed during email thread [96e][135] NR\_47GHz\_Band. The discussion was recorded in R4-2011873.

**Decision:** The document was **agreed**.

**R4-2010447 47GHz band - Regulatory overview - System parameters**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

This contribution is giving an overview of Regulatory situation for the 47GHZ band and is proposing system parameters for this new band

**Discussion:**

The contribution was discussed during email thread [96e][135] NR\_47GHz\_Band. The discussion was recorded in R4-2011873.

**Decision:** The document was **approved**.

### 10.25 Introduction of NR band n24 [NR\_band\_n24]

**R4-2011569 Email discussion summary for [96e][136] NR\_LTE\_band\_n24**

*Type: other For: discussion  
 Source: Moderator (Ligado Networks)*

**Discussion:**

The contribution summarized email discussion thread [96e][136] NR\_LTE\_band\_n24. The email thread was moderated by Ojas Choksi (Ligado Networks) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **revised to R4-2011874**.

**R4-2011874 Email discussion summary for [96e][136] NR\_LTE\_band\_n24**

*Type: other For: discussion  
 Source: Moderator (Ligado Networks)*

(Replaces R4-2011569)

**Discussion:**

The contribution summarized email discussion thread [96e][136] NR\_LTE\_band\_n24. The email thread was moderated by Ojas Choksi (Ligado Networks) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **noted**.

**R4-2011820 WF on UE related work for n24**

*Type: other For: discussion  
 Source: Ligado Networks*

**Discussion:**

The contribution was discussed during email thread [96e][136] NR\_LTE\_band\_n24. The discussion was recorded in R4-2011874.

**Decision:** The document was **approved**.

**R4-2011821 WF on UE related work for Modification of Band 24**

*Type: other For: discussion  
 Source: Ligado Networks*

**Discussion:**

The contribution was discussed during email thread [96e][136] NR\_LTE\_band\_n24. The discussion was recorded in R4-2011874.

**Decision:** The document was **approved**.

#### 10.25.1 UE RF (38.101-1) [NR\_band\_n24-Core]

**R4-2010721 System Parameters for n24 and discussion related to regulatory emission limits for UE**

*Type: discussion For: Approval  
 Source: Ligado Networks*

**Discussion:**

The contribution was discussed during email thread [96e][136] NR\_LTE\_band\_n24. The discussion was recorded in R4-2011874.

**Decision:** The document was **approved**.

#### 10.25.2 BS RF (38.104) [NR\_band\_n24-Core]

**R4-2010728 Review of FCC material on record in dockets 12-340, 11-109 regarding band 24 downlink**

*Type: discussion For: Approval  
 Source: Ligado Networks*

**Discussion:**

The contribution was discussed during email thread [96e][136] NR\_LTE\_band\_n24. The discussion was recorded in R4-2011874.

**Decision:** The document was **approved**.

#### 10.25.3 RRM (38.133) [NR\_band\_n24-Core]

#### 10.25.4 Others [NR\_band\_n24-Core/Perf]

**R4-2010717 Work plan for Introduction of NR band n24**

*Type: Work Plan For: Approval  
 Source: Ligado Networks*

**Discussion:**

The contribution was discussed during email thread [96e][136] NR\_LTE\_band\_n24. The discussion was recorded in R4-2011874.

**Decision:** The document was **approved**.

**R4-2011508 Initial considerations on band n24 impact on E911 emergency calls**

*Type: discussion For: Discussion  
 Source: Apple Inc.*

**Discussion:**

The contribution was discussed during email thread [96e][136] NR\_LTE\_band\_n24. The discussion was recorded in R4-2011874.

**Decision:** The document was **noted**.

### 10.26 Introduction of 1.6 GHz NR SUL band with same uplink frequency range of Band 24 [NR\_SUL\_UL\_n24]

**R4-2011570 Email discussion summary for [96e][137] NR\_SUL\_bands\_1.6GHz**

*Type: other For: discussion  
 Source: Moderator (Ligado Networks)*

**Discussion:**

The contribution summarized email discussion thread [96e][137] NR\_SUL\_bands\_1.6GHz. The email thread was moderated by Ojas Choksi (Ligado Networks) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **noted**.

**R4-2011875 Email discussion summary for [96e][137] NR\_SUL\_bands\_1.6GHz**

*Type: other For: discussion  
 Source: Moderator (Ligado Networks)*

**Decision:** The document was **withdrawn**.

#### 10.26.1 UE RF (38.101-1) [NR\_SUL\_UL\_n24-Core]

**R4-2010746 System Parameters for new SUL Band and discussion related to regulatory emission limits related to UE**

*Type: discussion For: Approval  
 Source: Ligado Networks*

**Discussion:**

The contribution was discussed during email thread [96e][137] NR\_SUL\_bands\_1.6GHz. The discussion was recorded in R4-2011570.

**Decision:** The document was **approved**.

#### 10.26.2 BS RF (38.104) [NR\_SUL\_UL\_n24-Core]

#### 10.26.3 RRM (38.133) [NR\_SUL\_UL\_n24-Core]

#### 10.26.4 Others [NR\_SUL\_UL\_n24-Core/Perf]

**R4-2010745 Work plan for Introduction of 1.6 GHz NR SUL Band with same uplink frequency range of Band 24**

*Type: Work Plan For: Approval  
 Source: Ligado Networks*

**Discussion:**

The contribution was discussed during email thread [96e][137] NR\_SUL\_bands\_1.6GHz. The discussion was recorded in R4-2011570.

**Decision:** The document was **approved**.

### 10.27 LTE/NR spectrum sharing in Band 40/n40 [NR\_n40\_LTE\_40\_coex-Core]

**R4-2011571 Email discussion summary for [96e][138] DSS\_bands**

*Type: other For: discussion  
 Source: Moderator (Reliance Jio)*

**Discussion:**

The contribution summarized email discussion thread [96e][138] DSS\_bands. The email thread was moderated by Ashish Gupta (Reliance Jio) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **revised to R4-2011876**.

**R4-2011876 Email discussion summary for [96e][138] DSS\_bands**

*Type: other For: discussion  
 Source: Moderator (Reliance Jio)*

(Replaces R4-2011571)

**Discussion:**

The contribution summarized email discussion thread [96e][138] DSS\_bands. The email thread was moderated by Ashish Gupta (Reliance Jio) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **noted**.

#### 10.27.1 General [NR\_n40\_LTE\_40\_coex-Core]

**R4-2010274 Discussion the test model in DSS**

*Type: discussion For: Discussion  
 Source: Samsung*

**Discussion:**

The contribution was discussed during email thread [96e][138] DSS\_bands. The discussion was recorded in R4-2011876.

**Decision:** The document was **noted**.

**R4-2009591 LTE/NR spectrum sharing in Band 40/n40**

*Type: CR For: Agreement  
 38.307 v16.3.0 CR-0024 Cat: B (Rel-17)  
  
 Source: Reliance Jio*

**Abstract:**

To enable dynamic spectrum sharing between LTE and NR in B40/n40 band

**Discussion:**

The contribution was discussed during email thread [96e][138] DSS\_bands. The discussion was recorded in R4-2011876.

**Decision:** The document was **revised to R4-2011824**.

**R4-2011824 LTE/NR spectrum sharing in Band 40/n40**

*Type: CR For: Agreement  
 38.307 v16.3.0 CR-0024 rev 1 Cat: B (Rel-17)  
  
 Source: Reliance Jio*

(Replaces R4-2009591)

**Abstract:**

To enable dynamic spectrum sharing between LTE and NR in B40/n40 band

**Discussion:**

The contribution was discussed during email thread [96e][138] DSS\_bands. The discussion was recorded in R4-2011876.

**Decision:** The document was **endorsed**.

**R4-2009944 Enabling LTE/NR spectrum sharing with 4-port LTE transmissions**

*Type: discussion For: Decision  
 Source: Apple Inc, Reliance Jio*

**Discussion:**

The contribution was discussed during email thread [96e][138] DSS\_bands. The discussion was recorded in R4-2011876.

**Decision:** The document was **noted**.

#### 10.27.2 UL shift [NR\_n40\_LTE\_40\_coex-Core]

**R4-2010752 UL shift for LTE/NR spectrum sharing in Band 40/n40**

*Type: discussion For: Approval  
 Source: OPPO*

**Discussion:**

The contribution was discussed during email thread [96e][138] DSS\_bands. The discussion was recorded in R4-2011876.

**Decision:** The document was **noted**.

**R4-2009589 LTE/NR spectrum sharing in Band 40/n40**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0408 Cat: B (Rel-17)  
  
 Source: Reliance Jio*

**Abstract:**

To enable dynamic spectrum sharing between LTE and NR in B40/n40 band

**Discussion:**

The contribution was discussed during email thread [96e][138] DSS\_bands. The discussion was recorded in R4-2011876.

**Decision:** The document was **revised to R4-2011822**.

**R4-2011822 LTE/NR spectrum sharing in Band 40/n40**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0408 rev 1 Cat: B (Rel-17)  
  
 Source: Reliance Jio*

(Replaces R4-2009589)

**Abstract:**

To enable dynamic spectrum sharing between LTE and NR in B40/n40 band

**Discussion:**

The contribution was discussed during email thread [96e][138] DSS\_bands. The discussion was recorded in R4-2011876.

**Decision:** The document was **endorsed**.

**R4-2009590 LTE/NR spectrum sharing in Band 40/n40**

*Type: CR For: Agreement  
 38.104 v16.4.0 CR-0214 Cat: B (Rel-17)  
  
 Source: Reliance Jio*

**Abstract:**

To enable dynamic spectrum sharing between LTE and NR in B40/n40 band

**Discussion:**

The contribution was discussed during email thread [96e][138] DSS\_bands. The discussion was recorded in R4-2011876.

**Decision:** The document was **revised to R4-2011823**.

**R4-2011823 LTE/NR spectrum sharing in Band 40/n40**

*Type: CR For: Agreement  
 38.104 v16.4.0 CR-0214 rev 1 Cat: B (Rel-17)  
  
 Source: Reliance Jio*

(Replaces R4-2009590)

**Abstract:**

To enable dynamic spectrum sharing between LTE and NR in B40/n40 band

**Discussion:**

The contribution was discussed during email thread [96e][138] DSS\_bands. The discussion was recorded in R4-2011876.

**Decision:** The document was **endorsed**.

### 10.28 LTE/NR spectrum sharing in Band 38/n38 [NR\_n38\_LTE\_38\_coex-Core]

#### 10.28.1 General [NR\_n38\_LTE\_38\_coex-Core]

#### 10.28.2 UL shift [NR\_n38\_LTE\_38\_coex-Core]

**R4-2010751 UL shift for LTE/NR spectrum sharing in Band 38/n38**

*Type: discussion For: Approval  
 Source: OPPO*

**Discussion:**

The contribution was discussed during email thread [96e][138] DSS\_bands. The discussion was recorded in R4-2011876.

**Decision:** The document was **noted**.

**R4-2009859 CR to introduce 7.5 kHz UL shift for LTE/NR spectrum sharing in Band 38/n38 (Rel-15)**

*Type: CR For: Agreement  
 38.101-1 v15.10.0 CR-0421 Cat: B (Rel-15)  
  
 Source: VODAFONE Group Plc*

**Abstract:**

Introduce 7.5 kHz uplink shift for spectrum sharing solutions in Band 38/n38.

**Discussion:**

The contribution was discussed during email thread [96e][138] DSS\_bands. The discussion was recorded in R4-2011876.

**Decision:** The document was **revised to R4-2011825**.

**R4-2011825 7.5 kHz UL shift for LTE/NR spectrum sharing in Band 38/n38**

*Type: CR For: Agreement  
 38.101-1 v15.10.0 CR-0421 rev 1 Cat: C (Rel-15)  
  
 Source: VODAFONE Group Plc*

(Replaces R4-2009859)

**Abstract:**

Specify 7.5 kHz uplink shift for spectrum sharing solutions in Band 38/n38 to align with Rel-17 changes.

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2009707 CR to introduce 7.5 kHz UL shift for LTE/NR spectrum sharing in Band 38/n38**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0418 Cat: A (Rel-16)  
  
 Source: VODAFONE Group Plc*

**Abstract:**

Introduce 7.5 kHz uplink shift for spectrum sharing solutions in Band 38/n38.

**Discussion:**

The contribution was discussed during email thread [96e][138] DSS\_bands. The discussion was recorded in R4-2011876.

**Decision:** The document was **revised to R4-2011826**.

**R4-2011826 CR to introduce 7.5 kHz UL shift for LTE/NR spectrum sharing in Band 38/n38**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0418 rev 1 Cat: A (Rel-16)  
  
 Source: VODAFONE Group Plc*

(Replaces R4-2009707)

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2011900 7.5 kHz UL shift for LTE/NR spectrum sharing in Band 38/n38**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0484 Cat: B (Rel-17)  
  
 Source: VODAFONE Group Plc*

**Abstract:**

Introduce 7.5 kHz uplink shift for spectrum sharing solutions in Band 38/n38.

**Discussion:**

The contribution was discussed during email thread [96e][138] DSS\_bands. The discussion was recorded in R4-2011876.

**Decision:** The document was **endorsed**.

**R4-2011898 7.5 kHz UL shift for LTE/NR spectrum sharing in Band 38/n38**

*Type: CR For: Agreement  
 38.104 v15.10.0 CR-0234 Cat: F (Rel-15)  
  
 Source: VODAFONE Group Plc*

**Abstract:**

Specify 7.5 kHz uplink shift for spectrum sharing solutions in Band 38/n38 to align with Rel-17 changes.

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2011899 7.5 kHz UL shift for LTE/NR spectrum sharing in Band 38/n38 - 38104, Rel-16**

*Type: CR For: Agreement  
 38.104 v16.4.0 CR-0235 Cat: A (Rel-16)  
  
 Source: VODAFONE Group Plc*

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2011901 7.5 kHz UL shift for LTE/NR spectrum sharing in Band 38/n38**

*Type: CR For: Agreement  
 38.104 v16.4.0 CR-0236 Cat: B (Rel-17)  
  
 Source: VODAFONE Group Plc*

**Abstract:**

Introduce 7.5 kHz uplink shift for spectrum sharing solutions in Band 38/n38.

**Discussion:**

The contribution was discussed during email thread [96e][138] DSS\_bands. The discussion was recorded in R4-2011876.

**Decision:** The document was **endorsed**.

**R4-2011944 CR to TS38.307 : LTE/NR spectrum sharing band 38 / n38**

*Type: CR For: Agreement  
 Source: VODAFONE Group Plc*

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

## 11 Reply to ITU-R LS (RP-200042)

### 11.1 Study on IMT parameters for frequency ranges 6.425-7.125GHz and 10.0-10.5GHz [FS\_6425\_10500MHz \_NR]

**R4-2011572 Email discussion summary for [96e][139] FS\_6425\_10500MHz \_NR**

*Type: other For: discussion  
 Source: Moderator (Ericsson)*

**Discussion:**

The contribution summarized email discussion thread [96e][139] FS\_6425\_10500MHz \_NR. The email thread was moderated by Dominique Evereare (Ericsson) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **revised to R4-2011877**.

**R4-2011877 Email discussion summary for [96e][139] FS\_6425\_10500MHz \_NR**

*Type: other For: discussion  
 Source: Moderator (Ericsson)*

(Replaces R4-2011572)

**Discussion:**

The contribution summarized email discussion thread [96e][139] FS\_6425\_10500MHz \_NR. The email thread was moderated by Dominique Evereare (Ericsson) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **noted**.

**R4-2011827 WF on the Simulations for the SI on 6.425-7.125GHz and 10.0-10.5GHz**

*Type: other For: discussion  
 Source: Nokia*

**Discussion:**

The contribution was discussed during email thread [96e][139] FS\_6425\_10500MHz \_NR. The discussion was recorded in R4-2011877.

**Decision:** The document was **approved**.

**R4-2011909 LS on Parameters of terrestrial component of IMT for sharing and compatibility studies in preparation for WRC-23**

*Type: LS out For: Approval  
 to ITU-R WP5D  
 Source: Ericsson*

**Discussion:**

The contribution was discussed during email thread [96e][139] FS\_6425\_10500MHz \_NR. The discussion was recorded in R4-2011877.

**Decision:** The document was **noted**.

**R4-2010370 TR 38.921 V 0.1.0**

*Type: draft TR For: Agreement  
 38.921 v0.1.0  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][139] FS\_6425\_10500MHz \_NR. The discussion was recorded in R4-2011877.

**Decision:** The document was **agreed**.

#### 11.1.1 UE parameters

**R4-2010449 TP to TR for SI IMT parameters - UE parameters**

*Type: other For: Approval  
 38.921 v..  
 Source: Ericsson*

**Abstract:**

This TP to TR (on the SI on IMT parameters) captures the current agreements made on UE parameters

**Discussion:**

The contribution was discussed during email thread [96e][139] FS\_6425\_10500MHz \_NR. The discussion was recorded in R4-2011877.

**Decision:** The document was **noted**.

**R4-2010484 TP to TR 38.921: UE IMT technology related parameters**

*Type: pCR For: Approval  
 38.921 v0.1.0  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][139] FS\_6425\_10500MHz \_NR. The discussion was recorded in R4-2011877.

**Decision:** The document was **revised to R4-2011828**.

**R4-2011828 TP to TR 38.921: UE IMT technology related parameters**

*Type: pCR For: Approval  
 38.921 v0.1.0  
 Source: Huawei, HiSilicon*

(Replaces R4-2010484)

**Discussion:**

The contribution was discussed during email thread [96e][139] FS\_6425\_10500MHz \_NR. The discussion was recorded in R4-2011877.

**Decision:** The document was **noted**.

**R4-2010938 Discussion on remaining issues for UE parameters**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][139] FS\_6425\_10500MHz \_NR. The discussion was recorded in R4-2011877.

**Decision:** The document was **noted**.

**R4-2009816 UE parameters for frequency ranges 6.425-7.125GHz and 10.0-10.5GHz**

*Type: discussion For: Discussion  
 Source: CATT*

**Discussion:**

The contribution was discussed during email thread [96e][139] FS\_6425\_10500MHz \_NR. The discussion was recorded in R4-2011877.

**Decision:** The document was **noted**.

#### 11.1.2 BS parameters

**R4-2010448 TP to TR for SI IMT parameters - BS parameters**

*Type: other For: Approval  
 38.921 v..  
 Source: Ericsson*

**Abstract:**

This TP to TR (on the SI on IMT parameters) captures the current agreements made on BS parameters

**Discussion:**

The contribution was discussed during email thread [96e][139] FS\_6425\_10500MHz \_NR. The discussion was recorded in R4-2011877.

**Decision:** The document was **noted**.

**R4-2010485 TP to TR 38.921: BS IMT technology related parameters**

*Type: pCR For: Approval  
 38.921 v0.1.0  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][139] FS\_6425\_10500MHz \_NR. The discussion was recorded in R4-2011877.

**Decision:** The document was **revised to R4-2011829**.

**R4-2011829 TP to TR 38.921: BS IMT technology related parameters**

*Type: pCR For: Approval  
 38.921 v0.1.0  
 Source: Huawei, HiSilicon, Ericsson, Nokia, ZTE*

(Replaces R4-2010485)

**Discussion:**

The contribution was discussed during email thread [96e][139] FS\_6425\_10500MHz \_NR. The discussion was recorded in R4-2011877.

**Decision:** The document was **approved**.

**R4-2010939 Discussion on remaining issues for BS parameters**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][139] FS\_6425\_10500MHz \_NR. The discussion was recorded in R4-2011877.

**Decision:** The document was **noted**.

**R4-2009817 BS parameters for frequency ranges 6.425-7.125GHz and 10.0-10.5GHz**

*Type: discussion For: Discussion  
 Source: CATT*

**Discussion:**

The contribution was discussed during email thread [96e][139] FS\_6425\_10500MHz \_NR. The discussion was recorded in R4-2011877.

**Decision:** The document was **noted**.

#### 11.1.3 Coexistence study

##### 11.1.3.1 Simulation assumptions

**R4-2010940 TP to TR38.912 uplink ACIR model**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][139] FS\_6425\_10500MHz \_NR. The discussion was recorded in R4-2011877.

**Decision:** The document was **revised to R4-2011831**.

**R4-2011831 TP to TR38.912 uplink ACIR model**

*Type: other For: Approval  
 Source: ZTE Corporation*

(Replaces R4-2010940)

**Discussion:**

The contribution was discussed during email thread [96e][139] FS\_6425\_10500MHz \_NR. The discussion was recorded in R4-2011877.

**Decision:** The document was **noted**.

**R4-2011195 TP to TR 38.921: Dense urban system level simulation assumptions for study on IMT parameters for frequency ranges 6.425-7.125GHz and 10.0-10.5GHz**

*Type: pCR For: Approval  
 38.921 v0.1.0  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This contribution proposes the dense urban system level simulation assumptions for coexistence study on ACLR and ACS of NR BS and UE for frequency ranges 6.425-7.125GHz and 10.0-10.5GHz, and the corresponding TP to TR 38.921.

**Discussion:**

The contribution was discussed during email thread [96e][139] FS\_6425\_10500MHz \_NR. The discussion was recorded in R4-2011877.

**Decision:** The document was **noted**.

##### 11.1.3.2 Downlink

**R4-2010112 Discussion on 6-7GHz ACIR requirement**

*Type: discussion For: Discussion  
 Source: CMCC*

**Discussion:**

The contribution was discussed during email thread [96e][139] FS\_6425\_10500MHz \_NR. The discussion was recorded in R4-2011877.

**Decision:** The document was **noted**.

**R4-2010450 Simulation resulation results - DL - SI IMT parameters**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution is providing coexistence simulations results in DL for the 6-7GHz and 10GHz bands

**Discussion:**

The contribution was discussed during email thread [96e][139] FS\_6425\_10500MHz \_NR. The discussion was recorded in R4-2011877.

**Decision:** The document was **noted**.

**R4-2010486 Downlink co-existence simulation results on 6.425-7.125GHz and 10.0-10.5GHz for urban macro and indoor hotspot**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][139] FS\_6425\_10500MHz \_NR. The discussion was recorded in R4-2011877.

**Decision:** The document was **noted**.

**R4-2010941 DL simulation results for 6425-7125MHz and 10-10.5GHz**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][139] FS\_6425\_10500MHz \_NR. The discussion was recorded in R4-2011877.

**Decision:** The document was **noted**.

**R4-2011196 Urban Macro and Indoor Hotspot Downlink Coexistence Simulation Results for Frequency Ranges 6.425-7.125GHz and 10.0-10.5GHz**

*Type: other For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This contribution provides the urban macro and indoor hotspot downlink coexistence simulation results according to the agreed assumptions.

**Discussion:**

The contribution was discussed during email thread [96e][139] FS\_6425\_10500MHz \_NR. The discussion was recorded in R4-2011877.

**Decision:** The document was **noted**.

**R4-2009818 Simulation results for 6425-7125MHz and 10-10.5GHz-downlink**

*Type: discussion For: Discussion  
 Source: CATT*

**Discussion:**

The contribution was discussed during email thread [96e][139] FS\_6425\_10500MHz \_NR. The discussion was recorded in R4-2011877.

**Decision:** The document was **noted**.

##### 11.1.3.3 Uplink

**R4-2010451 Simulation resulation results - UL - SI IMT parameters**

*Type: discussion For: Discussion  
 Source: Ericsson*

**Abstract:**

This contribution is providing coexistence simulations results in UL for the 6-7GHz and 10GHz bands

**Discussion:**

The contribution was discussed during email thread [96e][139] FS\_6425\_10500MHz \_NR. The discussion was recorded in R4-2011877.

**Decision:** The document was **noted**.

**R4-2010487 Uplink co-existence simulation results on 6.425-7.125GHz and 10.0-10.5GHz for urban macro and indoor hotspot**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][139] FS\_6425\_10500MHz \_NR. The discussion was recorded in R4-2011877.

**Decision:** The document was **noted**.

**R4-2010942 UL simulation results for 6425-7125MHz and 10-10.5GHz**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][139] FS\_6425\_10500MHz \_NR. The discussion was recorded in R4-2011877.

**Decision:** The document was **noted**.

**R4-2011197 Urban Macro and Indoor Hotspot Uplink Coexistence Simulation Results for Frequency Ranges 6.425-7.125GHz and 10.0-10.5GHz**

*Type: other For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This contribution provides the urban macro and indoor hotspot uplink coexistence simulation results according to the agreed assumptions.

**Discussion:**

The contribution was discussed during email thread [96e][139] FS\_6425\_10500MHz \_NR. The discussion was recorded in R4-2011877.

**Decision:** The document was **noted**.

**R4-2009819 Simulation results for 6425-7125MHz and 10-10.5GHz-uplink**

*Type: discussion For: Discussion  
 Source: CATT*

**Discussion:**

The contribution was discussed during email thread [96e][139] FS\_6425\_10500MHz \_NR. The discussion was recorded in R4-2011877.

**Decision:** The document was **noted**.

#### 11.1.4 Antenna characteristics

**R4-2010180 TP to TR 38.921: Addition of BS antenna model and parameters in subclause 4.2.3 and subclause 8.1**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

In this contribution a text proposal has been created based on agreements from last meeting regarding base stations antenna array simulation parameters applicable for the simulation campaign part of the SI. The text proposal is attached at the end on this

**Discussion:**

The contribution was discussed during email thread [96e][139] FS\_6425\_10500MHz \_NR. The discussion was recorded in R4-2011877.

**Decision:** The document was **revised to R4-2011830**.

**R4-2011830 TP to TR 38.921: Addition of BS antenna model and parameters in subclause 4.2.3 and subclause 8.1**

*Type: other For: Approval  
 Source: Ericsson, Huawei, Nokia, ZTE*

(Replaces R4-2010180)

**Discussion:**

The contribution was discussed during email thread [96e][139] FS\_6425\_10500MHz \_NR. The discussion was recorded in R4-2011877.

**Decision:** The document was **approved**.

**R4-2010488 TP to TR 38.921: antenna characteristics on 6.425-7.125GHz and 10.0-10.5 GHz**

*Type: pCR For: Approval  
 38.921 v0.1.0  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][139] FS\_6425\_10500MHz \_NR. The discussion was recorded in R4-2011877.

**Decision:** The document was **noted**.

**R4-2011198 Recommendation on Small cell outdoor/Micro urban AAS BS Maximum Output Power for Frequency Ranges 6.425-7.125GHz and 10.0-10.5GHz**

*Type: other For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This contribution provides our recommendation on Small cell outdoor/Micro urban AAS BS Maximum Output Power for Frequency Ranges 6.425-7.125GHz and 10.0-10.5GHz to close the open issue.

**Discussion:**

The contribution was discussed during email thread [96e][139] FS\_6425\_10500MHz \_NR. The discussion was recorded in R4-2011877.

**Decision:** The document was **noted**.

**R4-2009820 Remaining issue on antenna characteristics**

*Type: discussion For: Discussion  
 Source: CATT*

**Discussion:**

The contribution was discussed during email thread [96e][139] FS\_6425\_10500MHz \_NR. The discussion was recorded in R4-2011877.

**Decision:** The document was **noted**.

#### 11.1.5 Relevant information for the sharing and compatibility studies

**R4-2010489 Spatial emission and interference mitigation**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][139] FS\_6425\_10500MHz \_NR. The discussion was recorded in R4-2011877.

**Decision:** The document was **noted**.

### 11.2 Reply of IMT parameters for other frequency ranges requested in RP-200042

## 12 Rel-17 non-spectrum related work items for NR

### 12.1 Multiple Input Multiple Output (MIMO) Over-the-Air (OTA) requirements for NR UEs [NR\_MIMO\_OTA]

#### 12.1.1 General [NR\_MIMO\_OTA]

**R4-2012560 Email discussion summary for [96e][329] NR\_MIMO\_OTA**

*Type: other For: discussion  
 Source: Moderator (CAICT)*

**Discussion:**

The contribution summarized email discussion thread [96e][329] NR\_MIMO\_OTA. The topic areas for discussion were Rel-17 NR MIMO OTA Test

Testability maintenance. The email thread was moderated by Siting Zhu (CAICT). All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2012743**.

**R4-2012743 Email discussion summary for [96e][329] NR\_MIMO\_OTA**

*Type: other For: discussion  
 Source: Moderator (CAICT)*

(Replaces R4-2012560)

**Discussion:**

The contribution summarized email discussion thread [96e][329] NR\_MIMO\_OTA. The topic areas for discussion were Rel-17 NR MIMO OTA Test

Testability maintenance. The email thread was moderated by Siting Zhu (CAICT). All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **noted**.

**R4-2012707 WF on MIMO OTA**

*Type: other For: discussion  
 Source: vivo,CAICT*

**Discussion:**

The contribution was discussed during email thread [96e][329] NR\_MIMO\_OTA. The discussion was recorded in R4-2012743.

**Decision:** The document was **approved**.

**R4-2010831 CR for 38.827 on editorial corrections**

*Type: CR For: Agreement  
 38.827 v16.0.0 CR-0001 Cat: F (Rel-16)  
  
 Source: Huawei,HiSilicon*

**Abstract:**

editorial corrections

**Discussion:**

The contribution was discussed during email thread [96e][329] NR\_MIMO\_OTA. The discussion was recorded in R4-2012743.

**Decision:** The document was **not treated**.

**R4-2010832 Discussion on relevant work of NR MIMO OTA WI**

*Type: other For: Approval  
 Source: Huawei,HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][329] NR\_MIMO\_OTA. The discussion was recorded in R4-2012743.

**Decision:** The document was **noted**.

**R4-2011204 Work plan for Rel-17 NR MIMO OTA WI**

*Type: Work Plan For: Approval  
 Source: CAICT,vivo,OPPO*

**Discussion:**

The contribution was discussed during email thread [96e][329] NR\_MIMO\_OTA. The discussion was recorded in R4-2012743.

Session Chair Note: The detailed work plan in table is agreeable, revised to remove proposal1.

**Decision:** The document was **revised to R4-2012710**.

**R4-2012710 Work plan for Rel-17 NR MIMO OTA WI**

*Type: Work Plan For: Approval  
 Source: CAICT,vivo,OPPO*

(Replaces R4-2011204)

**Discussion:**

The contribution was discussed during email thread [96e][329] NR\_MIMO\_OTA. The discussion was recorded in R4-2012743.

**Decision:** The document was **approved**.

**R4-2011232 Reply LS to NGMN on 5G NR Over The Air test methodologies and performance requirements**

*Type: LS out For: Approval  
 to NGMN, cc RAN5, RAN  
 Source: vivo*

**Abstract:**

Reply LS to NGMN on 5G NR

**Discussion:**

The contribution was discussed during email thread [96e][329] NR\_MIMO\_OTA. The discussion was recorded in R4-2012743.

**Decision:** The document was **revised to R4-2012708**.

**R4-2012708 Reply LS to NGMN on 5G NR Over The Air test methodologies and performance requirements**

*Type: LS out For: Approval  
 to NGMN, cc RAN5, RAN  
 Source: vivo*

(Replaces R4-2011232)

**Discussion:**

The contribution was discussed during email thread [96e][329] NR\_MIMO\_OTA. The discussion was recorded in R4-2012743.

**Decision:** The document was **approved**.

**R4-2011233 Views on NR MIMO OTA WI**

*Type: other For: Approval  
 Source: vivo, CAICT*

**Abstract:**

Proposals on NR MIMO OTA WI

**Discussion:**

The contribution was discussed during email thread [96e][329] NR\_MIMO\_OTA. The discussion was recorded in R4-2012743.

**Decision:** The document was **noted**.

**R4-2011234 3GPP TS 38.1xy v0.0.1 skeleton**

*Type: other For: Approval  
 Source: vivo, CAICT*

**Discussion:**

The contribution was discussed during email thread [96e][329] NR\_MIMO\_OTA. The discussion was recorded in R4-2012743.

**Decision:** The document was **revised to R4-2012709**.

**R4-2012709 3GPP TS 38.151 v0.0.1 skeleton**

*Type: other For: Approval  
 Source: vivo, CAICT*

(Replaces R4-2011234)

**Discussion:**

The contribution was discussed during email thread [96e][329] NR\_MIMO\_OTA. The discussion was recorded in R4-2012743.

**Decision:** The document was **approved**.

#### 12.1.2 Performance Requirements [NR\_MIMO\_OTA-Core]

##### 12.1.2.1 Performance Requirements for FR1 [NR\_MIMO\_OTA-Core]

##### 12.1.2.2 Performance Requirements for FR2 [NR\_MIMO\_OTA-Core]

**R4-2010775 FR2 MIMO OTA performance metrics**

*Type: discussion For: Approval  
 Source: OPPO*

**Discussion:**

The contribution was discussed during email thread [96e][329] NR\_MIMO\_OTA. The discussion was recorded in R4-2012743.

**Decision:** The document was **noted**.

**R4-2011335 Consideratons on performance requiremetns for FR2 MIMO OTA**

*Type: discussion For: (not specified)  
 Source: Qualcomm Incorporated*

**Discussion:**

The contribution was discussed during email thread [96e][329] NR\_MIMO\_OTA. The discussion was recorded in R4-2012743.

**Decision:** The document was **noted**.

#### 12.1.3 Testing methodologies [NR\_MIMO\_OTA-Core]

**R4-2010833 MIMO OTA test methodology for the verification of multi-antenna reception performance of NR Ues**

*Type: other For: Approval  
 Source: Huawei,Hisilicon*

**Discussion:**

The contribution was discussed during email thread [96e][329] NR\_MIMO\_OTA. The discussion was recorded in R4-2012743.

**Decision:** The document was **noted**.

**R4-2011216 On FR2 NR MIMO OTA Testing Methodology**

*Type: other For: Approval  
 Source: Keysight Technologies UK Ltd*

**Abstract:**

This contribution is addressing open topics from the SI and items that were missed and need further clarifications in the WI.

**Discussion:**

The contribution was discussed during email thread [96e][329] NR\_MIMO\_OTA. The discussion was recorded in R4-2012743.

**Decision:** The document was **revised to R4-2012712**.

**R4-2012712 On FR2 NR MIMO OTA Testing Methodology**

*Type: other For: Approval  
 Source: Keysight Technologies UK Ltd*

(Replaces R4-2011216)

**Decision:** The document was **withdrawn**.

##### 12.1.3.1 Testing parameters for Performance [NR\_MIMO\_OTA-Core]

**R4-2010201 Performance metric for FR2 MIMO OTA**

*Type: discussion For: Approval  
 Source: Samsung*

**Discussion:**

The contribution was discussed during email thread [96e][329] NR\_MIMO\_OTA. The discussion was recorded in R4-2012743.

**Decision:** The document was **noted**.

##### 12.1.3.2 Optimization of test methodologies [NR\_MIMO\_OTA-Core]

**R4-2010774 3D-MPAC implementation of measurement probe and positioner**

*Type: discussion For: Approval  
 Source: OPPO*

**Discussion:**

The contribution was discussed during email thread [96e][329] NR\_MIMO\_OTA. The discussion was recorded in R4-2012743.

**Decision:** The document was **noted**.

##### 12.1.3.3 Channel model validation [NR\_MIMO\_OTA-Core]

**R4-2010776 Uncertainty or deviation caused by the difference of the channel model**

*Type: discussion For: Approval  
 Source: OPPO*

**Discussion:**

The contribution was discussed during email thread [96e][329] NR\_MIMO\_OTA. The discussion was recorded in R4-2012743.

**Decision:** The document was **noted**.

**R4-2011202 Time domain techniques for FR1 Spatial Correlation validation**

*Type: other For: Approval  
 Source: Spirent Communications*

**Abstract:**

Proposal 1. Add the alternative spatial correlation validation based on time domain techniques.

**Discussion:**

The contribution was discussed during email thread [96e][329] NR\_MIMO\_OTA. The discussion was recorded in R4-2012743.

**Decision:** The document was **revised to R4-2012711**.

**R4-2012711 Time domain techniques for FR1 Spatial Correlation validation**

*Type: other For: Approval  
 Source: Spirent Communications*

(Replaces R4-2011202)

**Discussion:**

The contribution was discussed during email thread [96e][329] NR\_MIMO\_OTA. The discussion was recorded in R4-2012743.

**Decision:** The document was **noted**.

## 13 Rel-17 Study Items for NR

### 13.1 Study on enhanced test methods for FR2 in NR [FS\_FR2\_enhTestMethods]

**R4-2012561 Email discussion summary for [96e][330] FR2\_enhTestMethods**

*Type: other For: discussion  
 Source: Moderator (Apple)*

**Discussion:**

The contribution summarized email discussion thread [96e][330] FR2\_enhTestMethods. The topic areas for discussion were Rel-17 Fr2 test method enhancement SI. The email thread was moderated by Anatoliy (Toliy) Ioffe (Apple). All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **revised to R4-2012744**.

**R4-2012744 Email discussion summary for [96e][330] FR2\_enhTestMethods**

*Type: other For: discussion  
 Source: Moderator (Apple)*

(Replaces R4-2012561)

**Discussion:**

The contribution summarized email discussion thread [96e][330] FR2\_enhTestMethods. The topic areas for discussion were Rel-17 Fr2 test method enhancement SI. The email thread was moderated by Anatoliy (Toliy) Ioffe (Apple). All contributions discussed in the thread were treated during BS RF Test Demod session chaired by Haijie Qiu (Samsung).

**Decision:** The document was **noted**.

**R4-2012713 WF on the high DL power and low UL power test cases objective**

*Type: other For: discussion  
 Source: Apple*

**Discussion:**

The contribution was discussed during email thread [96e][330] FR2\_enhTestMethods. The discussion was recorded in R4-2012744.

**Decision:** The document was **approved**.

**R4-2012714 WF on the polarization mismatch objective**

*Type: other For: discussion  
 Source: Samsung*

**Discussion:**

The contribution was discussed during email thread [96e][330] FR2\_enhTestMethods. The discussion was recorded in R4-2012744.

**Decision:** The document was **approved**.

**R4-2012715 WF on the inter-band CA within FR2 objective**

*Type: other For: discussion  
 Source: Anritsu*

**Discussion:**

The contribution was discussed during email thread [96e][330] FR2\_enhTestMethods. The discussion was recorded in R4-2012744.

**Decision:** The document was **approved**.

**R4-2011236 On enhanced test methods for FR2 RF**

*Type: other For: Approval  
 Source: vivo, CAICT*

**Abstract:**

Proposals on the objective 1 and 2

**Discussion:**

The contribution was discussed during email thread [96e][330] FR2\_enhTestMethods. The discussion was recorded in R4-2012744.

**Decision:** The document was **noted**.

**R4-2009773 Beam sweeping and test time reduction in FR2**

*Type: discussion For: Discussion  
 Source: Fraunhofer HHI, Fraunhofer IIS*

**Discussion:**

The contribution was discussed during email thread [96e][330] FR2\_enhTestMethods. The discussion was recorded in R4-2012744.

**Decision:** The document was **not treated**.

**R4-2009959 FR2 test method enhancement informal email discussion summary**

*Type: other For: Information  
 Source: Apple Inc.*

**Discussion:**

The contribution was discussed during email thread [96e][330] FR2\_enhTestMethods. The discussion was recorded in R4-2012744.

**Decision:** The document was **noted**.

#### 13.1.1 Test methodology for high DL power and low UL power test cases

**R4-2010856 Summary and Further Results on Impact of phase variation on beam pattern for NF test method**

*Type: other For: Approval  
 Source: MVG Industries, Sony*

**Abstract:**

During RAN4#93, a WF was agreed [1] for AI – enhanced test methods for NR FR2. Specifically, for Objective 1 (define test methodology for high DL power and low UL power test cases) a list of questions was developed to clarify the scope of potential enhanc

**Discussion:**

The contribution was discussed during email thread [96e][330] FR2\_enhTestMethods. The discussion was recorded in R4-2012744.

**Decision:** The document was **noted**.

**R4-2011218 On Test methodology for high DL power and low UL power test cases**

*Type: other For: Approval  
 Source: Keysight Technologies UK Ltd*

**Abstract:**

This contribution outlines our view on topic #1 (Test methodology for high DL power and low UL power test cases) of this SI [1].

**Discussion:**

The contribution was discussed during email thread [96e][330] FR2\_enhTestMethods. The discussion was recorded in R4-2012744.

**Decision:** The document was **noted**.

**R4-2011281 Views on test methods for high DL power and low UL power TCs**

*Type: discussion For: Approval  
 38.884 v..  
 Source: ROHDE & SCHWARZ*

**Discussion:**

The contribution was discussed during email thread [96e][330] FR2\_enhTestMethods. The discussion was recorded in R4-2012744.

**Decision:** The document was **noted**.

**R4-2011456 FR2 testability enhancement for UE emissions**

*Type: other For: Discussion  
 38.101-2 v..  
 Source: Qualcomm Incorporated*

**Abstract:**

View on need to continue evolution of test methods for regulatory facing requirements

**Discussion:**

The contribution was discussed during email thread [96e][330] FR2\_enhTestMethods. The discussion was recorded in R4-2012744.

**Decision:** The document was **noted**.

**R4-2009960 Remaining issues with the test methodology for high DL power and low UL power test cases**

*Type: discussion For: Discussion  
 Source: Apple Inc.*

**Discussion:**

The contribution was discussed during email thread [96e][330] FR2\_enhTestMethods. The discussion was recorded in R4-2012744.

**Decision:** The document was **noted**.

#### 13.1.2 Polarization basis mismatch

**R4-2010129 EIRP measurement for polarization mismatch**

*Type: discussion For: Approval  
 Source: LG Electronics Polska*

**Discussion:**

The contribution was discussed during email thread [96e][330] FR2\_enhTestMethods. The discussion was recorded in R4-2012744.

**Decision:** The document was **noted**.

**R4-2010202 Discussion on dual polarization transmission for UL TX test**

*Type: discussion For: Discussion  
 Source: Samsung*

**Discussion:**

The contribution was discussed during email thread [96e][330] FR2\_enhTestMethods. The discussion was recorded in R4-2012744.

**Decision:** The document was **noted**.

**R4-2011217 On minimizing the impact of polarization basis mismatch between the TE and DUT on the RF testing**

*Type: other For: Approval  
 Source: Keysight Technologies UK Ltd*

**Abstract:**

This contribution outlines our view on topic #2 of this SI [1] to define solutions to minimize the impact of polarization basis mismatch between the TE and DUT on the RF testing.

**Discussion:**

The contribution was discussed during email thread [96e][330] FR2\_enhTestMethods. The discussion was recorded in R4-2012744.

**Decision:** The document was **noted**.

**R4-2011423 Views on testability enhancement for UE FR2 test**

*Type: other For: Discussion  
 Source: Sony, Ericsson*

**Discussion:**

The contribution was discussed during email thread [96e][330] FR2\_enhTestMethods. The discussion was recorded in R4-2012744.

**Decision:** The document was **noted**.

**R4-2011457 FR2 testability enhancement for polarization mismatch**

*Type: other For: Agreement  
 38.101-2 v..  
 Source: Qualcomm Incorporated*

**Abstract:**

We discuss need for dual pol receive in TE

**Discussion:**

The contribution was discussed during email thread [96e][330] FR2\_enhTestMethods. The discussion was recorded in R4-2012744.

**Decision:** The document was **noted**.

**R4-2009560 Views on testability enhancement for UE FR2 test**

*Type: other For: Discussion  
 Source: Sony*

**Discussion:**

The contribution was discussed during email thread [96e][330] FR2\_enhTestMethods. The discussion was recorded in R4-2012744.

**Decision:** The document was **noted**.

**R4-2009627 Views on FR2 SISO EIRP test enhancement**

*Type: discussion For: Approval  
 Source: MediaTek Beijing Inc.*

**Abstract:**

Proposal1: 2-port CSI-RS shall be provided in EIRP test procedure.

Proposal2: 2-port CSI-RS can be simultaneous or sequent.

Proposal3: Practical TPMI shall be provided in EIRP test procedure.

**Discussion:**

The contribution was discussed during email thread [96e][330] FR2\_enhTestMethods. The discussion was recorded in R4-2012744.

**Decision:** The document was **noted**.

**R4-2009961 Remaining issues with polarization basis mismatch**

*Type: discussion For: Discussion  
 Source: Apple Inc.*

**Discussion:**

The contribution was discussed during email thread [96e][330] FR2\_enhTestMethods. The discussion was recorded in R4-2012744.

**Decision:** The document was **noted**.

#### 13.1.3 Enhanced test methods for inter-band (FR1+FR2) CA

**R4-2010802 Discussion on open issues of inter-band CA testability**

*Type: discussion For: Approval  
 Source: Rohde & Schwarz*

**Discussion:**

The contribution was discussed during email thread [96e][330] FR2\_enhTestMethods. The discussion was recorded in R4-2012744.

**Decision:** The document was **noted**.

**R4-2009962 Remaining issues with enhanced test methods for inter-band CA in FR2**

*Type: discussion For: Discussion  
 Source: Apple Inc.*

**Discussion:**

The contribution was discussed during email thread [96e][330] FR2\_enhTestMethods. The discussion was recorded in R4-2012744.

**Decision:** The document was **noted**.

### 13.2 Study on supporting NR from 52.6 GHz to 71 GHz [FS\_NR\_52\_to\_71GHz]

**R4-2011573 Email discussion summary for [96e][140] FS\_NR\_52\_to\_71GHz**

*Type: other For: discussion  
 Source: Moderator (Qualcomm)*

**Discussion:**

The contribution summarized email discussion thread [96e][140] FS\_NR\_52\_to\_71GHz. The email thread was moderated by Ville Vintola (Qualcomm) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **revised to R4-2011878**.

**R4-2011878 Email discussion summary for [96e][140] FS\_NR\_52\_to\_71GHz**

*Type: other For: discussion  
 Source: Moderator (Qualcomm)*

(Replaces R4-2011573)

**Discussion:**

The contribution summarized email discussion thread [96e][140] FS\_NR\_52\_to\_71GHz. The email thread was moderated by Ville Vintola (Qualcomm) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **noted**.

**R4-2011837 WF on PA and antenna assumptions for 60 GHz BS**

*Type: other For: discussion  
 Source: Huawei*

**Discussion:**

The contribution was discussed during email thread [96e][140] FS\_NR\_52\_to\_71GHz. The discussion was recorded in R4-2011878.

**Decision:** The document was **approved**.

**R4-2011838 WF on numerologies for FS\_NR\_52\_to\_71GHz**

*Type: other For: discussion  
 Source: Intel*

**Discussion:**

The contribution was discussed during email thread [96e][140] FS\_NR\_52\_to\_71GHz. The discussion was recorded in R4-2011878.

**Decision:** The document was **approved**.

**R4-2011839 WF on PTRS evaluation and RAN4 aspects**

*Type: other For: discussion  
 Source: Nokia*

**Discussion:**

The contribution was discussed during email thread [96e][140] FS\_NR\_52\_to\_71GHz. The discussion was recorded in R4-2011878.

**Decision:** The document was **approved**.

**R4-2011840 WF on power amplifier model in 60 GHz**

*Type: other For: discussion  
 Source: Skyworks*

**Discussion:**

The contribution was discussed during email thread [96e][140] FS\_NR\_52\_to\_71GHz. The discussion was recorded in R4-2011878.

**Decision:** The document was **approved**.

**R4-2009562 Views on the phase noise model above 52 GHz**

*Type: other For: Discussion  
 Source: Sony*

**Discussion:**

The contribution was discussed during email thread [96e][140] FS\_NR\_52\_to\_71GHz. The discussion was recorded in R4-2011878.

**Decision:** The document was **noted**.

#### 13.2.1 General [FS\_NR\_52\_to\_71GHz]

**R4-2011292 Work plan for Study on supporting NR from 52.6 GHz to 71 GHz**

*Type: other For: Approval  
 Source: Qualcomm Incorporated*

**Discussion:**

The contribution was discussed during email thread [96e][140] FS\_NR\_52\_to\_71GHz. The discussion was recorded in R4-2011878.

**Decision:** The document was **noted**.

**R4-2011439 Phase noise and RF impairments modeling for beyond 52GHz**

*Type: discussion For: Approval  
 Source: FUTUREWEI*

**Discussion:**

The contribution was discussed during email thread [96e][140] FS\_NR\_52\_to\_71GHz. The discussion was recorded in R4-2011878.

**Decision:** The document was **noted**.

**R4-2009757 On phase noise and PA models in 52.6 - 71 GHz**

*Type: discussion For: Discussion  
 Source: Intel Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][140] FS\_NR\_52\_to\_71GHz. The discussion was recorded in R4-2011878.

**Decision:** The document was **noted**.

**R4-2009974 Overview of SI**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

During the Study Item phase, RAN4 needs to carry out work needed to support the decision on waveform parameterization. During the WI, the RAN4 part of work also imply to specify new bands with corresponding BS, UE and RRM requirements. In this paper, an o

**Discussion:**

The contribution was discussed during email thread [96e][140] FS\_NR\_52\_to\_71GHz. The discussion was recorded in R4-2011878.

**Decision:** The document was **noted**.

#### 13.2.2 Numerology, Channel BW [FS\_NR\_52\_to\_71GHz]

**R4-2010109 Numerology and channel BW on supporting NR from 52.6GHz to 71GHz**

*Type: discussion For: Discussion  
 Source: CMCC*

**Discussion:**

The contribution was discussed during email thread [96e][140] FS\_NR\_52\_to\_71GHz. The discussion was recorded in R4-2011878.

**Decision:** The document was **noted**.

**R4-2010176 On 52.6 to 71 GHz phase noise characteristics and draft LS to RAN1**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

In this contribution, we present a new phase noise model based on recently published data on both state-of-the-art PLL and crystal oscillators that lead to an improved model representing the current technology envelope. It should of course be understood t

**Discussion:**

The contribution was discussed during email thread [96e][140] FS\_NR\_52\_to\_71GHz. The discussion was recorded in R4-2011878.

**Decision:** The document was **noted**.

**R4-2010291 Discussion on system parameters for B52.6G**

*Type: discussion For: Approval  
 Source: vivo*

**Discussion:**

The contribution was discussed during email thread [96e][140] FS\_NR\_52\_to\_71GHz. The discussion was recorded in R4-2011878.

**Decision:** The document was **noted**.

**R4-2010500 Discussion on numerology and channel bandwidth for 52.6 GHz to 71 GHz**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][140] FS\_NR\_52\_to\_71GHz. The discussion was recorded in R4-2011878.

**Decision:** The document was **noted**.

**R4-2010726 Applicable numerologies**

*Type: discussion For: Discussion  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

In this contribution applicable numerologies and channelization for NR above 52.6 GHz are discussed.

**Discussion:**

The contribution was discussed during email thread [96e][140] FS\_NR\_52\_to\_71GHz. The discussion was recorded in R4-2011878.

**Decision:** The document was **noted**.

**R4-2010946 Discussion on system parameters for 52.6GHz-71GHz**

*Type: other For: Approval  
 Source: ZTE Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][140] FS\_NR\_52\_to\_71GHz. The discussion was recorded in R4-2011878.

**Decision:** The document was **noted**.

**R4-2011440 Numerology considerations for beyond 52GHz**

*Type: discussion For: Approval  
 Source: FUTUREWEI*

**Discussion:**

The contribution was discussed during email thread [96e][140] FS\_NR\_52\_to\_71GHz. The discussion was recorded in R4-2011878.

**Decision:** The document was **noted**.

**R4-2009758 On numerology and channel bandwidth in 52.6 - 71 GHz**

*Type: discussion For: Approval  
 Source: Intel Corporation*

**Discussion:**

The contribution was discussed during email thread [96e][140] FS\_NR\_52\_to\_71GHz. The discussion was recorded in R4-2011878.

**Decision:** The document was **noted**.

**R4-2009798 Discussion on numerology and CBW for above 52.6 GHz**

*Type: other For: Approval  
 Source: CATT*

**Discussion:**

The contribution was discussed during email thread [96e][140] FS\_NR\_52\_to\_71GHz. The discussion was recorded in R4-2011878.

**Decision:** The document was **noted**.

**R4-2009945 Initial considerations on the numerology and channel bandwidth sizes for 60GHz frequency range**

*Type: discussion For: Discussion  
 Source: Apple Inc.*

**Discussion:**

The contribution was discussed during email thread [96e][140] FS\_NR\_52\_to\_71GHz. The discussion was recorded in R4-2011878.

**Decision:** The document was **noted**.

#### 13.2.3 Others [FS\_NR\_52\_to\_71GHz]

**R4-2010292 Discussion on RF impairments for B52.6G**

*Type: discussion For: Approval  
 Source: vivo*

**Discussion:**

The contribution was discussed during email thread [96e][140] FS\_NR\_52\_to\_71GHz. The discussion was recorded in R4-2011878.

**Decision:** The document was **noted**.

**R4-2010727 Reply LS to RAN1 and NR evaluations for above 52.6 GHz**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

In this contribution NR performance evaluation results for above 52.6 GHz operation are provided and a LS to RAN1 is proposed.

**Discussion:**

The contribution was discussed during email thread [96e][140] FS\_NR\_52\_to\_71GHz. The discussion was recorded in R4-2011878.

**Decision:** The document was **revised to R4-2011904**.

**R4-2011904 Reply LS to RAN1 and NR evaluations for above 52.6 GHz**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

(Replaces R4-2010727)

**Discussion:**

The contribution was discussed during email thread [96e][140] FS\_NR\_52\_to\_71GHz. The discussion was recorded in R4-2011878.

**Decision:** The document was **noted**.

**R4-2010845 Key technology considerations relating to 52-71GHz specification**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

Details of some technology considerations for the frequency range

**Discussion:**

The contribution was discussed during email thread [96e][140] FS\_NR\_52\_to\_71GHz. The discussion was recorded in R4-2011878.

**Decision:** The document was **noted**.

**R4-2011268 Initial discussion on the BS-related aspects for 52.6 - 71 GHz range SI**

*Type: pCR For: Approval  
 38.808 v0.0.1  
 Source: Huawei*

**Abstract:**

In this contribution we provide an initial discussion on BS-related aspects of the 52.6 – 71 GHz study item, including topics which are found to be relevant to the RAN4 part of this SI, but which were not directly addressed in the WID objectives. Related

**Discussion:**

The contribution was discussed during email thread [96e][140] FS\_NR\_52\_to\_71GHz. The discussion was recorded in R4-2011878.

**Decision:** The document was **noted**.

**R4-2011494 on PN model for 60GHz+reply LS RAN1**

*Type: other For: Approval  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][140] FS\_NR\_52\_to\_71GHz. The discussion was recorded in R4-2011878.

**Decision:** The document was **noted**.

**R4-2009921 Key technology considerations relating to 52-71GHz specification**

*Type: other For: Approval  
 Source: Ericsson Hungary Ltd*

**Abstract:**

Details of some technology considerations for the frequency range

**Discussion:**

The contribution was discussed during email thread [96e][140] FS\_NR\_52\_to\_71GHz. The discussion was recorded in R4-2011878.

**Decision:** The document was **noted**.

**R4-2009946 Initial considerations on 60 GHz PN and PA models**

*Type: discussion For: Discussion  
 Source: Apple Inc.*

**Discussion:**

The contribution was discussed during email thread [96e][140] FS\_NR\_52\_to\_71GHz. The discussion was recorded in R4-2011878.

**Decision:** The document was **noted**.

## 14 Rel-17 Work Items for LTE

### 14.1 LTE inter-band Carrier Aggregation for 2 bands DL with 1 band UL [LTE\_CA\_R17\_2BDL\_1BUL]

**R4-2011574 Email discussion summary for [96e][141] LTE\_Baskets**

*Type: other For: discussion  
 Source: Moderator (Ericsson)*

**Discussion:**

The contribution summarized email discussion thread [96e][141] LTE\_Baskets. The email thread was moderated by Per Lindell (Ericsson) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **noted**.

#### 14.1.1 Rapporteur Input (WID/TR/CR) [LTE\_CA\_R17\_2BDL\_1BUL-Core/Perf]

**R4-2011332 Revised WID: Rel17 LTE inter-band CA for 2 bands DL with 1 band UL**

*Type: WID revised For: Information  
 Source: Qualcomm Incorporated*

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2011333 Introduction of Rel-17 LTE inter-band CA for 2 bands DL with 1 band UL combinations in TS36.101**

*Type: draftCR For: Endorsement  
 36.101 v16.6.0  
 Source: Qualcomm Incorporated*

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2011334 TR skeleton for TR 36.717-02-01 Rel-17 LTE inter-band CA for 2 bands DL and 1 band UL CA**

*Type: draft TR For: Agreement  
 36.717-02-01 v0.0.1  
 Source: Qualcomm Incorporated*

**Discussion:**

The contribution was discussed during email thread [96e][141] LTE\_Baskets. The discussion was recorded in R4-2011574.

**Decision:** The document was **agreed**.

#### 14.1.2 UE RF with harmonic, close proximity and isolation issues [LTE\_CA\_R17\_2BDL\_1BUL-Core]

#### 14.1.3 UE RF without specific issues [LTE\_CA\_R17\_2BDL\_1BUL-Core]

**R4-2010865 Draft CR to 36.101 to add CA\_3C-38A with UL CA\_3C**

*Type: draftCR For: Endorsement  
 36.101 v16.6.0  
 Source: Huawei, HiSilicon*

**Abstract:**

1.To add UL configuration CA\_3C for CA\_3C-38A

**Discussion:**

The contribution was discussed during email thread [96e][141] LTE\_Baskets. The discussion was recorded in R4-2011574.

**Decision:** The document was **endorsed**.

**R4-2010866 Draft CR to 36.101 to add CA\_3C-20A with UL CA\_3C**

*Type: draftCR For: Endorsement  
 36.101 v16.6.0  
 Source: Huawei, HiSilicon*

**Abstract:**

1.To add UL configuration CA\_3C for CA\_3C-20A

**Discussion:**

The contribution was discussed during email thread [96e][141] LTE\_Baskets. The discussion was recorded in R4-2011574.

**Decision:** The document was **endorsed**.

### 14.2 LTE inter-band Carrier Aggregation for 3 bands DL with 1 band UL [LTE\_CA\_R17\_3BDL\_1BUL]

**R4-2009710 TP for TR 36.717-03-01: CA\_3-8-41**

*Type: pCR For: Approval  
 36.717-03-01 v0.0.1  
 Source: VODAFONE Group Plc*

**Abstract:**

This contribution provides a text proposal on LTE CA band combination CA\_3-8-41 for TR 36.717-03-01.

**Discussion:**

The contribution was discussed during email thread [96e][141] LTE\_Baskets. The discussion was recorded in R4-2011574.

**Decision:** The document was **revised to R4-2011579**.

**R4-2011579 TP for TR 36.717-03-01: CA\_3-8-41**

*Type: pCR For: Approval  
 36.717-03-01 v0.0.1  
 Source: VODAFONE Group Plc*

(Replaces R4-2009710)

**Discussion:**

The contribution was discussed during email thread [96e][141] LTE\_Baskets. The discussion was recorded in R4-2011574.

**Decision:** The document was **approved**.

**R4-2009711 TP for TR 36.717-03-01 CA\_3-20-38**

*Type: pCR For: Approval  
 36.717-03-01 v0.0.1  
 Source: VODAFONE Group Plc*

**Abstract:**

This contribution provides a text proposal on LTE CA band combination CA\_3-20-38 for TR 36.717-03-01.

**Discussion:**

The contribution was discussed during email thread [96e][141] LTE\_Baskets. The discussion was recorded in R4-2011574.

**Decision:** The document was **revised to R4-2011580**.

**R4-2011580 TP for TR 36.717-03-01 CA\_3-20-38**

*Type: pCR For: Approval  
 36.717-03-01 v0.0.1  
 Source: VODAFONE Group Plc*

(Replaces R4-2009711)

**Discussion:**

The contribution was discussed during email thread [96e][141] LTE\_Baskets. The discussion was recorded in R4-2011574.

**Decision:** The document was **approved**.

**R4-2009712 TP for TR 36.717-03-01: CA\_3-40-41**

*Type: pCR For: Approval  
 36.717-03-01 v0.0.1  
 Source: VODAFONE Group Plc*

**Abstract:**

This contribution provides a text proposal on LTE CA band combination CA\_3-40-41 for TR 36.717-03-01.

**Discussion:**

The contribution was discussed during email thread [96e][141] LTE\_Baskets. The discussion was recorded in R4-2011574.

**Decision:** The document was **revised to R4-2011581**.

**R4-2011581 TP for TR 36.717-03-01: CA\_3-40-41**

*Type: pCR For: Approval  
 36.717-03-01 v0.0.1  
 Source: VODAFONE Group Plc*

(Replaces R4-2009712)

**Discussion:**

The contribution was discussed during email thread [96e][141] LTE\_Baskets. The discussion was recorded in R4-2011574.

**Decision:** The document was **approved**.

#### 14.2.1 Rapporteur Input (WID/TR/CR) [LTE\_CA\_R17\_3BDL\_1BUL-Core/Perf]

**R4-2011499 Revised WID for LTE inter-band CA for 3 bands DL with 1 bands UL**

*Type: WID revised For: Information  
 Source: Huawei,HiSilicon*

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2011501 Introduction of completed R16 3DL band combinations to TS 36.101**

*Type: draftCR For: Endorsement  
 36.101 v16.6.0  
 Source: Huawei,HiSilicon*

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2011502 Introduction of completed R16 3DL band combinations to TS 36.101**

*Type: draftCR For: Endorsement  
 36.101 v16.6.0  
 Source: Huawei,HiSilicon*

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2011503 TR skeleton for Rel-17 LTE inter-band CA for 3 bands DL with 1 band UL**

*Type: draft TR For: Agreement  
 36.717-03-01 v0.0.1  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][141] LTE\_Baskets. The discussion was recorded in R4-2011574.

**Decision:** The document was **agreed**.

**R4-2011892 Draft TR for Rel-17 LTE inter-band CA for 3 bands DL with 1 band UL v0.1.0**

*Type: draft TR For: Agreement  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

#### 14.2.2 UE RF with harmonic, close proximity and isolation issues [LTE\_CA\_R17\_3BDL\_1BUL-Core]

**R4-2010874 TP for TR 36.717-03-01: CA\_7A-28A-66A / CA\_7C-28A-66A**

*Type: pCR For: Approval  
 36.717-03-01 v0.0.1  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][141] LTE\_Baskets. The discussion was recorded in R4-2011574.

**Decision:** The document was **approved**.

#### 14.2.3 UE RF without specific issues [LTE\_CA\_R17\_3BDL\_1BUL-Core]

**R4-2010867 Draft CR to 36.101 to add CA\_3C-7A-8A with UL CA\_3C**

*Type: draftCR For: Endorsement  
 36.101 v16.6.0  
 Source: Huawei, HiSilicon*

**Abstract:**

1.To add UL configuration CA\_3C for CA\_3C-7A-8A

**Discussion:**

The contribution was discussed during email thread [96e][141] LTE\_Baskets. The discussion was recorded in R4-2011574.

**Decision:** The document was **endorsed**.

**R4-2010868 Draft CR to 36.101 to add CA\_1A-3C-38A with UL CA\_3C**

*Type: draftCR For: Endorsement  
 36.101 v16.6.0  
 Source: Huawei, HiSilicon*

**Abstract:**

1.To add UL configuration CA\_3C for CA\_1A-3C-38A

**Discussion:**

The contribution was discussed during email thread [96e][141] LTE\_Baskets. The discussion was recorded in R4-2011574.

**Decision:** The document was **endorsed**.

**R4-2010869 Draft CR to 36.101 to add CA\_3C-8A-38A with UL CA\_3C**

*Type: draftCR For: Endorsement  
 36.101 v16.6.0  
 Source: Huawei, HiSilicon*

**Abstract:**

1.To add UL configuration CA\_3C for CA\_3C-8A-38A

**Discussion:**

The contribution was discussed during email thread [96e][141] LTE\_Baskets. The discussion was recorded in R4-2011574.

**Decision:** The document was **endorsed**.

**R4-2010870 Draft CR to 36.101 to add CA\_1A-3C-20A with UL CA\_3C**

*Type: draftCR For: Endorsement  
 36.101 v16.6.0  
 Source: Huawei, HiSilicon*

**Abstract:**

1.To add UL configuration CA\_3C for CA\_1A-3C-20A

**Discussion:**

The contribution was discussed during email thread [96e][141] LTE\_Baskets. The discussion was recorded in R4-2011574.

**Decision:** The document was **endorsed**.

**R4-2010871 Draft CR to 36.101 to add CA\_3C-8A-20A**

*Type: draftCR For: Endorsement  
 36.101 v16.6.0  
 Source: Huawei, HiSilicon*

**Abstract:**

1.To add CA\_3C-8A-20A

**Discussion:**

The contribution was discussed during email thread [96e][141] LTE\_Baskets. The discussion was recorded in R4-2011574.

**Decision:** The document was **endorsed**.

**R4-2010872 TP for TR 36.717-03-01: CA\_3A-20A-38A/CA\_3C-20A-38A with UL CA\_3C**

*Type: pCR For: Approval  
 36.717-03-01 v0.0.1  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][141] LTE\_Baskets. The discussion was recorded in R4-2011574.

**Decision:** The document was **approved**.

**R4-2010873 TP for TR 36.717-03-01: CA\_8A-20A-38A**

*Type: pCR For: Approval  
 36.717-03-01 v0.0.1  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][141] LTE\_Baskets. The discussion was recorded in R4-2011574.

**Decision:** The document was **revised to R4-2011583**.

**R4-2011583 TP for TR 36.717-03-01: CA\_8A-20A-38A**

*Type: pCR For: Approval  
 36.717-03-01 v0.0.1  
 Source: Huawei, HiSilicon*

(Replaces R4-2010873)

**Discussion:**

The contribution was discussed during email thread [96e][141] LTE\_Baskets. The discussion was recorded in R4-2011574.

**Decision:** The document was **approved**.

### 14.3 LTE inter-band Carrier Aggregation for x bands DL (x=4, 5) with 1 band UL [LTE\_CA\_R17\_xBDL\_1BUL]

**R4-2009713 TP for TR 36.717-04-01: CA\_1-3-20-38**

*Type: pCR For: Approval  
 36.717-04-01 v0.0.1  
 Source: VODAFONE Group Plc*

**Abstract:**

This contribution provides a text proposal on LTE CA band combination CA\_1-3-20-38 for TR 36.717-04-01.

**Discussion:**

The contribution was discussed during email thread [96e][141] LTE\_Baskets. The discussion was recorded in R4-2011574.

**Decision:** The document was **revised to R4-2011582**.

**R4-2011582 TP for TR 36.717-04-01: CA\_1-3-20-38**

*Type: pCR For: Approval  
 36.717-04-01 v0.0.1  
 Source: VODAFONE Group Plc*

(Replaces R4-2009713)

**Discussion:**

The contribution was discussed during email thread [96e][141] LTE\_Baskets. The discussion was recorded in R4-2011574.

**Decision:** The document was **approved**.

#### 14.3.1 Rapporteur Input (WID/TR/CR) [LTE\_CA\_R17\_xBDL\_1BUL-Core]

**R4-2011404 Revised WID: LTE Advanced inter-band CA Rel-17 for x bands DL (x=4, 5) with 1 band UL**

*Type: WID revised For: Information  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2011405 Updated scope of TR: LTE inter-band CA for 4/5 bands DL with 1 band UL**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

The contribution was discussed during email thread [96e][141] LTE\_Baskets. The discussion was recorded in R4-2011574.

**Decision:** The document was **approved**.

**R4-2011406 TR 36.717-04-01 v0.0.1**

*Type: draft TR For: Agreement  
 36.717-04-01 v0.0.1  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

The contribution was discussed during email thread [96e][141] LTE\_Baskets. The discussion was recorded in R4-2011574.

**Decision:** The document was **agreed**.

**R4-2011893 TR 36.717-04-01 v0.1.0**

*Type: draft TR For: Agreement  
 Source: Nokia, Nokia Shanghai Bell*

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

#### 14.3.2 UE RF with 4 LTE bands CA [LTE\_CA\_R17\_xBDL\_1BUL-Core]

**R4-2010875 TP for TR 36.717-04-01: CA\_2A-7A-28A-66A / CA\_2A-7C-28A-66A**

*Type: pCR For: Approval  
 36.717-04-01 v0.0.1  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][141] LTE\_Baskets. The discussion was recorded in R4-2011574.

**Decision:** The document was **approved**.

**R4-2010876 TP for TR 36.717-04-01: CA\_2A-5A-7A-66A / CA\_2A-5A-7C-66A**

*Type: pCR For: Approval  
 36.717-04-01 v0.0.1  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][141] LTE\_Baskets. The discussion was recorded in R4-2011574.

**Decision:** The document was **approved**.

#### 14.3.3 UE RF with 5 LTE bands CA [LTE\_CA\_R17\_xBDL\_1BUL-Core]

### 14.4 LTE inter-band Carrier Aggregation for 2 bands DL with 2 band UL [LTE\_CA\_R17\_2BDL\_2BUL]

#### 14.4.1 Rapporteur Input (WID/TR/CR) [LTE\_CA\_R17\_2BDL\_2BUL-Core]

**R4-2010828 TR skeleton 36.717-02-02**

*Type: draft TR For: Agreement  
 36.717-02-02 v0.0.1  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][141] LTE\_Baskets. The discussion was recorded in R4-2011574.

**Decision:** The document was **agreed**.

**R4-2010829 Introduction of completed LTE CA for 2 bands DL with 2 bands UL into Rel-17 TS 36.101**

*Type: draftCR For: Endorsement  
 36.101 v16.6.0  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2010830 Revised WID for LTE inter-band CA for 2 bands DL with 2 bands UL**

*Type: WID revised For: Information  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

#### 14.4.2 UE RF with harmonic, close proximity and isolation issues [LTE\_CA\_R17\_2BDL\_2BUL-Core]

#### 14.4.3 UE RF without specific issues [LTE\_CA\_R17\_2BDL\_2BUL-Core]

### 14.5 LTE inter-band Carrier Aggregation for x bands DL (x= 3, 4, 5) with 2 band UL [LTE\_CA\_R17\_xBDL\_2BUL]

#### 14.5.1 Rapporteur Input (WID/TR/CR) [LTE\_CA\_R17\_xBDL\_2BUL-Core]

**R4-2010091 TR 36.717-03-02 v0.0.1 TR Skeleton 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 v0.0.1  
 Source: LG Electronics Polska*

**Discussion:**

The contribution was discussed during email thread [96e][141] LTE\_Baskets. The discussion was recorded in R4-2011574.

**Decision:** The document was **agreed**.

**R4-2011894 TR 36.717-03-02 v0.1.0 TR Skeleton 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  
 Source: LG Electronics Polska*

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2010127 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: Information  
 Source: LG Electronics Polska*

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

**R4-2010128 Introduction of LTE-A inter-band CA for x bands (x=3,4,5) DL with 2 bands UL to TS36.101**

*Type: CR For: Agreement  
 36.101 v16.6.0 CR-5655 Cat: B (Rel-17)  
  
 Source: LG Electronics Polska*

**Discussion:**

The contribution was subject for email agreement by 17:00 UTC Sept. 4.

**Decision:** The document was **not concluded**.

#### 14.5.2 UE RF with MSD [LTE\_CA\_R17\_xBDL\_2BUL-Core]

**R4-2010092 TP on initial summary of self-interference analysis for new x bands (x=3,4,5) DL with 2 bands UL**

*Type: pCR For: Approval  
 36.717-03-02 v0.0.1  
 Source: LG Electronics Polska*

**Discussion:**

The contribution was discussed during email thread [96e][141] LTE\_Baskets. The discussion was recorded in R4-2011574.

**Decision:** The document was **approved**.

#### 14.5.3 UE RF without MSD [LTE\_CA\_R17\_xBDL\_2BUL-Core]

**R4-2010093 TP on the general part of TR 36.717-03-02**

*Type: pCR For: Approval  
 36.717-03-02 v0.0.1  
 Source: LG Electronics Polska*

**Discussion:**

The contribution was discussed during email thread [96e][141] LTE\_Baskets. The discussion was recorded in R4-2011574.

**Decision:** The document was **approved**.

### 14.6 RRM for LTE CA basket WIs [LTE\_CA\_R17\_xxxx]

#### 14.6.1 RRM Core (36.133) [LTE\_CA\_R17\_xxxx-Core]

#### 14.6.2 RRM Perf (36.133) [LTE\_CA\_R17\_xxxx-Perf]

### 14.7 New WID on Additional LTE bands for UE category M1&M2 and/or NB1&NB2 in Rel-17 [LTE\_bands\_R17\_M1\_M2\_NB1\_NB2]

**R4-2011575 Email discussion summary for [96e][142] LTE\_bands\_R17\_M1\_M2\_NB1\_NB2**

*Type: other For: discussion  
 Source: Moderator (Ericsson)*

**Discussion:**

The contribution summarized email discussion thread [96e][142] LTE\_bands\_R17\_M1\_M2\_NB1\_NB2. The email thread was moderated by Chunhui Zhang (Ericsson) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **revised to R4-2011879**.

**R4-2011879 Email discussion summary for [96e][142] LTE\_bands\_R17\_M1\_M2\_NB1\_NB2**

*Type: other For: discussion  
 Source: Moderator (Ericsson)*

(Replaces R4-2011575)

**Discussion:**

The contribution summarized email discussion thread [96e][142] LTE\_bands\_R17\_M1\_M2\_NB1\_NB2. The email thread was moderated by Chunhui Zhang (Ericsson) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **noted**.

**R4-2011832 WF on adding B24 for M1/M2 and NB1/NB2**

*Type: other For: discussion  
 Source: Ericsson*

**Decision:** The document was **approved**.

#### 14.7.1 Rapporteur Input (WID/TR/CR) [LTE\_bands\_R17\_M1\_M2\_NB1\_NB2-Core]

**R4-2011039 Work plan and RF analysis on introduction of B24 for M1/M2 and NB1/NB2**

*Type: other For: Approval  
 Source: Ericsson*

**Abstract:**

in this paper, the RF impact on the spec and future work plan is proposed.

**Discussion:**

The contribution was discussed during email thread [96e][142] LTE\_bands\_R17\_M1\_M2\_NB1\_NB2. The discussion was recorded in R4-2011879.

**Decision:** The document was **noted**.

#### 14.7.2 RF [LTE\_bands\_R17\_M1\_M2\_NB1\_NB2-Core]

#### 14.7.3 Others [LTE\_bands\_R17\_M1\_M2\_NB1\_NB2-Perf]

### 14.8 Modification of LTE Band 24 specifications to comply with updated regulatory emission limits [LTE\_B24\_mod]

#### 14.8.1 General and rapporteur input [LTE\_B24\_mod-Core]

**R4-2010747 Work plan for modification of LTE Band 24**

*Type: Work Plan For: Approval  
 Source: Ligado Networks*

**Discussion:**

The contribution was discussed during email thread [96e][136] NR\_LTE\_band\_n24. The discussion was recorded in R4-2011874.

**Decision:** The document was **approved**.

#### 14.8.2 UE RF [LTE\_B24\_mod-Core]

**R4-2010748 Summary of required changes to UE E-UTRA specifications for Band 24 to address updated regulatory emission limits**

*Type: discussion For: Approval  
 Source: Ligado Networks*

**Discussion:**

The contribution was discussed during email thread [96e][136] NR\_LTE\_band\_n24. The discussion was recorded in R4-2011874.

**Decision:** The document was **noted**.

#### 14.8.3 BS RF [LTE\_B24\_mod-Core]

**R4-2011819 WF on CR work split**

*Type: other For: discussion  
 Source: Ligado Networks*

**Discussion:**

The contribution was discussed during email thread [96e][136] NR\_LTE\_band\_n24. The discussion was recorded in R4-2011874.

**Decision:** The document was **approved**.

**R4-2010749 Review of material on record with FCC for Band 24 downlink and summary of required changes to BS E-UTRA specifications for Band 24**

*Type: discussion For: Approval  
 Source: Ligado Networks*

**Discussion:**

The contribution was discussed during email thread [96e][136] NR\_LTE\_band\_n24. The discussion was recorded in R4-2011874.

**Decision:** The document was **approved**.

#### 14.8.4 RRM and others [LTE\_B24\_mod-Core/Perf]

**R4-2010750 Assessment of changes resulting from regulatory updates for Band 24 to E-UTRA RRM specifications**

*Type: discussion For: Approval  
 Source: Ligado Networks*

**Discussion:**

The contribution was discussed during email thread [96e][136] NR\_LTE\_band\_n24. The discussion was recorded in R4-2011874.

**Decision:** The document was **noted**.

**R4-2011509 Initial considerations on band 24 impact on E911 emergency calls**

*Type: discussion For: Discussion  
 Source: Apple Inc.*

**Discussion:**

The contribution was discussed during email thread [96e][136] NR\_LTE\_band\_n24. The discussion was recorded in R4-2011874.

**Decision:** The document was **noted**.

## 15 Rel-17 Study Items for LTE

### 15.1 High-power UE operation for fixed-wireless/vehicle-mounted use cases in LTE bands 5 and 12 and NR band n71 [FS\_LTE\_NR\_HPUE\_FWVM]

**R4-2011576 Email discussion summary for [96e][143] FS\_LTE\_NR\_HPUE\_FWVM**

*Type: other For: discussion  
 Source: Moderator (Nokia)*

**Discussion:**

The contribution summarized email discussion thread [96e][143] FS\_LTE\_NR\_HPUE\_FWVM. The email thread was moderated by Man Hung Ng (Nokia) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **revised to R4-2011880**.

**R4-2011880 Email discussion summary for [96e][143] FS\_LTE\_NR\_HPUE\_FWVM**

*Type: other For: discussion  
 Source: Moderator (Nokia)*

(Replaces R4-2011576)

**Discussion:**

The contribution summarized email discussion thread [96e][143] FS\_LTE\_NR\_HPUE\_FWVM. The email thread was moderated by Man Hung Ng (Nokia) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **noted**.

#### 15.1.1 General

**R4-2011199 Work Plan for Study on High-power UE operation for fixed-wireless/vehicle-mounted use cases in Band 12, Band 5, and Band n71**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This contribution provides a work plan according to the list of tasks in the SID. It is proposed to approve this work plan in RAN4 to be used as guidance for agenda and contributions for this study item in the coming RAN4 meeting, considering the contribu

**Discussion:**

The contribution was discussed during email thread [96e][143] FS\_LTE\_NR\_HPUE\_FWVM. The discussion was recorded in R4-2011880.

**Decision:** The document was **approved**.

**R4-2011200 TR 37.xxx V0.0.1: High-power UE operation for fixed-wireless/vehicle-mounted use cases in Band 12, Band 5, and Band n71**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

Skeleton TR for Study on High-power UE operation for fixed-wireless/vehicle-mounted use cases in Band 12, Band 5, and Band n71.

**Decision:** The document was **withdrawn**.

**R4-2011219 TR 37.xxx V0.0.1: High-power UE operation for fixed-wireless/vehicle-mounted use cases in Band 12, Band 5, and Band n71**

*Type: other For: Approval  
 Source: Nokia France*

**Discussion:**

The contribution was discussed during email thread [96e][143] FS\_LTE\_NR\_HPUE\_FWVM. The discussion was recorded in R4-2011880.

**Decision:** The document was **agreed**.

#### 15.1.2 Coexistence study

**R4-2011201 TP to TR 37.xxx: Simulation assumptions for coexistence study on High-power UE operation for fixed-wireless/vehicle-mounted use cases in Band 12, Band 5, and Band n71**

*Type: other For: Approval  
 Source: Nokia, Nokia Shanghai Bell*

**Abstract:**

This contribution proposes the system level simulation assumptions for the coexistence study and the corresponding TP to TR.

**Decision:** The document was **withdrawn**.

**R4-2011220 TP to TR 37.xxx: Simulation assumptions for coexistence study on High-power UE operation for fixed-wireless/vehicle-mounted use cases in Band 12, Band 5, and Band n71**

*Type: other For: Approval  
 Source: Nokia France*

**Discussion:**

The contribution was discussed during email thread [96e][143] FS\_LTE\_NR\_HPUE\_FWVM. The discussion was recorded in R4-2011880.

**Decision:** The document was **revised to R4-2011833**.

**R4-2011833 TP to TR 37.xxx: Simulation assumptions for coexistence study on High-power UE operation for fixed-wireless/vehicle-mounted use cases in Band 12, Band 5, and Band n71**

*Type: other For: Approval  
 Source: Nokia France*

(Replaces R4-2011220)

**Discussion:**

The contribution was discussed during email thread [96e][143] FS\_LTE\_NR\_HPUE\_FWVM. The discussion was recorded in R4-2011880.

**Decision:** The document was **approved**.

#### 15.1.3 UE RF

## 16 Liaison and output to other groups

## 17 Revision of the Work Plan

### 17.1 Simplification of band combinations in RAN4 specifications

**R4-2011577 Email discussion summary for [96e][144] BC\_simplification**

*Type: other For: discussion  
 Source: Moderator (NTT DoCoMo)*

**Discussion:**

The contribution summarized email discussion thread [96e][144] BC\_simplification. The email thread was moderated by Yuta Oguma (NTT DOCOMO INC.) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **revised to R4-2011881**.

**R4-2011881 Email discussion summary for [96e][144] BC\_simplification**

*Type: other For: discussion  
 Source: Moderator (NTT DoCoMo)*

(Replaces R4-2011577)

**Discussion:**

The contribution summarized email discussion thread [96e][144] BC\_simplification. The email thread was moderated by Yuta Oguma (NTT DOCOMO INC.) and treated during Main session chaired by Steven Chen (Futurewei).

**Decision:** The document was **noted**.

**R4-2011834 WF on wild card approach**

*Type: other For: discussion  
 Source: ZTE*

**Discussion:**

The contribution was discussed during email thread [96e][144] BC\_simplification. The discussion was recorded in R4-2011881.

**Decision:** The document was **noted**.

**R4-2011835 WF on modified procedure for DC including FR2 and further simplification on band combinations**

*Type: other For: discussion  
 Source: Nokia*

**Discussion:**

The contribution was discussed during email thread [96e][144] BC\_simplification. The discussion was recorded in R4-2011881.

**Decision:** The document was **approved**.

**R4-2011836 WF on alternative to creating new BCSs**

*Type: other For: discussion  
 Source: T-Mobile USA*

**Discussion:**

The contribution was discussed during email thread [96e][144] BC\_simplification. The discussion was recorded in R4-2011881.

**Decision:** The document was **noted**.

**R4-2011897 CR for 38.101-1: Introduction of BCS4 for CA, DC and SUL**

*Type: CR For: Agreement  
 38.101-1 v16.4.0 CR-0485 Cat: C (Rel-16)  
  
 Source: T-Mobile USA, Deutsche Telekom, AT&T, Telus, Bell Mobility, Telstra, Telecom Italia, Ericsson, Vodaphone, Rogers, KDDI, Ericsson*

**Discussion:**

The contribution was discussed during email thread [96e][144] BC\_simplification. The discussion was recorded in R4-2011881.

**Decision:** The document was **not pursued**.

**R4-2010062 An alternative to creating new BCSs**

*Type: discussion For: Approval  
 Source: T-Mobile USA, Deutsche Telekom, AT&T, Telus, Bell Canada, Telstra, Telecom Italia, Ericsson*

**Discussion:**

The contribution was discussed during email thread [96e][144] BC\_simplification. The discussion was recorded in R4-2011881.

**Decision:** The document was **noted**.

**R4-2010324 Simplification on CA**

*Type: discussion For: Approval  
 Source: ZTE Corporation*

**Abstract:**

Simplification on CA & EN-DC configurations

**Discussion:**

The contribution was discussed during email thread [96e][144] BC\_simplification. The discussion was recorded in R4-2011881.

**Decision:** The document was **noted**.

**R4-2010455 On band simplification**

*Type: other For: Approval  
 38.101-3 v..  
 Source: Nokia Japan*

**Abstract:**

How to simplify the procedures for the introduction of new EN-DC band configurations including FR2 is discussed.

**Discussion:**

The contribution was discussed during email thread [96e][144] BC\_simplification. The discussion was recorded in R4-2011881.

**Decision:** The document was **noted**.

**R4-2009950 Simplification of band combination tables in 38.101**

*Type: discussion For: Discussion  
 Source: Apple Inc.*

**Discussion:**

The contribution was discussed during email thread [96e][144] BC\_simplification. The discussion was recorded in R4-2011881.

**Decision:** The document was **noted**.

**R4-2009951 CR for simplification of band combination tables for 38101-3 Rel16 with Excel**

*Type: CR For: Agreement  
 38.101-3 v16.4.0 CR-0315 Cat: D (Rel-16)  
  
 Source: Apple Inc.*

**Discussion:**

The contribution was discussed during email thread [96e][144] BC\_simplification. The discussion was recorded in R4-2011881.

**Decision:** The document was **not pursued**.

### 17.2 R17 new proposals

#### 17.2.1 Spectrum related

**R4-2010267 New basket WID: Band combination specific requirements for UE power class 2 (PC2) for NR inter-band Carrier Aggregation with 2 bands downlink and 2 bands uplink**

*Type: WID new For: Information  
 Source: China Telecom*

**Abstract:**

This new WI is to capture the band-combination specific requirements for CA shifted from RP-201337 or new proposed according to MCC suggestion. The background could be found in AI 10.16.1

**Decision:** The document was **not treated**.

**R4-2009667 Proposal on new Rel-17 Basket: New WID on Dual Connectivity (DC) of x bands (x=2,3,4) LTE inter-band CA (xDL/1UL) and 1 NR FR1 band (1DL/1UL) and 1 NR FR2 band (1DL/1UL)**

*Type: Work Plan For: Approval  
 Source: Samsung*

**Decision:** The document was **not treated**.

#### 17.2.2 Non-spectrum related

**R4-2010055 RAN4 Rel-17 RRM work area summary**

*Type: discussion For: Information  
 Source: Apple*

**Decision:** The document was **not treated**.

**R4-2010058 New SID: Efficient utilization of licensed spectrum that is not aligned with existing NR channel bandwidths**

*Type: SID new For: Information  
 Source: T-Mobile USA, Ericsson*

**Decision:** The document was **not treated**.

**R4-2010059 Motivation for new SID on Efficient utilization of licensed spectrum that is not aligned with existing NR channel bandwidths**

*Type: discussion For: Information  
 Source: T-Mobile USA*

**Decision:** The document was **not treated**.

**R4-2010074 Motivation for NR support for High speed train scenario in Rel-17**

*Type: WID new For: Information  
 Source: CMCC*

**Decision:** The document was **not treated**.

**R4-2010075 New WID on NR support for high speed train scenario**

*Type: WID new For: Information  
 Source: CMCC*

**Decision:** The document was **not treated**.

**R4-2010089 Motivation on NR RRM requirement for UE different RX beam sets in FR2**

*Type: WID new For: Information  
 Source: LG Electronics Inc.*

**Abstract:**

It is motivation paper to introduce new WID on NR RRM requirement for UE different RX beam sets in FR2.

**Decision:** The document was **not treated**.

**R4-2010090 New WID on NR RRM requirement for UE different RX beam sets in FR2**

*Type: WID new For: Information  
 Source: LG Electronics Inc.*

**Abstract:**

It is new WID on NR RRM requirement for UE different RX beam sets in FR2.

**Decision:** The document was **not treated**.

**R4-2010110 Intermediate summary for RAN4 non-spectrum Rel-17 items: [FR1 HST and ATG]**

*Type: other For: Information  
 Source: CMCC*

**Decision:** The document was **not treated**.

**R4-2010122 Motivation for supporting non-colocated scenarios for band 42 and n77**

*Type: discussion For: Information  
 Source: SoftBank Corp.*

**Decision:** The document was **not treated**.

**R4-2010316 Motivation to introduce new R17 WI on further RRM enhancement**

*Type: discussion For: Information  
 Source: MediaTek inc.*

**Decision:** The document was **not treated**.

**R4-2010357 Intermediate summary for e-mail discussion for Rel-17 proposal FR2 HST**

*Type: other For: Information  
 Source: Samsung*

**Decision:** The document was **not treated**.

**R4-2010753 Enhancements to TCI state known status in Rel-17**

*Type: discussion For: Approval  
 Source: NEC*

**Abstract:**

In this contribution we propose to include TCI state known status enhancements in the scope of TCI switch enhancements feature under WI Rel-17 RRM further enhancements.

**Decision:** The document was **not treated**.

**R4-2010852 Motivation for optimizations on power class fall back**

*Type: discussion For: Information  
 Source: vivo*

**Decision:** The document was **not treated**.

**R4-2010853 [Draft] New SID: Optimizations on power class fall back**

*Type: SID new For: Information  
 Source: vivo, China Unicom*

**Decision:** The document was **withdrawn**.

**R4-2011029 Discussion on ATG network**

*Type: other For: Information  
 Source: ZTE Corporation*

**Decision:** The document was **not treated**.

**R4-2011175 Motivation for further RRM enhancement in Rel-17**

*Type: discussion For: Information  
 Source: Huawei, Hisilicon*

**Decision:** The document was **not treated**.

**R4-2011176 New WID on further RRM enhancement**

*Type: WID new For: Information  
 Source: Huawei, Hisilicon*

**Decision:** The document was **not treated**.

**R4-2011185 [Draft] New WID: Optimizations on power class fall back**

*Type: WID new For: Information  
 Source: vivo*

**Decision:** The document was **not treated**.

**R4-2011221 Intermediate summary for e-mail discussion on OTA aspects of the Rel.17 RAN4 non-spectrum package**

*Type: discussion For: Information  
 Source: Moderator(Qualcomm Incorporated)*

**Decision:** The document was **not treated**.

**R4-2011237 Motivation for WI: NR FR1 UE SA and EN-DC TRP and TRS**

*Type: discussion For: Information  
 Source: vivo*

**Abstract:**

Motivation paper

**Decision:** The document was **not treated**.

**R4-2011238 New WID: NR FR1 UE SA and EN-DC TRP and TRS**

*Type: WID new For: Information  
 Source: vivo, OPPO, CMCC, CAICT, Rohde & Schwarz*

**Abstract:**

WID on NR FR1 TRP&TRS OTA

**Decision:** The document was **not treated**.

**R4-2011320 Motivation on NR RRM requirement enhancements in Rel-17**

*Type: discussion For: Information  
 Source: ZTE*

**Decision:** The document was **not treated**.

**R4-2011321 New WID on NR RRM requirement enhancements in Rel-17**

*Type: WID new For: Information  
 Source: ZTE*

**Decision:** The document was **not treated**.

**R4-2011463 Motivation for new WI on supporting overlapping CA for LTE**

*Type: discussion For: Information  
 Source: Huawei, HiSilicon*

**Abstract:**

Motivation on support of intra-band overlapping CA for LTE.

**Decision:** The document was **not treated**.

**R4-2011464 New WID proposal: supporting overlapping CA for LTE**

*Type: WID new For: Information  
 Source: Huawei, HiSilicon*

**Abstract:**

In this contribution, we provide the draft WID on intra-band overlapping CA for LTE.

**Decision:** The document was **not treated**.

**R4-2011465 Motivation for new WI on Rel-17 NR FR1 RF**

*Type: discussion For: Information  
 Source: Huawei, HiSilicon*

**Abstract:**

Motivation paper for FR1 RF enhancement for Rel-17.

**Decision:** The document was **not treated**.

**R4-2011466 New WID proposal: RF requirements enhancement for NR frequency range 1 (FR1) in Rel-17**

*Type: WID new For: Information  
 Source: Huawei, HiSilicon*

**Abstract:**

In this paper, we provide the updated WID for FR1 RF enhancement for Rel-17.

**Decision:** The document was **not treated**.

**R4-2009585 Intermediate email discussion summary for RAN4 Rel-17 demodulation scope**

*Type: discussion For: Discussion  
 Source: Moderator (China Telecom)*

**Decision:** The document was **not treated**.

**R4-2009586 Motivation for further enhancement on NR demodulation performance requirements**

*Type: discussion For: Information  
 Source: China Telecom*

**Decision:** The document was **not treated**.

**R4-2009587 Draft WID: Further enhancement on NR demodulation performance requirements**

*Type: discussion For: Information  
 Source: China Telecom*

**Decision:** The document was **not treated**.

**R4-2009750 Motivation to introduce new R17 WI on NR MG enhancements**

*Type: other For: Information  
 Source: Intel Corporation, Apple*

**Decision:** The document was **not treated**.

**R4-2009751 New WI Proposal on NR MG enhancements**

*Type: other For: Information  
 Source: Intel Corporation, Apple*

**Decision:** The document was **not treated**.

**R4-2009821 Motivation for NR RRM further enhancement in Rel-17**

*Type: discussion For: Discussion  
 Source: CATT*

**Decision:** The document was **not treated**.

**R4-2009822 New WID on NR RRM further enhancement in Rel-17**

*Type: WID new For: Information  
 Source: CATT*

**Decision:** The document was **not treated**.

**R4-2009918 Motivation paper on REL-17 RRM further enhancement**

*Type: discussion For: Information  
 Source: Apple, Intel*

**Decision:** The document was **not treated**.

**R4-2009919 WID of REL-17 NR RRM further enhancement**

*Type: other For: Information  
 Source: Apple, Intel*

**Decision:** The document was **not treated**.

**R4-2009958 Views on Rel-17 non-spectrum RF enhancements**

*Type: discussion For: Information  
 Source: Apple Inc.*

**Decision:** The document was **not treated**.

**R4-2011461 Motivation for update of SI to support irregular channel bandwidth**

*Type: discussion For: Information  
 Source: Huawei, HiSilicon*

**Abstract:**

Motivation on the method to support irregular channel bandwidth

**Decision:** The document was **not treated**.

**R4-2011462 SID on efficient utilization of licensed spectrum that is no aligned with existing NR channel bandwidth**

*Type: SID new For: Information  
 Source: Huawei, HiSilicon*

**Abstract:**

In this contribution we provide the proposals for update of SID on support of irregular channel bandwidth based on the paper in the last RAN plenary.

**Decision:** The document was **not treated**.

**R4-2011027 Motivation paper of new WID on performance requirements for UE advanced receiver in Rel-17**

*Type: other For: Information  
 Source: Huawei, HiSilicon*

**Discussion:**

The contribution was discussed during email thread [96e][209] NR\_Mob\_enh\_RRM. The discussion was recorded in R4-2012209.

**Decision:** The document was **not treated**.

### 17.3 Others

## 18 Any other business

## 19 Close of the E-meeting

The Chairman Steven Chen (Futurewei) closed the meeting on RAN4 reflector on 28/08/2020.

Report prepared by: MCC

## Annex A: Contribution documents and status

A1: List of TDocs

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Document** | **Title** | **Source** | **Decision** | **Replaces** | **Replaced by** |
| R4-2009500 | Agenda for RAN4 #96-e | RAN4 Chairman | revised |  | R4-2011530 |
| R4-2009501 | RAN4#95-e Meeting Report | ETSI MCC | approved |  |  |
| R4-2009502 | NGMN Liaison Statement to 3GPP RAN4 on 5G NR Over The Air test methodologies and performance requirements | NGMN Alliance Project | noted |  |  |
| R4-2009503 | Resolutions of the World Radiocommunication Conference, 2019 (WRC-19) 01PC(FMD)O-2020-001473 | WRC-19 | noted |  |  |
| R4-2009504 | LS response to RAN2 LS on Guard Symbols in IAB | RAN1 | noted |  |  |
| R4-2009505 | LS on categories for terrestrial broadcast | RAN1 | noted |  |  |
| R4-2009506 | LS to RAN2 on NR-U RSSI Measurement Duration | RAN1 | noted |  |  |
| R4-2009507 | Reply LS on RAN4 IAB-MT feature list agreement | RAN1 | noted |  |  |
| R4-2009508 | LS on the UE DL PRS processing | RAN1 | noted |  |  |
| R4-2009509 | LS on UE capability on wideband carrier operation for NR-U | RAN1 | noted |  |  |
| R4-2009510 | Reply LS on NR-U SSB monitoring capabilities | RAN1 | noted |  |  |
| R4-2009511 | LS Reply on DCP Open Issues | RAN1 | noted |  |  |
| R4-2009512 | LS to RAN2 on initial BWP for NR-U | RAN1 | noted |  |  |
| R4-2009513 | LS on SCell Dormancy | RAN1 | noted |  |  |
| R4-2009514 | LS on updated Rel-16 RAN1 UE features lists for NR | RAN1 | noted |  |  |
| R4-2009515 | LS on sidelink synchronization timing reference | RAN1 | noted |  |  |
| R4-2009516 | LS on updated Rel-16 RAN1 UE features lists for NR after RAN1#101-e | RAN1 | noted |  |  |
| R4-2009517 | LS on further updated Rel-16 RAN1 UE features list for LTE | RAN1 | noted |  |  |
| R4-2009518 | LS reply to RAN4 on UE declaring beam failure due to LBT failures during active TCI switching | RAN2 | noted |  |  |
| R4-2009519 | LS to RAN4 on RRM relaxation in power saving | RAN2 | noted |  |  |
| R4-2009520 | Reply LS on Rel-16 UE feature lists | RAN2 | noted |  |  |
| R4-2009521 | Reply LS on supporting Rel-16 NR HST from Rel-15 Ues | RAN2 | noted |  |  |
| R4-2009522 | Reply LS on inter-frequency measurement without gap | RAN2 | noted |  |  |
| R4-2009523 | Reply LS RAN4 on RRM Enhanced Measurement Reporting | RAN2 | noted |  |  |
| R4-2009524 | Reply LS on SCell dormancy requirement scope | RAN2 | noted |  |  |
| R4-2009525 | LS on UE capability xDD differentiation for SUL/SDL bands | RAN2 | noted |  |  |
| R4-2009526 | LS on Clarification on RAN4 features of NE-DC | RAN2 | noted |  |  |
| R4-2009527 | Reply LS on XDD-FRX Differentiation | RAN2 | noted |  |  |
| R4-2009528 | Response LS on Exchange of information related to SRS-RSRP measurement resource configuration for UE-CLI | RAN3 | noted |  |  |
| R4-2009529 | LS on ambiguity in output power requirements for power class 2 UE for EN-DC | RAN5 | noted |  |  |
| R4-2009530 | LS on RF testing of 4Rx capable UE | RAN5 | noted |  |  |
| R4-2009531 | LS on structure of NR CA reference sensitivity requirements in 38.101-1 | RAN5 | noted |  |  |
| R4-2009532 | LS on introducing UE capability for power class for NR band in MR-DC combination | RAN | noted |  |  |
| R4-2009533 | New work item in SE21 on measurement methodologies for 5G AAS in the field | CEPT ECC WG SE | noted |  |  |
| R4-2009534 | Correction to intra-frequency event triggered reporting test case in CEModeA | ANRITSU LTD | agreed |  |  |
| R4-2009535 | Correction to intra-frequency event triggered reporting test case in CEModeA | ANRITSU LTD | agreed |  |  |
| R4-2009536 | Correction to intra-frequency event triggered reporting test case in CEModeA | ANRITSU LTD | agreed |  |  |
| R4-2009537 | Correction to intra-frequency event triggered reporting test case in CEModeA | ANRITSU LTD | agreed |  |  |
| R4-2009538 | CR to ZP-CSI-RS configuration | ANRITSU LTD | revised |  | R4-2012594 |
| R4-2009539 | CR to ZP-CSI-RS configuration | ANRITSU LTD | agreed |  |  |
| R4-2009540 | CR to 2Rx PDSCH mapping type B | ANRITSU LTD | agreed |  |  |
| R4-2009541 | CR to 2Rx PDSCH mapping type B | ANRITSU LTD | agreed |  |  |
| R4-2009542 | CR to Redirection from NR in FR1 to E-UTRAN | ANRITSU LTD | agreed |  |  |
| R4-2009543 | CR to Redirection from NR in FR1 to E-UTRAN | ANRITSU LTD | agreed |  |  |
| R4-2009544 | CR to timing advance adjustment accuracy in FR1 | ANRITSU LTD | agreed |  |  |
| R4-2009545 | CR to timing advance adjustment accuracy in FR1 | ANRITSU LTD | agreed |  |  |
| R4-2009546 | Correction to band 85 spurious emission limits UE co-existence | Sequans Communications | agreed |  |  |
| R4-2009547 | Correction to band 85 spurious emission limits UE co-existence | Sequans Communications | agreed |  |  |
| R4-2009548 | CR to SA event triggered reporting tests with per-UE gaps | ANRITSU LTD | postponed |  | - |
| R4-2009549 | CR to SA event triggered reporting tests with per-UE gaps | ANRITSU LTD | withdrawn |  |  |
| R4-2009550 | CR to SS-RSRQ Intra-Frequency and Inter-frequency FR1 measurement accuracy | ANRITSU LTD | agreed |  |  |
| R4-2009551 | CR to SS-RSRQ Intra-Frequency and Inter-frequency FR1 measurement accuracy | ANRITSU LTD | agreed |  |  |
| R4-2009552 | Update to FR2 240kHz SSB Configurations | ANRITSU LTD | agreed |  |  |
| R4-2009553 | Update to FR2 240kHz SSB Configurations | ANRITSU LTD | agreed |  |  |
| R4-2009554 | FR2 PRACH Test cases in 38.133 Annex A | ANRITSU LTD | noted |  |  |
| R4-2009555 | Remaining issues on P-MPR reporting | Sony, Ericsson | noted |  |  |
| R4-2009556 | Remaining issues in beam correspondence | Sony, Ericsson | noted |  |  |
| R4-2009557 | Inter-band DL CA in FR2: CBM/IBM capability and associated spherical coverage EIS tests | Sony, Ericsson | withdrawn |  |  |
| R4-2009558 | Update of FR2 Random Access Test cases | ANRITSU LTD | agreed |  |  |
| R4-2009559 | Update of FR2 Random Access Test cases | ANRITSU LTD | agreed |  |  |
| R4-2009560 | Views on testability enhancement for UE FR2 test | Sony | noted |  |  |
| R4-2009561 | Views on RF requirement for FWA | Sony | noted |  |  |
| R4-2009562 | Views on the phase noise model above 52 GHz | Sony | noted |  |  |
| R4-2009563 | Update to FR2 event-triggered reporting RRM Test cases in A.5.6 and A.7.6 | ANRITSU LTD | agreed |  |  |
| R4-2009564 | Update to FR2 event-triggered reporting RRM Test cases in A.5.6 and A.7.6 | ANRITSU LTD | agreed |  |  |
| R4-2009565 | Update to FR2 SS-RSRP RRM Test cases in A.5.7 and A.7.7 | ANRITSU LTD | agreed |  |  |
| R4-2009566 | Update to FR2 SS-RSRP RRM Test cases in A.5.7 and A.7.7 | ANRITSU LTD | agreed |  |  |
| R4-2009567 | CR to EN-DC timing advance adjustment accuracy in FR2 | ANRITSU LTD | agreed |  |  |
| R4-2009568 | CR to EN-DC timing advance adjustment accuracy in FR2 | ANRITSU LTD | agreed |  |  |
| R4-2009569 | CR to configuration of CSI-RS for tracking | ANRITSU LTD | agreed |  |  |
| R4-2009570 | CR to configuration of CSI-RS for tracking | ANRITSU LTD | agreed |  |  |
| R4-2009571 | Update of RRC-based Active BWP Switch test cases | ANRITSU LTD | revised |  | R4-2012070 |
| R4-2009572 | Update of RRC-based Active BWP Switch test cases | ANRITSU LTD | agreed |  |  |
| R4-2009573 | Update to FR2 Annex B RRM side conditions | ANRITSU LTD | agreed |  |  |
| R4-2009574 | Update to FR2 Annex B RRM side conditions | ANRITSU LTD | agreed |  |  |
| R4-2009575 | Add UE Beam assumption for RRM Test cases in A.5.5 | ANRITSU LTD | agreed |  |  |
| R4-2009576 | Add UE Beam assumption for RRM Test cases in A.5.5 | ANRITSU LTD | agreed |  |  |
| R4-2009577 | MSD analysis on NR V2X UE for V2X\_20\_n38 | Xiaomi Communications | noted |  |  |
| R4-2009578 | Applicability of DL interruption due to Tx switching | China Telecom | noted |  |  |
| R4-2009579 | On NR CA PDSCH normal demodulation requirements | China Telecom | noted |  |  |
| R4-2009580 | On PMI reporting requirements for larger Tx ports | China Telecom | noted |  |  |
| R4-2009581 | Simulation results for 16 Tx subband PMI reporting requirements | China Telecom | noted |  |  |
| R4-2009582 | On power imbalance requirements for FR1 CA and EN-DC | China Telecom | noted |  |  |
| R4-2009583 | On NR CA CQI reporting requirements | China Telecom | noted |  |  |
| R4-2009584 | UE demodulation and CSI reporting requirements for FR2 DL 256QAM | China Telecom | noted |  |  |
| R4-2009585 | Intermediate email discussion summary for RAN4 Rel-17 demodulation scope | Moderator (China Telecom) | not treated |  |  |
| R4-2009586 | Motivation for further enhancement on NR demodulation performance requirements | China Telecom | not treated |  |  |
| R4-2009587 | Draft WID: Further enhancement on NR demodulation performance requirements | China Telecom | not treated |  |  |
| R4-2009588 | Correction to FR1 UL contiguous CA MPR regions | Nokia Corporation | revised |  | R4-2011729 |
| R4-2009589 | LTE/NR spectrum sharing in Band 40/n40 | Reliance Jio | revised |  | R4-2011822 |
| R4-2009590 | LTE/NR spectrum sharing in Band 40/n40 | Reliance Jio | revised |  | R4-2011823 |
| R4-2009591 | LTE/NR spectrum sharing in Band 40/n40 | Reliance Jio | revised |  | R4-2011824 |
| R4-2009592 | On UE capability xDD differentiation for SUL/SDL bands | Nokia Japan | noted |  |  |
| R4-2009593 | On remaining issues for WRC-19 | Nokia Japan | noted |  |  |
| R4-2009594 | EESS protection related requirements for FR2 bands | Nokia Japan | revised |  | R4-2011910 |
| R4-2009595 | EESS protection related requirements for FR2 bands | Nokia Japan | withdrawn |  |  |
| R4-2009596 | NR CGI measurements with autonomous gaps for 36.133 | Ericsson Limited, Nokia, Nokia Shanghai Bell | revised |  | R4-2012157 |
| R4-2009597 | Options for P-MPR reporting | InterDigital, Inc. | noted |  |  |
| R4-2009598 | Introduction of the P-MPR 3 bits report mapping in 38.133 | InterDigital, Inc. | revised |  | R4-2011736 |
| R4-2009599 | Clarifications for P-MPR operation in sub-clause 6.2.4 according to the P-MPR reporting agreements. | InterDigital, Inc. | revised |  | R4-2011735 |
| R4-2009600 | Pcmax defined reporting ranges accuracy issue in 38.133 for FR2 | InterDigital, Inc. | withdrawn |  |  |
| R4-2009601 | CR on Active BWP switch and Active TCI State Switching requirements - Rel15 | Apple | withdrawn |  |  |
| R4-2009602 | CR on Active BWP switch and Active TCI State Switching requirements - Rel16 | Apple | withdrawn |  |  |
| R4-2009603 | CR on Requirement for MAC-CE based TCI State Switch-EN-DC-Rel15 | Apple | merged |  |  |
| R4-2009604 | CR on Requirement for MAC-CE based TCI State Switch-EN-DC-Rel16 | Apple | withdrawn |  |  |
| R4-2009605 | CR on Requirement for MAC-CE based TCI State Switch-SA-Rel15 | Apple | merged |  |  |
| R4-2009606 | CR on Requirement for MAC-CE based TCI State Switch-SA-Rel16 | Apple | withdrawn |  |  |
| R4-2009607 | Requirements for BWP switching on multiple CCs | Apple | noted |  |  |
| R4-2009608 | Requirements for UL spatial relation info switch | Apple | noted |  |  |
| R4-2009609 | Discussion on RRM requirements for Multi-TRP | Apple | noted |  |  |
| R4-2009610 | On PMI reporting requirements with larger number of TX ports | Apple | noted |  |  |
| R4-2009611 | On UE demod and CSI requirements for Ultra low BLER | Apple | noted |  |  |
| R4-2009612 | On UE demod and CSI requirements with higher BLER | Apple | noted |  |  |
| R4-2009613 | On PDSCH demodulation requirements for Multi TRP | Apple | noted |  |  |
| R4-2009614 | On PMI reporting requirements with eType II codebook | Apple | noted |  |  |
| R4-2009615 | CR for n26 AMPR for 256QAM | Qualcomm Incorporated | agreed |  |  |
| R4-2009616 | OOB blocking for Inter-band CA | Qualcomm Incorporated | agreed |  |  |
| R4-2009617 | OOB blocking for Inter-band CA | Qualcomm Incorporated | agreed |  |  |
| R4-2009618 | CR for missing note for DC\_39A\_n41A for non-simultaneous RX/TX operation | Qualcomm Incorporated | agreed |  |  |
| R4-2009619 | CR for correcting DC\_48\_n5 UE spurious coexistence in 38.101-3 | Qualcomm Incorporated | agreed |  |  |
| R4-2009620 | CR for missing DC\_3A\_n1A Cross Band Noise MSD for large NR UL BW in 38.101-3 | Qualcomm Incorporated | not pursued |  |  |
| R4-2009621 | CR for missing IMD MSD in 38.101-3 for DC\_3A-28A\_n41A, DC\_28A-41A\_n77A | Qualcomm Incorporated | agreed |  |  |
| R4-2009622 | CR for Pcmax correction for FR1 intraband ULCA | Qualcomm Incorporated | not pursued |  |  |
| R4-2009623 | CR for missing DC\_1A\_n40A Cross Band Noise MSD for large NR UL BW in 38.101-3 | Qualcomm Incorporated | revised |  | R4-2011756 |
| R4-2009624 | CR for missing DC\_1A\_n40A Cross Band Noise MSD for large NR UL BW in 38.101-3 | Qualcomm Incorporated | withdrawn |  |  |
| R4-2009625 | CR for missing IMD MSD in 38.101-3 for DC\_1A-41A\_n78A, DC\_7A-28A\_n78A | Qualcomm Incorporated | revised |  | R4-2011757 |
| R4-2009626 | CR for missing IMD MSD in 38.101-3 for DC\_1A-41A\_n78A, DC\_7A-28A\_n78A | Qualcomm Incorporated | agreed |  |  |
| R4-2009627 | Views on FR2 SISO EIRP test enhancement | MediaTek Beijing Inc. | noted |  |  |
| R4-2009628 | ENDC crossband noise impact with large NR BW | Qualcomm Incorporated | noted |  |  |
| R4-2009629 | Views on FR2 FWA UE with maximum TRP of 23dBm | MediaTek Beijing Inc. | noted |  |  |
| R4-2009630 | FR1 PC3 Intra-band Contiguous ULCA AMPR | Qualcomm Incorporated | noted |  |  |
| R4-2009631 | FR1 Intra-band Non-contiguous ULCA MPR | Qualcomm Incorporated | noted |  |  |
| R4-2009632 | CR to 38101-1 on introducing new SUL band n96 | Huawei, HiSilicon | withdrawn |  |  |
| R4-2009633 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 38.101-1 | CMCC | revised |  | R4-2011803 |
| R4-2009634 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 38.104 | CMCC | revised |  | R4-2011804 |
| R4-2009635 | Introduction of 1880-1920MHz SUL band into Rel-16 TS 36.104 | CMCC | revised |  | R4-2011805 |
| R4-2009636 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 36.141 | CMCC | revised |  | R4-2011806 |
| R4-2009637 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 37.104 | CMCC | revised |  | R4-2011807 |
| R4-2009638 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 37.105 | CMCC | revised |  | R4-2011808 |
| R4-2009639 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 37.141 | CMCC | revised |  | R4-2011809 |
| R4-2009640 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 37.145-1 | CMCC | revised |  | R4-2011810 |
| R4-2009641 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 37.145-2 | CMCC | revised |  | R4-2011811 |
| R4-2009642 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 38.141-1 | CMCC | revised |  | R4-2011812 |
| R4-2009643 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 38.141-2 | CMCC | revised |  | R4-2011813 |
| R4-2009644 | introduction of 2300-2400MHz SUL band into Rel-17 TS 38.101-1 | CMCC | revised |  | R4-2011814 |
| R4-2009645 | Introduction of 2300-2400MHz SUL band into Rel-17 TS 38.104 | CMCC | revised |  | R4-2011815 |
| R4-2009646 | Introduction of 2300-2400MHz SUL band into Rel-16 TS 36.104 | CMCC | not pursued |  |  |
| R4-2009647 | Introduction of 2300-2400MHz SUL band into Rel-17 TS 36.141 | CMCC | not pursued |  |  |
| R4-2009648 | Introduction of 2300-2400MHz SUL band into Rel-17 TS 37.104 | CMCC | not pursued |  |  |
| R4-2009649 | Introduction of 2300-2400MHz SUL band into Rel-17 TS 37.105 | CMCC | not pursued |  |  |
| R4-2009650 | Introduction of 2300-2400MHz SUL band into Rel-17 TS 37.141 | CMCC | not pursued |  |  |
| R4-2009651 | Introduction of 2300-2400MHz SUL band into Rel-17 TS 37.145-1 | CMCC | not pursued |  |  |
| R4-2009652 | Introduction of 2300-2400MHz SUL band into Rel-17 TS 37.145-2 | CMCC | not pursued |  |  |
| R4-2009653 | Introduction of 2300-2400MHz SUL band into Rel-17 TS 38.141-1 | CMCC | not pursued |  |  |
| R4-2009654 | Introduction of 2300-2400MHz SUL band into Rel-17 TS 38.141-2 | CMCC | not pursued |  |  |
| R4-2009655 | Clarification of assumption on EVM measurement for UL-MIMO | Anritsu Corporation | noted |  |  |
| R4-2009656 | NR SCC UL power drop behaviour with EN-DC UE in FR2 | Anritsu Corporation | noted |  |  |
| R4-2009657 | CR on Minimum output power and Off power MBW definition in FR2 | Anritsu Corporation | agreed |  |  |
| R4-2009658 | CR on Minimum output power and Off power MBW definition in FR2 | Anritsu Corporation | agreed |  |  |
| R4-2009659 | Correction to a description of PRB for in-band emission with CA in FR2 | Anritsu Corporation | not pursued |  |  |
| R4-2009660 | Correction to a description of PRB for in-band emission with CA in FR2 | Anritsu Corporation | withdrawn |  |  |
| R4-2009661 | Correction to in-band emissions for intra-band contiguous EN-DC | Anritsu Corporation | agreed |  |  |
| R4-2009662 | Correction to in-band emissions for intra-band contiguous EN-DC | Anritsu Corporation | agreed |  |  |
| R4-2009663 | Testability issue with OoBB for FR1 EN-DC UE (3) | Anritsu Corporation | noted |  |  |
| R4-2009664 | CR to 7.3B.2.3 BW, SCS and UL RB condition extension | Anritsu Corporation | not pursued |  |  |
| R4-2009665 | CR to 7.3B.2.3 BW, SCS and UL RB condition extension | Anritsu Corporation | withdrawn |  |  |
| R4-2009666 | Correction to ASEM for NS\_27 | Anritsu Corporation | revised |  | R4-2011771 |
| R4-2009667 | Proposal on new Rel-17 Basket: New WID on Dual Connectivity (DC) of x bands (x=2,3,4) LTE inter-band CA (xDL/1UL) and 1 NR FR1 band (1DL/1UL) and 1 NR FR2 band (1DL/1UL) | Samsung | not treated |  |  |
| R4-2009668 | Add UE Beam assumption for RRM Test cases in A.7.5 Rel-15 | Samsung | agreed |  |  |
| R4-2009669 | Add UE Beam assumption for RRM Test cases in A.7.5 Rel-16 | Samsung | agreed |  |  |
| R4-2009670 | Remaining issues on RLM requirement for IAB-MT | Samsung | noted |  |  |
| R4-2009671 | UE Rx-Tx measurements | ZTE Corporation | noted |  |  |
| R4-2009672 | gNB requirements for NR positioning | ZTE Corporation | noted |  |  |
| R4-2009673 | Measurement period for PRS-RSTD | ZTE Corporation | noted |  |  |
| R4-2009674 | New gap patterns for PRS measurements | ZTE Corporation | noted |  |  |
| R4-2009675 | TCI state switching under NR-U | ZTE Corporation | noted |  |  |
| R4-2009676 | Discussion on RLM in NR-U | ZTE Corporation | noted |  |  |
| R4-2009677 | On BWP switch in NR-U | ZTE Corporation | noted |  |  |
| R4-2009678 | Pending issues on cell re-selection under NR-U | ZTE Corporation | noted |  |  |
| R4-2009679 | on RLM requirements for IAB-MT | ZTE Corporation | revised |  | R4-2012234 |
| R4-2009680 | transmit timing requirements of IAB-MTs in CA scenarios | ZTE Corporation | noted |  |  |
| R4-2009681 | Discussion on applicable timing for the PL RS activated by MAC-CE | ZTE Corporation | noted |  |  |
| R4-2009682 | [CR] Applicable timing for the PL RS activated by MAC-CE | ZTE Corporation | merged |  |  |
| R4-2009683 | Work split for 2-step RACH performance part | ZTE Corporation | noted |  |  |
| R4-2009684 | [draftCR] Test cases for 2-step RACH (Random access) | ZTE Corporation | postponed |  | R4-2012185 |
| R4-2009685 | Test cases for 2-step RACH (Random access) | ZTE Corporation | noted |  |  |
| R4-2009686 | Maintenance CR for 2-step RA | ZTE Corporation | revised |  | R4-2012184 |
| R4-2009687 | TP for CA\_n1-n77-n257 3DL/1UL for TR38.717-03-01 | NTT DOCOMO, INC. | approved |  |  |
| R4-2009688 | TP for CA\_n1-n78-n257 3DL/1DL for TR38.717-03-01 | NTT DOCOMO, INC. | approved |  |  |
| R4-2009689 | TP for CA\_n1-n79-n257 3UL/1DL for TR38.717-03-01 | NTT DOCOMO, INC. | approved |  |  |
| R4-2009690 | TP for CA\_n1-n77-n257 3UL/2DL for TR38.717-03-02 | NTT DOCOMO, INC. | approved |  |  |
| R4-2009691 | TP for CA\_n1-n78-n257 3UL/2DL for TR38.717-03-02 | NTT DOCOMO, INC. | approved |  |  |
| R4-2009692 | TP for CA\_n1-n79-n257 3UL/2DL for TR38.717-03-02 | NTT DOCOMO, INC. | approved |  |  |
| R4-2009693 | TP for CA\_n77-n79-n257 3UL/2DL for TR38.717-03-02 | NTT DOCOMO, INC. | approved |  |  |
| R4-2009694 | TP for CA\_n78-n79-n257 3UL/2DL for TR38.717-03-02 | NTT DOCOMO, INC. | approved |  |  |
| R4-2009695 | Views on NR PUSCH for high speed | NTT DOCOMO, INC. | noted |  |  |
| R4-2009696 | CR for TS 38.141-1: Updates of NR PUSCH performance requirements for HST | NTT DOCOMO, INC. | revised |  | R4-2012677 |
| R4-2009697 | CR for TS 38.141-1: Updates of NR PUSCH performance Annex including FRC and channel model for HST | NTT DOCOMO, INC. | revised |  | R4-2012678 |
| R4-2009698 | Views on NR PRACH for high speed | NTT DOCOMO, INC. | noted |  |  |
| R4-2009699 | Views on NR PUSCH for UL timing adjustment | NTT DOCOMO, INC. | noted |  |  |
| R4-2009700 | Views on NR BS performance for ultra-low BLER | NTT DOCOMO, INC. | noted |  |  |
| R4-2009701 | Views on NR BS performance for high-reliability and low-latency | NTT DOCOMO, INC. | noted |  |  |
| R4-2009702 | Adding NR FDD non-contiguous Intra-band CA and FR1 3CC Inter-band CA into Release Independence | Dish Network | withdrawn |  |  |
| R4-2009703 | Adding NR FDD Intra-band CA and FR1 3CC Inter-band CA into Release Independence | Dish Network | withdrawn |  |  |
| R4-2009704 | Adding NR FDD Intra-band CA and FR1 3CC Inter-band CA into Release Independence | Dish Network | not pursued |  |  |
| R4-2009705 | Adding NR FDD Intra-band CA and FR1 3CC Inter-band CA into Release Independence | Dish Network | withdrawn |  |  |
| R4-2009706 | Views on new power class for FWA UE | Samsung | noted |  |  |
| R4-2009707 | CR to introduce 7.5 kHz UL shift for LTE/NR spectrum sharing in Band 38/n38 | VODAFONE Group Plc | revised |  | R4-2011826 |
| R4-2009708 | Discussion on spatial relation switch for uplink | NTT DOCOMO, INC. | noted |  |  |
| R4-2009709 | Discussion on inter-band CA requirement for FR2 | NTT DOCOMO, INC. | noted |  |  |
| R4-2009710 | TP for TR 36.717-03-01: CA\_3-8-41 | VODAFONE Group Plc | revised |  | R4-2011579 |
| R4-2009711 | TP for TR 36.717-03-01 CA\_3-20-38 | VODAFONE Group Plc | revised |  | R4-2011580 |
| R4-2009712 | TP for TR 36.717-03-01: CA\_3-40-41 | VODAFONE Group Plc | revised |  | R4-2011581 |
| R4-2009713 | TP for TR 36.717-04-01: CA\_1-3-20-38 | VODAFONE Group Plc | revised |  | R4-2011582 |
| R4-2009714 | TP for TR 37.717-21-11: DC\_1-32\_n28 | VODAFONE Group Plc | revised |  | R4-2011584 |
| R4-2009715 | TP for TR 37.717-21-11: DC\_7-32\_n28 | VODAFONE Group Plc | revised |  | R4-2011585 |
| R4-2009716 | TP for TR 37.717-21-11: DC\_7-32\_n78 | VODAFONE Group Plc | approved |  |  |
| R4-2009717 | TP for TR 37.717-21-11: DC\_20-32\_n28 | VODAFONE Group Plc | revised |  | R4-2011586 |
| R4-2009718 | Introduction of UE PC2 for NR band n40 | Reliance Jio | agreed |  |  |
| R4-2009719 | Discussion on completion of EN-DC PC2 FDD+TDD HPUE | China Unicom | noted |  |  |
| R4-2009720 | Draft CR on introducing CA\_n1A-n78A | China Unicom | endorsed |  |  |
| R4-2009721 | Discussion on PDCCH-WUS requirements | Intel Corporation | noted |  |  |
| R4-2009722 | Discussion on UE demodulation requirements for Ultra-low BLER | Intel Corporation | noted |  |  |
| R4-2009723 | Discussion on CSI requirements for Ultra-low BLER | Intel Corporation | noted |  |  |
| R4-2009724 | Discussion on BS requirements for Ultra-low BLER | Intel Corporation | noted |  |  |
| R4-2009725 | Discussion on UE demodulation requirements for URLLC | Intel Corporation | revised |  | R4-2012564 |
| R4-2009726 | Discussion on CSI requirements for URLLC | Intel Corporation | noted |  |  |
| R4-2009727 | Discussion on BS demodulation requirements for URLLC | Intel Corporation | noted |  |  |
| R4-2009728 | Discussion on UE demodulation requirements for FR2 DL 256QAM | Intel Corporation | noted |  |  |
| R4-2009729 | Discussion on SDR requirements for FR2 DL 256QAM | Intel Corporation | noted |  |  |
| R4-2009730 | Discussion on NR CA UE demodulation requirements | Intel Corporation | noted |  |  |
| R4-2009731 | Draft CR on FRC for Normal NR CA demodulation requirements | Intel Corporation | revised |  | R4-2012696 |
| R4-2009732 | Simulation results for PMI Type I | Intel Corporation | noted |  |  |
| R4-2009733 | Discussion on FR1 CA and EN-DC power imbalance requirements | Intel Corporation | noted |  |  |
| R4-2009734 | Views on NR UE demodulation requirements for DPS transmission scheme | Intel Corporation | noted |  |  |
| R4-2009735 | Simulation results for HST-SFN | Intel Corporation | noted |  |  |
| R4-2009736 | Simulation results for HST Single Tap | Intel Corporation | noted |  |  |
| R4-2009737 | Simulation results for HST multi-path fading | Intel Corporation | noted |  |  |
| R4-2009738 | Views on UE demodulation requirements for NR eMIMO | Intel Corporation | noted |  |  |
| R4-2009739 | Views on BS demodulation requirements for NR 2-Step RACH | Intel Corporation | noted |  |  |
| R4-2009740 | Further discussion on new gap patterns for NR Pos measurement | Intel Corporation | noted |  |  |
| R4-2009741 | Further discussion on NR PRS RSTD requirements | Intel Corporation | noted |  |  |
| R4-2009742 | Further discussion on PRS RSRP measurement requirements for NR positioning | Intel Corporation | noted |  |  |
| R4-2009743 | Discussion on UE RX-TX time difference measurement requirements for NR positioning | Intel Corporation | noted |  |  |
| R4-2009744 | CR to TS 38.133: PRS RSTD requirements | Intel Corporation | revised |  | R4-2012129 |
| R4-2009745 | Discussion of RRM requirements for BWP switching on multiple CCs | Intel Corporation | noted |  |  |
| R4-2009746 | Discussion about CSI-RS L3 measurement capability and requirements | Intel Corporation | noted |  |  |
| R4-2009747 | Discussion about CSI-RS L3 measurement bandwidth and synchronization | Intel Corporation | noted |  |  |
| R4-2009748 | Intra-band Inter-frequency sync DAPS handover test in SA for FR1 | Intel Corporation | postponed |  |  |
| R4-2009749 | Intra-band Inter-frequency async DAPS handover test in SA for FR1 | Intel Corporation | postponed |  |  |
| R4-2009750 | Motivation to introduce new R17 WI on NR MG enhancements | Intel Corporation, Apple | not treated |  |  |
| R4-2009751 | New WI Proposal on NR MG enhancements | Intel Corporation, Apple | not treated |  |  |
| R4-2009752 | Discussion on requirements for spatial relation info switch | Intel Corporation | noted |  |  |
| R4-2009753 | CC allocation in intra-band non-cont. DL CA | Intel Corporation | noted |  |  |
| R4-2009754 | CR to 38.101-2 (Rel-16) intra-band non-cont. DL CA | Intel Corporation | revised |  | R4-2011739 |
| R4-2009755 | FR2 inter-band DL CA | Intel Corporation | noted |  |  |
| R4-2009756 | On transparent transmit diversity | Intel Corporation | noted |  |  |
| R4-2009757 | On phase noise and PA models in 52.6 - 71 GHz | Intel Corporation | noted |  |  |
| R4-2009758 | On numerology and channel bandwidth in 52.6 - 71 GHz | Intel Corporation | noted |  |  |
| R4-2009759 | Views on Rel-16 UE feature list | Intel Corporation | noted |  |  |
| R4-2009760 | Discussion on the remaining issues on CSI-RS measurement configuration | Xiaomi | noted |  |  |
| R4-2009761 | Discussion on the remaining issues for UE measurement capabilities requirements | Xiaomi | noted |  |  |
| R4-2009762 | Discussion on the remaining issues for cell identification requirement | Xiaomi | noted |  |  |
| R4-2009763 | CR on capabilities for support of event triggering and reporting criteria | Xiaomi | revised |  | R4-2012175 |
| R4-2009764 | CR on measurement relaxation requirements for UEs under power saving mode | Xiaomi | postponed |  |  |
| R4-2009765 | Discussion on test cases for power saving RRM | Xiaomi | noted |  |  |
| R4-2009766 | Discussion on the remaining issues on MRTD requirement for FR2 inter-band CA | Xiaomi | noted |  |  |
| R4-2009767 | CR on MRTD requirement for FR2 inter-band CA | Xiaomi | postponed |  |  |
| R4-2009768 | Discussion on test cases for NR V2X RRM | Xiaomi | noted |  |  |
| R4-2009769 | Discussion on the remaining issues for BWP switching on multiple CCs | Xiaomi Technology | noted |  |  |
| R4-2009770 | TP for TR 37.717-31-11: DC\_1-7-32\_n28 | VODAFONE Group Plc | approved |  |  |
| R4-2009771 | TP for TR 37.717-31-11: DC\_1-7-32\_n78 | VODAFONE Group Plc | approved |  |  |
| R4-2009772 | TP for TR 37.717-31-11: DC\_1-20-32\_n28 | VODAFONE Group Plc | approved |  |  |
| R4-2009773 | Beam sweeping and test time reduction in FR2 | Fraunhofer HHI, Fraunhofer IIS | not treated |  |  |
| R4-2009774 | TP for TR 37.717-31-11: DC\_1-20-32\_n78 | VODAFONE Group Plc | approved |  |  |
| R4-2009775 | TP for TR 37.717-31-11: DC\_3-7-32\_n78 | VODAFONE Group Plc | approved |  |  |
| R4-2009776 | TP for TR 37.717-31-11: DC\_3-20-32\_n78 | VODAFONE Group Plc | approved |  | - |
| R4-2009777 | TP for TR 37.717-31-11: DC\_7-20-32\_n1 | VODAFONE Group Plc | approved |  | - |
| R4-2009778 | TP for TR 37.717-31-11: DC\_7-20-32\_n28 | VODAFONE Group Plc | approved |  |  |
| R4-2009779 | Discussion on out of band CLTA maximum height | CATT | noted |  |  |
| R4-2009780 | CR for TS 38.141-2: Correction on half-power vertical beam width for the out of band CLTA | CATT | not pursued |  |  |
| R4-2009781 | CR for 38.141-2: correction on half-power vertical beam width for the out of band CLTA | CATT | withdrawn |  |  |
| R4-2009782 | Summary of ideal and impairment results for NR HST demodulation requirements | CATT | revised |  | R4-2012749 |
| R4-2009783 | Simulation results for NR PUSCH UL timing adjustment demodulation requirement | CATT | noted |  |  |
| R4-2009784 | Discussion on the remaining issues of NR HST PUSCH UL TA | CATT | noted |  |  |
| R4-2009785 | CR for TS 38.141-2: Introduction of NR PUSCH UL timing adjustment performance requirement for scenario Z | CATT | agreed |  |  |
| R4-2009786 | CR for 38.141-2: appendix for NR PUSCH UL timing adjustment for scenario Z | CATT | withdrawn |  |  |
| R4-2009787 | CR for TS 38.141-2: Add maximum test system uncertainty for NR HST PUSCH with single port and AWGN | CATT | agreed |  |  |
| R4-2009788 | CR for TS 38.141-1: Add maximum test system uncertainty for NR HST PUSCH with single port and AWGN | CATT | agreed |  |  |
| R4-2009789 | TP for TR 38.809: IAB-MT Transmit signal quality | CATT | revised |  | R4-2012623 |
| R4-2009790 | TP for TS 38.174: IAB-MT Transmit signal quality | CATT | revised |  | R4-2012622 |
| R4-2009791 | Discussion on IAB-MT feature list remaining issues | CATT | noted |  |  |
| R4-2009792 | Discussion on IAB-MT power related issues | CATT | noted |  |  |
| R4-2009793 | Discussion on IAB-MT unwanted emissions | CATT | noted |  |  |
| R4-2009794 | Discussion on IAB-MT REFSENS FRC | CATT | noted |  |  |
| R4-2009795 | Discussion on LA IAB-MT ACS and IBB | CATT | noted |  |  |
| R4-2009796 | Discussion on SAR solution for interband PC2 2UL CA | CATT | noted |  |  |
| R4-2009797 | Discussion on SAR solution for SUL PC2 | CATT | noted |  |  |
| R4-2009798 | Discussion on numerology and CBW for above 52.6 GHz | CATT | noted |  |  |
| R4-2009799 | CR for R15 38.101-2: Clarification of the order of sub-blocks for intra-band non-contiguous CA | CATT | not pursued |  |  |
| R4-2009800 | CR for R15 38.101-2: Correction of in-band emission tables | CATT | revised |  | R4-2011690 |
| R4-2009801 | CR for R16 38.101-2: Correction of in-band emission tables | CATT | agreed |  |  |
| R4-2009802 | CR for R16 38.101-2: Correction of Table 5.4.3.3-1 | CATT | withdrawn |  |  |
| R4-2009803 | CR for TS38.133 Rel-16, Corrction for SCell activation delay requirement | CATT | agreed |  |  |
| R4-2009804 | CR for TS38.133 Rel-15, Correction for RRM core requirements | CATT | agreed |  |  |
| R4-2009805 | CR for TS38.133 Rel-16, Correction for RRM core requirements | CATT | agreed |  |  |
| R4-2009806 | CR for TS38.133 Rel-15, Correction for test cases of BWP switching | CATT | revised |  | R4-2012071 |
| R4-2009807 | CR for TS38.133 Rel-16, Correction for test cases of BWP switching | CATT | agreed |  |  |
| R4-2009808 | Discussion on RRM requirements for power saving | CATT | noted |  |  |
| R4-2009809 | CR for RRM requirements for power saving | CATT | postponed |  |  |
| R4-2009810 | Discussion on RRM Test cases for power saving | CATT | noted |  |  |
| R4-2009811 | Demodulation test for PDCCH-WUS | CATT | noted |  |  |
| R4-2009812 | TR 38.717-03-01 on Rel-17 NR inter-band Carrier Aggregation (CA) for | CATT | agreed |  |  |
| R4-2009813 | Draft big CR on Introducing NR inter-band CA for 3DL Bands and 1UL band for 38.101-1 | CATT | not concluded |  |  |
| R4-2009814 | Draft big CR on Introducing NR inter-band CA for 3DL Bands and 1UL band for 38.101-3 | CATT | not concluded |  |  |
| R4-2009815 | Revised WID on Rel-17 NR inter-band CA of 3DL bands and 1UL band | CATT | not concluded |  |  |
| R4-2009816 | UE parameters for frequency ranges 6.425-7.125GHz and 10.0-10.5GHz | CATT | noted |  |  |
| R4-2009817 | BS parameters for frequency ranges 6.425-7.125GHz and 10.0-10.5GHz | CATT | noted |  |  |
| R4-2009818 | Simulation results for 6425-7125MHz and 10-10.5GHz-downlink | CATT | noted |  |  |
| R4-2009819 | Simulation results for 6425-7125MHz and 10-10.5GHz-uplink | CATT | noted |  |  |
| R4-2009820 | Remaining issue on antenna characteristics | CATT | noted |  |  |
| R4-2009821 | Motivation for NR RRM further enhancement in Rel-17 | CATT | not treated |  |  |
| R4-2009822 | New WID on NR RRM further enhancement in Rel-17 | CATT | not treated |  |  |
| R4-2009823 | CR for TS 38.101-1, REFSENS requirements for NR V2X band n38 | CATT | not pursued |  |  |
| R4-2009824 | CR for TS 38.101-3, Time mask for TDM operation between NR V2X and LTE V2X | CATT | not pursued |  |  |
| R4-2009825 | CR for TS 38.104, Introduce BS impact of NR V2X | CATT | revised |  | R4-2011916 |
| R4-2009826 | REFSENS requirements for NR V2X band n38 | CATT | not pursued |  |  |
| R4-2009827 | On BS impact of NR V2X | CATT | noted |  |  |
| R4-2009828 | On general requirement and additional requirement for NR V2X | CATT | noted |  |  |
| R4-2009829 | Switching period for NR V2X in ITS band | CATT | revised |  | R4-2011716 |
| R4-2009830 | On PSBCH demodulation performance requirement for NR V2X | CATT | noted |  |  |
| R4-2009831 | On NR V2X demodulation performance requirements | CATT | noted |  |  |
| R4-2009832 | Revised basket WID for V2X band combination | CATT | endorsed |  |  |
| R4-2009833 | TR 37 8xx skeleton for V2X new band combinations | CATT | revised |  | R4-2011795 |
| R4-2009834 | TP on harmonics and IMD analysis for V2X\_(n)39A\_(n)47A con-current operation | CATT | revised |  | R4-2011796 |
| R4-2009835 | Discussion on remaining issues of NR HST PUSCH | CATT | noted |  |  |
| R4-2009836 | Discussion on remaining issues of NR HST PRACH | CATT | noted |  |  |
| R4-2009837 | CR for TS 38.141-1, Introduction of high speed support declaration for NR HST PRACH | CATT | revised |  | R4-2012682 |
| R4-2009838 | CR for TS 38.141-2, Introduction of high speed support declaration for NR HST | CATT | revised |  | R4-2012683 |
| R4-2009839 | Discussion on CSI-RS based measurement bandwidth | CATT | noted |  |  |
| R4-2009840 | Discussion on CSI-RS based intra and inter-frequency measurement definition | CATT | noted |  |  |
| R4-2009841 | Discussion on CSI-RS based UE measurement capabilities | CATT | noted |  |  |
| R4-2009842 | Discussion on CSI-RS based intra and inter measurement requirements | CATT | noted |  |  |
| R4-2009843 | UE feature on support of RRM requirements for CSI-RS based L3 measurement | CATT | noted |  |  |
| R4-2009844 | CR on CSI-RS based intra-frequency measurement requirement (Introduction, requirement applicability and number of cell and beams) | CATT | revised |  | R4-2012170 |
| R4-2009845 | Discussion on PRS RSTD measurement requirements | CATT | noted |  |  |
| R4-2009846 | Discussion on PRS-RSRP measurement requirements | CATT | noted |  |  |
| R4-2009847 | Discussion on UE Rx-Tx time difference measurement requirements | CATT | noted |  |  |
| R4-2009848 | Link level simulation results for UE RX-Tx time difference | CATT | noted |  |  |
| R4-2009849 | Discussion on new measurement gap patterns for positioning measurements | CATT | noted |  |  |
| R4-2009850 | Discussion on gNB measurement requirements | CATT | noted |  |  |
| R4-2009851 | On NR Rel-16 HST BS demodulation PUSCH requirements and simulation results | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2009852 | CR for 38.104: HST PUSCH demodulation requirements | Nokia, Nokia Shanghai Bell | revised |  | R4-2012679 |
| R4-2009853 | CR for 38.104: HST PUSCH demodulation FRC and channel model annexes | Nokia, Nokia Shanghai Bell | revised |  | R4-2012680 |
| R4-2009854 | On NR Rel-16 HST BS demodulation PRACH requirements | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2009855 | On NR Rel-16 HST BS demodulation UL timing adjustment requirements and simulation results | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2009856 | On NR Rel-16 ultra low BLER BS demodulation requirements and simulation results | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2009857 | On NR Rel-16 high reliability and low latency BS demodulation requirements and simulation results | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2009858 | On PMI reporting test case for eType II codebooks | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2009859 | CR to introduce 7.5 kHz UL shift for LTE/NR spectrum sharing in Band 38/n38 (Rel-15) | VODAFONE Group Plc | revised |  | R4-2011825 |
| R4-2009860 | TP for TR 37.717-41-11: DC\_1-7-20-32\_n28 | VODAFONE Group Plc | approved |  |  |
| R4-2009861 | TP for TR 37.717-41-11: DC\_1-7-20-32\_n78 | VODAFONE Group Plc | approved |  |  |
| R4-2009862 | TP for TR 37.717-41-11: DC\_3-7-20-32\_n78 | VODAFONE Group Plc | approved |  |  |
| R4-2009863 | RRM requirements for inter-band CA in FR2 | Intel Corporation | noted |  |  |
| R4-2009864 | CR on RRM requirements for BWP switching delay on multiple CCs | Intel Corporation | merged |  |  |
| R4-2009865 | CR on uplink spatial relation switch delay (section 8.12) | Intel Corporation | revised |  | R4-2012272 |
| R4-2009866 | Remaining issues on cell reselection in NR-U | Qualcomm Incorporated | noted |  |  |
| R4-2009867 | On Scell activation and deactivation requirements in NR-U | Qualcomm Incorporated | noted |  |  |
| R4-2009868 | On active TCI state switching in NR-U | Qualcomm Incorporated | noted |  |  |
| R4-2009869 | Remaining issues in UL BWP switching in NR-U | Qualcomm Incorporated | noted |  |  |
| R4-2009870 | On RLM requirements in NR-U | Qualcomm Incorporated | noted |  |  |
| R4-2009871 | Remaining issues on measurement requirements in NR-U | Qualcomm Incorporated | noted |  |  |
| R4-2009872 | On performance tests of RRM features in R16 MTC | Qualcomm Incorporated | noted |  |  |
| R4-2009873 | On performance tests of RRM features in R16 NB-IoT | Qualcomm Incorporated | noted |  |  |
| R4-2009874 | On PRS-RSTD measurements for NR positioning | Qualcomm Incorporated | noted |  |  |
| R4-2009875 | On PRS-RSRP measurements for NR positioning | Qualcomm Incorporated | noted |  |  |
| R4-2009876 | On UE Rx-Tx time difference measurement for NR positioning | Qualcomm Incorporated | noted |  |  |
| R4-2009877 | Link-level simulation assumptions for RSTD and UE Rx-Tx time difference measurements | Qualcomm Incorporated | noted |  |  |
| R4-2009878 | on gNB requirements for NR positioning | Qualcomm Incorporated | noted |  |  |
| R4-2009879 | On new MG patterns for NR positioning | Qualcomm Incorporated | noted |  |  |
| R4-2009880 | Introduction of SCell activation/deactivation delay requirements for SCells operating with CCA | Qualcomm Incorporated | revised |  | R4-2012088 |
| R4-2009881 | Revision of CSSF within gap to include NR positioning measurements with gap sharing | Qualcomm Incorporated | revised |  | R4-2012137 |
| R4-2009882 | Introduction of new MG patterns for NR positioning | Qualcomm Incorporated | revised |  | R4-2012138 |
| R4-2009883 | Introduction of UE Rx-Tx time difference measurement requirements for NR positioning | Qualcomm Incorporated | revised |  | R4-2012130 |
| R4-2009884 | Introduction of intra-frequency sync and async DAPS HO test cases in FR1 | Qualcomm Incorporated | postponed |  |  |
| R4-2009885 | Introduction of intra-frequency sync and async LTE DAPS HO test cases | Qualcomm Incorporated | postponed |  | - |
| R4-2009886 | Corrections to RSS based RSRP measruement requriements in R16 eMTC | Qualcomm Incorporated | not pursued |  |  |
| R4-2009887 | CR on TS38.133 for handover test cases | MediaTek inc., Intel | revised |  | R4-2012072 |
| R4-2009888 | CR on TS38.133 for handover test cases | MediaTek inc., Intel | agreed |  |  |
| R4-2009889 | CR on TS38.133 for introducing the PDSCH RMC configuration in cell re-selection test cases | MediaTek inc. | agreed |  |  |
| R4-2009890 | CR on TS38.133 for introducing the PDSCH RMC configuration in cell re-selection test cases | MediaTek inc. | agreed |  |  |
| R4-2009891 | CR on TS36.133 for measurement capability of IDLE mode CA measurement (Section 4.9.2.2) | MediaTek inc. | postponed |  | - |
| R4-2009892 | CR on TS36.133 for measurement capability of IDLE mode CA measurement | MediaTek inc. | withdrawn |  |  |
| R4-2009893 | CR on TS38.133 for measurement capability of IDLE mode DC/CA measurement (Section 4.2.2.1, 4.4.2) | MediaTek inc. | postponed |  |  |
| R4-2009894 | Discussion on LTE CRS based and NR SSB based measurement in NR IDLE/INACTIVE mode | MediaTek inc. | noted |  |  |
| R4-2009895 | Discussion on dual active protocol stack handover | MediaTek inc. | noted |  |  |
| R4-2009896 | CR on TS38.133 for dual active protocol stack handover (Section 6.1.3) | MediaTek inc. | withdrawn |  |  |
| R4-2009897 | Discussion on dormancy Scell | MediaTek inc. | noted |  |  |
| R4-2009898 | Discussion on RRM measurement relaxation for RRC\_IDLE/INACTIVE | MediaTek inc. | noted |  |  |
| R4-2009899 | CR on TS38.133 for inter-frequency measurement requirement without gap (Section 9.1.5, 9.3.1) | MediaTek inc. | not pursued |  |  |
| R4-2009900 | CR on TS38.133 for intra-frequency measurement definition (Section 9.2.1) | MediaTek inc. | agreed |  |  |
| R4-2009901 | Co-existence challenges with NR-U 100MHz channel bandwidth and other technologies | Charter Communications Inc. | noted |  |  |
| R4-2009902 | CR on SCell deactivation requirement for R15 | Apple | merged |  |  |
| R4-2009903 | CR on SCell deactivation requirement for R16 | Apple | merged |  |  |
| R4-2009904 | CR on FR2 measurement capability for R15 | Apple | revised |  | R4-2012066 |
| R4-2009905 | CR on FR2 measurement capability for R16 | Apple | agreed |  |  |
| R4-2009906 | Further discussion on R15 BWP switching delay requirement | Apple | noted |  |  |
| R4-2009907 | Draft CR on UE behavior for UE specific CBW change | Apple | not pursued |  |  |
| R4-2009908 | On MO merging for NR-U | Apple | noted |  |  |
| R4-2009909 | CR on UE measurement capability of NR-U for R16 | Apple | agreed |  |  |
| R4-2009910 | Further discussion on serving cell evaluation in RRC connected mode for NR-U | Apple | noted |  |  |
| R4-2009911 | Draft CR on serving cell evaluation in RRC connected mode for NR-U | Apple | noted |  |  |
| R4-2009912 | On remaining issues for RLM/BFD OOS evaluation in NR-U | Apple | noted |  |  |
| R4-2009913 | On new positioning measurement gaps | Apple | noted |  |  |
| R4-2009914 | On positioning SRS transmission in CDRX | Apple | noted |  |  |
| R4-2009915 | Test case list for multiple SCell activation for R16 eRRM | Apple | noted |  |  |
| R4-2009916 | On RRM requirement based on dual DRX for FR1+FR2 CA | Apple | noted |  |  |
| R4-2009917 | CR on RRM requirement based on dual DRX for FR1+FR2 CA | Apple | revised |  | R4-2012267 |
| R4-2009918 | Motivation paper on REL-17 RRM further enhancement | Apple, Intel | not treated |  |  |
| R4-2009919 | WID of REL-17 NR RRM further enhancement | Apple, Intel | not treated |  |  |
| R4-2009920 | Definition of NR-U Demod Performance Tests | Qualcomm Incorporated | noted |  |  |
| R4-2009921 | Key technology considerations relating to 52-71GHz specification | Ericsson Hungary Ltd | noted |  |  |
| R4-2009922 | Update NR Frequency Band Groups to include Band n30 | AT&T | agreed |  |  |
| R4-2009923 | Update NR Frequency Band Groups to include Band n14 | AT&T | agreed |  |  |
| R4-2009924 | TP for TR 37.717-21-11 for DC\_2A-4A\_n28A | Huawei, HiSilicon | approved |  |  |
| R4-2009925 | TP for TR 37.717-21-11 for DC\_2A-7A\_n28A | Huawei, HiSilicon | approved |  |  |
| R4-2009926 | TP for TR 37.717-21-11 for DC\_2A-66A\_n28A | Huawei, HiSilicon | approved |  |  |
| R4-2009927 | TP for TR 37.717-21-11 for DC\_4A-7A\_n28A | Huawei, HiSilicon | approved |  |  |
| R4-2009928 | TP for TR 37.717-21-11 for DC\_5-7\_n66 | Huawei, HiSilicon | approved |  |  |
| R4-2009929 | TP for TR 37.717-21-11 for DC\_7A-66A\_n28A | Huawei, HiSilicon | approved |  |  |
| R4-2009930 | TP for TR 37.717-11-11 for DC\_2A\_n28A | Huawei, HiSilicon | noted |  | - |
| R4-2009931 | TP for 37.717-11-11 for DC\_28A\_n2A | Huawei, HiSilicon | noted |  | - |
| R4-2009932 | Further considerations on the uplink duty cycle enhancements for the MPE scenario | Apple Inc. | noted |  |  |
| R4-2009933 | Remaining issues on NR-U wideband operation | Apple Inc. | noted |  |  |
| R4-2009934 | NR-U CA BW Classes | Apple Inc. | noted |  |  |
| R4-2009935 | LTE/NR spectrum sharing in band 48/n48 frequency range | Apple Inc., Comcast | revised |  | R4-2011532 |
| R4-2009936 | Introduction of LTE/NR spectrum sharing in band 48/n48 frequency range | Apple Inc., Comcast | revised |  | R4-2011925 |
| R4-2009937 | Introduction of LTE/NR spectrum sharing in band 48/n48 frequency range | Apple Inc., Comcast | revised |  | R4-2011926 |
| R4-2009938 | Coexistence cleanup for 36101 Rel16 | Apple Inc. | revised |  | R4-2011697 |
| R4-2009939 | Coexistence cleanup for 38101-1 Rel16 | Apple Inc. | agreed |  |  |
| R4-2009940 | Coexistence cleanup for 38101-3 Rel16 | Apple Inc. | agreed |  |  |
| R4-2009941 | On transparent TxD | Apple Inc. | noted |  |  |
| R4-2009942 | NR-U MPR for PC5 | Apple Inc. | noted |  |  |
| R4-2009943 | PC1.5 UL MIMO MPR | Apple Inc. | noted |  |  |
| R4-2009944 | Enabling LTE/NR spectrum sharing with 4-port LTE transmissions | Apple Inc, Reliance Jio | noted |  |  |
| R4-2009945 | Initial considerations on the numerology and channel bandwidth sizes for 60GHz frequency range | Apple Inc. | noted |  |  |
| R4-2009946 | Initial considerations on 60 GHz PN and PA models | Apple Inc. | noted |  |  |
| R4-2009947 | CR Editorial cleanup of band combination tables for 38101-1 Rel16 | Apple Inc. | agreed |  |  |
| R4-2009948 | CR Editorial cleanup of band combination tables for 38101-3 Rel16 | Apple Inc. | agreed |  |  |
| R4-2009949 | Correction for REL16 FR2 contiguous intra-band CA configuration table | Apple Inc. | revised |  | R4-2011776 |
| R4-2009950 | Simplification of band combination tables in 38.101 | Apple Inc. | noted |  |  |
| R4-2009951 | CR for simplification of band combination tables for 38101-3 Rel16 with Excel | Apple Inc. | not pursued |  |  |
| R4-2009952 | Applicability of P-MPR to EN-DC PC2 | Apple Inc. | noted |  |  |
| R4-2009953 | WRC-19 resolutions and impact to NR bands | Apple Inc. | noted |  |  |
| R4-2009954 | CR to capture WRC-19 impact on NR bands in TR38.817-01 | Apple Inc. | revised |  | R4-2011689 |
| R4-2009955 | CR to capture WRC-19 impact on NR bands in TR38.817-01 Cat-A | Apple Inc. | agreed |  |  |
| R4-2009956 | Remaining issues with beam correspondence enhncements | Apple Inc. | noted |  |  |
| R4-2009957 | Preliminary views on the new 47 GHz band | Apple Inc. | noted |  |  |
| R4-2009958 | Views on Rel-17 non-spectrum RF enhancements | Apple Inc. | not treated |  |  |
| R4-2009959 | FR2 test method enhancement informal email discussion summary | Apple Inc. | noted |  |  |
| R4-2009960 | Remaining issues with the test methodology for high DL power and low UL power test cases | Apple Inc. | noted |  |  |
| R4-2009961 | Remaining issues with polarization basis mismatch | Apple Inc. | noted |  |  |
| R4-2009962 | Remaining issues with enhanced test methods for inter-band CA in FR2 | Apple Inc. | noted |  |  |
| R4-2009963 | Beam Management assumptions for inter-band CA | Apple Inc., Qualcomm Incorporated | noted |  |  |
| R4-2009964 | CR to 38.101-3 MSD due to UL harmonics and intermodulation interference | Apple Inc. | revised |  | R4-2011760 |
| R4-2009965 | CR to 38.101-3 MSD due to UL harmonics and intermodulation interference R16 | Apple Inc. | agreed |  |  |
| R4-2009966 | ACS requirement for NR-U | Apple Inc. | noted |  |  |
| R4-2009967 | On the criteria for selecting a proper CLTA | Ericsson | noted |  |  |
| R4-2009968 | CR to TS 38.141-2: Improvement of out-of-band CLTA characteristics | Ericsson | not pursued |  |  |
| R4-2009969 | CR to TS 38.141-2: Improvement of out-of-band CLTA characteristics | Ericsson | withdrawn |  |  |
| R4-2009970 | CR to TR 37.941: Clause 6 Measurement Types | Ericsson | revised |  | R4-2012699 |
| R4-2009971 | CR to TR 37.941: Clause 6.3.3 Angular alignment in TRP measurements | Ericsson | revised |  | R4-2012703 |
| R4-2009972 | CR to TR 37.941: Clause 6 Measurement Types | Ericsson | agreed |  |  |
| R4-2009973 | CR to TR 37.941: Clause 6.3.3 Angular alignment in TRP measurements | Ericsson | agreed |  |  |
| R4-2009974 | Overview of SI | Ericsson | noted |  |  |
| R4-2009975 | CR to correct protected band of intra-band EN-DC | KDDI Corporation | agreed |  |  |
| R4-2009976 | CR to correct protected band of intra-band EN-DC | KDDI Corporation | agreed |  |  |
| R4-2009977 | TP for TR 38.717-01-01: CA\_3DL\_n77(3A)\_1UL\_n77A | SoftBank Corp. | noted |  | - |
| R4-2009978 | TP for TR 37.717-11-11: DC\_42\_n3 | SoftBank Corp. | revised |  | R4-2011592 |
| R4-2009979 | Features for Performance Tests in 2-step RACH | Qualcomm | noted |  |  |
| R4-2009980 | Delay requirement for switching of multiple BWPs | Qualcomm | noted |  |  |
| R4-2009981 | Multi-TRP transmission related requirements | Qualcomm | noted |  |  |
| R4-2009982 | RRM requirements for PL-RS update | Qualcomm | noted |  |  |
| R4-2009983 | Requirements for L1-SINR estimation accuracy | Qualcomm | noted |  |  |
| R4-2009984 | MRTD/MTTD requirements in FR2 inter-band CA | Qualcomm | noted |  |  |
| R4-2009985 | Features for performance tests in power saving WI | Qualcomm | noted |  |  |
| R4-2009986 | RRM requirements with CBM and IBM in FR2 inter band CA | Qualcomm | noted |  |  |
| R4-2009987 | Spatial relation switch for uplink | Qualcomm | noted |  |  |
| R4-2009988 | General requirements in IAB networks | Qualcomm | revised |  | R4-2012614 |
| R4-2009989 | TP for IAB-MT classes | Qualcomm | noted |  |  |
| R4-2009990 | Discussion regarding RLM requirements of IAB-MTs | Qualcomm | noted |  |  |
| R4-2009991 | TP for remaining items of RRM requirements for IAB-MTs | Qualcomm | revised |  | R4-2012108 |
| R4-2009992 | TP for TR 37.717-21-11: EN-DC\_1-11\_n28 | SoftBank Corp. | approved |  |  |
| R4-2009993 | TP for TR 37.716-21-11: EN-DC\_3-11\_n28 | SoftBank Corp. | approved |  |  |
| R4-2009994 | TP for TR 37.717-21-11: EN-DC\_8-11\_n28 | SoftBank Corp. | approved |  |  |
| R4-2009995 | TP for TR 37.717-21-11: EN-DC\_3-11\_n77 | SoftBank Corp. | revised |  | R4-2011593 |
| R4-2009996 | TP for TR 37.717-31-11: EN-DC\_1-8-11\_n3 | SoftBank Corp. | approved |  |  |
| R4-2009997 | TP for TR 37.717-31-11: EN-DC\_1-8-42\_n28 | SoftBank Corp. | approved |  |  |
| R4-2009998 | TP for TR 37.717-11-21: EN-DC\_1\_n3-n77 | SoftBank Corp. | revised |  | R4-2011654 |
| R4-2009999 | TP for TR 37.717-11-21: EN-DC\_8\_n3-n77 | SoftBank Corp. | revised |  | R4-2011655 |
| R4-2010000 | TP for TR 37.717-11-21: EN-DC\_11\_n3-n77 | SoftBank Corp. | noted |  |  |
| R4-2010001 | TP for TR 37.717-11-21: EN-DC\_11\_n3-n28 | SoftBank Corp. | revised |  | R4-2011656 |
| R4-2010002 | TP for TR 37.717-11-21: EN-DC\_1-42\_n28-n77 | SoftBank Corp. | revised |  | R4-2011657 |
| R4-2010003 | TP for TR 37.717-11-21: EN-DC\_3-42\_n28-n77 | SoftBank Corp. | revised |  | R4-2011658 |
| R4-2010004 | TP for TR 37.717-11-21: EN-DC\_8-42\_n28-n77 | SoftBank Corp. | revised |  | R4-2011659 |
| R4-2010005 | TP for TR 37.717-11-21: EN-DC\_1-3-8\_n28-n77 | SoftBank Corp. | revised |  | R4-2011660 |
| R4-2010006 | Draft CR for TS 38.101-1: Support of DC\_n3-n77 and DC\_n28\_n77 | SoftBank Corp. | revised |  | R4-2011627 |
| R4-2010007 | Draft CR for TS 38.101-3: Support of n77(2A) for DC\_41-42\_n77 | SoftBank Corp. | revised |  | R4-2011594 |
| R4-2010008 | Draft CR for TS 38.101-3: Support of n77(2A) for DC\_1-3-42\_n77, DC\_1-41-42\_n77 and DC\_3-41-42\_n77 | SoftBank Corp. | endorsed |  |  |
| R4-2010009 | Draft CR for TS 38.101-3: Support of n77(2A) for DC\_1-3-41-42\_n77 | SoftBank Corp. | endorsed |  |  |
| R4-2010010 | Work plan for V2X demodulation performance | LG Electronics Inc. | approved |  |  |
| R4-2010011 | Discussion on Spec. structure for V2X demodulation | LG Electronics Inc. | noted |  |  |
| R4-2010012 | Discussion on test cases for NR V2X performance | LG Electronics Inc. | noted |  |  |
| R4-2010013 | REFSENS requirements and LLS results of REFSENS for NR V2X UE | LG Electronics Inc. | noted |  |  |
| R4-2010014 | V2X TX Issues | Qualcomm Incorporated | noted |  |  |
| R4-2010015 | V2X RX Issues | Qualcomm Incorporated | noted |  |  |
| R4-2010016 | Discussion on the remain issues for NSA high power UE | Xiaomi | noted |  |  |
| R4-2010017 | Discussion on Tx diversity open issues | Xiaomi | noted |  |  |
| R4-2010018 | Views on DL interruption due to UL Tx switching | Xiaomi | noted |  |  |
| R4-2010019 | Views on P-MPR reporting for FR2 MPE. | Xiaomi | noted |  |  |
| R4-2010020 | CR to TS 38.101-3: corrections on MSD table due to harmonic interference for EN-DC FR1 | Xiaomi | not pursued |  |  |
| R4-2010021 | CR to TS 38.101-3 R16: corrections on MSD table for EN-DC FR1 | Xiaomi | withdrawn |  |  |
| R4-2010022 | CR to TS 38.101-1: corrections on narrow band blocking for intra-band contiguous CA | Xiaomi | revised |  | R4-2011908 |
| R4-2010023 | CR to TS 38.101-1: corrections on narrow band blocking for intra-band contiguous CA | Xiaomi | agreed |  |  |
| R4-2010024 | CR for Table number mismatch for CLI performance tests | LG Electronics Inc. | agreed |  |  |
| R4-2010025 | CR for TS 38.101-1: Clarification of UE external components | Qualcomm Incorporated | not pursued |  |  |
| R4-2010026 | CR for TS 38.101-1: Removal of table 6.5E.3.4.3-1 | Qualcomm Incorporated | revised |  | R4-2011707 |
| R4-2010027 | CR for TS 38.101-1: V2X REFSENS | Qualcomm Incorporated | not pursued |  |  |
| R4-2010028 | CR for TS 38.101-1: A-MPR tables for SSSB, PSFCH | Qualcomm Incorporated | not pursued |  |  |
| R4-2010029 | CR for TS 38.101-1: Pi/2 BPSK DMRS | Qualcomm Incorporated | not pursued |  |  |
| R4-2010030 | CR on Inter-RAT RSTD measurements (section 9.4.4) | MediaTek inc. | agreed |  |  |
| R4-2010031 | CR on Inter-RAT RSTD measurements (section 9.4.4) | MediaTek inc. | agreed |  |  |
| R4-2010032 | CR on active BWP switch in R15 | MediaTek inc. | revised |  | R4-2012280 |
| R4-2010033 | CR on active BWP switch in R16 | MediaTek inc. | agreed |  |  |
| R4-2010034 | Remaining issues on signalling characteristics | MediaTek inc. | noted |  |  |
| R4-2010035 | CR on active TCI state switch test case (section A.5.5.8.1, A.7.5.8.1) | MediaTek inc. | merged |  |  |
| R4-2010036 | CR on active TCI state switch test case | MediaTek inc. | withdrawn |  |  |
| R4-2010037 | Remaining issues on NR V2X RRM requirement | MediaTek inc. | noted |  |  |
| R4-2010038 | Discussion on NR V2X RRM test case | MediaTek inc. | noted |  |  |
| R4-2010039 | Discussion on NR V2X Demod test case | MediaTek inc. | noted |  |  |
| R4-2010040 | Remaining issues on Interruption at SRS carrier switch | MediaTek inc. | noted |  |  |
| R4-2010041 | Remaining issues on CGI reading requirement | MediaTek inc. | noted |  |  |
| R4-2010042 | Discussion on BWP switch on multiple CCs | MediaTek inc. | noted |  |  |
| R4-2010043 | Remaining issues on active spatial relation switch | MediaTek inc. | noted |  |  |
| R4-2010044 | CR on multiple SCells activation (section 8.3.7) | MediaTek inc. | revised |  | R4-2012165 |
| R4-2010045 | FR1 EN-DC Out-of-Band Blocking UL test configuration | Apple Inc. | noted |  |  |
| R4-2010046 | CR for TS 38.101-3: FR1 inter-band EN-DC out-of-band blocking UL configuration | Apple Inc. | revised |  | R4-2011936 |
| R4-2010047 | CR for TS 38.101-3: FR1 inter-band EN-DC out-of-band blocking UL configuration | Apple Inc. | agreed |  |  |
| R4-2010048 | CR for TS 38.101-2: Correction on n259 ACS test parameters for Case 1 | Apple Inc. | not pursued |  |  |
| R4-2010049 | LO location for intra-band UL CA | Qualcomm Incorporated | noted |  |  |
| R4-2010050 | On Rel-16 UE feature list | Apple | noted |  |  |
| R4-2010051 | On MRTD for inter-band CA | Apple | noted |  |  |
| R4-2010052 | On measurement bandwidth of CSI-RS based L3 measurement | Apple | noted |  |  |
| R4-2010053 | On UE measurement capability of CSI-RS based L3 measurement | Apple | noted |  |  |
| R4-2010054 | On other remaining issues of CSI-RS based L3 measurement | Apple | noted |  |  |
| R4-2010055 | RAN4 Rel-17 RRM work area summary | Apple | not treated |  |  |
| R4-2010056 | CR on MRTD for FR2 inter-band CA | Apple | revised |  | R4-2012151 |
| R4-2010057 | CR on MRTD for FR2 inter-band CA | Apple | revised |  | R4-2012181 |
| R4-2010058 | New SID: Efficient utilization of licensed spectrum that is not aligned with existing NR channel bandwidths | T-Mobile USA, Ericsson | not treated |  |  |
| R4-2010059 | Motivation for new SID on Efficient utilization of licensed spectrum that is not aligned with existing NR channel bandwidths | T-Mobile USA | not treated |  |  |
| R4-2010060 | CR for 38.101-1: Introduction of Power Class 1.5 | T-Mobile USA | revised |  | R4-2011783 |
| R4-2010061 | CR for 38.307: Introduction of Power Class 1.5 | T-Mobile USA | agreed |  |  |
| R4-2010062 | An alternative to creating new BCSs | T-Mobile USA, Deutsche Telekom, AT&T, Telus, Bell Canada, Telstra, Telecom Italia, Ericsson | noted |  |  |
| R4-2010063 | PC 1.5 in RAN4 UE features list for Rel-16 | T-Mobile USA | noted |  |  |
| R4-2010064 | Discussion on release independent for RRM enhanced requirements for NR HST | CMCC | noted |  |  |
| R4-2010065 | Further discussion on CSI-RS measurement capability | CMCC | noted |  |  |
| R4-2010066 | Discussion on CSI-RS measurement requirements | CMCC | noted |  |  |
| R4-2010067 | Discussion on test case list for Rel-16 NR HST | CMCC | noted |  |  |
| R4-2010068 | Simulation results for PDSCH requirements with Multi-DCI | CMCC | noted |  |  |
| R4-2010069 | Updated simulation results for HST-SFN | CMCC | noted |  |  |
| R4-2010070 | Updated simulation results for HST single tap | CMCC | noted |  |  |
| R4-2010071 | Simulation results for multi-path fading channel | CMCC | noted |  |  |
| R4-2010072 | Discussion on the synchronization assumption for CSI-RS measurement | CMCC | noted |  |  |
| R4-2010073 | 38.133 CR on UE measurement capability on the number of frequency layers to be monitored for CSI-RS measurement | CMCC | revised |  | R4-2012169 |
| R4-2010074 | Motivation for NR support for High speed train scenario in Rel-17 | CMCC | not treated |  |  |
| R4-2010075 | New WID on NR support for high speed train scenario | CMCC | not treated |  |  |
| R4-2010076 | CR on HST-SFN requirements for TDD | CMCC | revised |  | R4-2012669 |
| R4-2010077 | 36.133 CR on cell identification in connected mode for EUTRAN-NR measurement for Rel-16 NR HST | CMCC | agreed |  |  |
| R4-2010078 | 38.133 CR on cell re-selection requirements for Rel-16 NR HST | CMCC | agreed |  |  |
| R4-2010079 | Further discussion on UE demodulation for NR HST | CMCC | noted |  |  |
| R4-2010080 | Discussion on BS demodulation for NR HST | CMCC | noted |  |  |
| R4-2010081 | Discussion on SS-SINR measurement for NR HST | CMCC | noted |  |  |
| R4-2010082 | Remaining issues on intra or inter frequency measurements | ZTE Corporation | noted |  |  |
| R4-2010083 | Discussion of maintenace issues for NR V2X | LG Electronics Inc. | noted |  |  |
| R4-2010084 | CR of missed requirements based on the agreed CRs in RAN4#95-e | LG Electronics Inc. | revised |  | R4-2012105 |
| R4-2010085 | CR of interruption requirements | LG Electronics Inc. | revised |  | R4-2012106 |
| R4-2010086 | Work Plan and List of Test Cases for NR V2X RRM | LG Electronics Inc. | noted |  |  |
| R4-2010087 | Discussion of Test Cases for NR V2X RRM | LG Electronics Inc. | noted |  |  |
| R4-2010088 | CR to TS 38.101-3: PC2 band 3+band n78 ENDC | China Unicom | revised |  | R4-2011785 |
| R4-2010089 | Motivation on NR RRM requirement for UE different RX beam sets in FR2 | LG Electronics Inc. | not treated |  |  |
| R4-2010090 | New WID on NR RRM requirement for UE different RX beam sets in FR2 | LG Electronics Inc. | not treated |  |  |
| R4-2010091 | TR 36.717-03-02 v0.0.1 TR Skeleton for LTE-A inter-band CA for x bands (x=3,4,5) DL with 2 bands UL in Rel-17 | LG Electronics Polska | agreed |  |  |
| R4-2010092 | TP on initial summary of self-interference analysis for new x bands (x=3,4,5) DL with 2 bands UL | LG Electronics Polska | approved |  |  |
| R4-2010093 | TP on the general part of TR 36.717-03-02 | LG Electronics Polska | approved |  |  |
| R4-2010094 | Discussion on the Support of Transparent Tx Diversity in Rel-16 | Samsung | noted |  |  |
| R4-2010095 | Draft Reply LS to GCF on Requirement in Power Class 2 for UL MIMO Test Cases | Samsung | noted |  |  |
| R4-2010096 | On the Remaining Issues of Uplink Full Power Transmission (ULFPTx) | Samsung | noted |  |  |
| R4-2010097 | CR to TS38.101-1 on introduction of Uplink Full Power Transmission | Samsung, Qualcomm | revised |  | R4-2011762 |
| R4-2010098 | Discussion on Multi-TRP Transmission | Samsung | noted |  |  |
| R4-2010099 | CR to TS38.133 on introduction of multi-TRP transmission (Section 7.5 and 7.6) | Samsung | not pursued |  | R4-2012149 |
| R4-2010100 | Discussion on updating pathloss RS for PUSCH/SRS via MAC-CE | Samsung | noted |  |  |
| R4-2010101 | Demodulation on UE power saving | CMCC | noted |  |  |
| R4-2010102 | Discussion on FR1 CA and EN-DC power imbalance requirements | CMCC | noted |  |  |
| R4-2010103 | draftCR: Introduction of NR PDSCH FR1 CA 2Rx performance requirements | CMCC | withdrawn |  |  |
| R4-2010104 | Simulation results of NR UE PMI with 16, and 32Tx antennas | CMCC | noted |  |  |
| R4-2010105 | Applicability of DL interruption for different band combinations | CMCC | noted |  |  |
| R4-2010106 | Test applicability rule for NR CA PDSCH normal demodulation | CMCC | noted |  |  |
| R4-2010107 | CR on definition of inter-frequency measurements without measurement gap (9.3.1) | CMCC | revised |  | R4-2012166 |
| R4-2010108 | Disucssion on support of 30KHz SCS for SSB of n34 and n39 | CMCC | noted |  |  |
| R4-2010109 | Numerology and channel BW on supporting NR from 52.6GHz to 71GHz | CMCC | noted |  |  |
| R4-2010110 | Intermediate summary for RAN4 non-spectrum Rel-17 items: [FR1 HST and ATG] | CMCC | not treated |  |  |
| R4-2010111 | Discussion on IAB-MT Pcmax | CMCC | noted |  |  |
| R4-2010112 | Discussion on 6-7GHz ACIR requirement | CMCC | noted |  |  |
| R4-2010113 | TP on V2X A-MPR for SSSB, PFSCH, PSSCH, PSCCH | Qualcomm Incorporated | noted |  |  |
| R4-2010114 | Corrections of Japan-related CA co-ex tables for REL-15 combo | SoftBank Corp., NTT docomo INC., KDDI Corporation | agreed |  |  |
| R4-2010115 | Corrections of Japan-related CA co-ex tables for REL-15 combo | SoftBank Corp., NTT docomo INC., KDDI Corporation | agreed |  |  |
| R4-2010116 | CR to T parameters in 8.3.2 of 38.133 | Qualcomm Incorporated | postponed |  |  |
| R4-2010117 | Early measurement reporting in MR-DC | Qualcomm Incorporated | noted |  |  |
| R4-2010118 | Scell BWP dormancy | Qualcomm Incorporated | noted |  |  |
| R4-2010119 | FR2 Beam Correspondence | Qualcomm Incorporated | noted |  |  |
| R4-2010120 | Multiple SCell activation in NR | Qualcomm Incorporated | noted |  |  |
| R4-2010121 | Corrections of Japan-related CA co-ex tables for REL-16 combo | SoftBank Corp., NTT docomo INC., KDDI Corporation | not pursued |  |  |
| R4-2010122 | Motivation for supporting non-colocated scenarios for band 42 and n77 | SoftBank Corp. | not treated |  |  |
| R4-2010123 | Corrections of Japan-related EN-DC co-ex tables for REL-15 combo | SoftBank Corp., NTT docomo INC., KDDI Corporation | revised |  | R4-2011759 |
| R4-2010124 | Corrections of Japan-related EN-DC co-ex tables for REL-15 combo | SoftBank Corp., NTT docomo INC., KDDI Corporation, Huawei, HiSilicon | agreed |  |  |
| R4-2010125 | Corrections of Japan-related EN-DC co-ex tables for REL-16 combo | SoftBank Corp., NTT docomo INC., KDDI Corporation | not pursued |  |  |
| R4-2010126 | Handling of additional requirements for UE co-ex in CA/DC | SoftBank Corp. | noted |  |  |
| R4-2010127 | Revised WID on LTE-A inter-band CA for x bands (x=3,4,5) DL with 2 bands UL in Rel-17 | LG Electronics Polska | not concluded |  |  |
| R4-2010128 | Introduction of LTE-A inter-band CA for x bands (x=3,4,5) DL with 2 bands UL to TS36.101 | LG Electronics Polska | not concluded |  |  |
| R4-2010129 | EIRP measurement for polarization mismatch | LG Electronics Polska | noted |  |  |
| R4-2010130 | TR 37.717-11-21 v0.0.1 TR skeleton: LTE(xDL/1UL)+ NR(2DL/1UL) DC in Rel-17 | LG Electronics Polska | agreed |  |  |
| R4-2010131 | Revised WID on LTE (xDL/UL x=1.2,3,4) with NR 2 bands (2DL/1UL) EN DC in Rel-17 | LG Electronics Polska | not concluded |  |  |
| R4-2010132 | Introducing CR on new EN-DC LTE(xDL/1UL)+ NR(2DL/1UL) DC in Rel-17 | LG Electronics Polska | not concluded |  |  |
| R4-2010133 | TP on initial summary of self-interference analysis for new EN-DC LTE(xDL/1UL)+ NR(2DL/1UL) DC in Rel-17 | LG Electronics Polska | approved |  |  |
| R4-2010134 | Discussion on enhancement of BC in Rel-16 at FR2 | LG Electronics France | noted |  |  |
| R4-2010135 | Remaining MPR/A-MPR requirements for NR V2X UE | LG Electronics France | noted |  |  |
| R4-2010136 | MSD Analysis results and harmonic reduction filter for V2X\_20A\_n38A | LG Electronics France | noted |  |  |
| R4-2010137 | Correction on 5G V2X UE RF requirements in rel-16 | LG Electronics France | revised |  | R4-2011705 |
| R4-2010138 | Correction on 5G V2X con-current UE RF requirements in rel-16 | LG Electronics France | revised |  | R4-2011717 |
| R4-2010139 | CR for TR38.886: Correction on TR38.886 for V2X UE Tx and Rx requirements | LG Electronics France | revised |  | R4-2011939 |
| R4-2010140 | Test case design for PDSCH requirements with Multi-TRP/Panel transmission | Samsung | noted |  |  |
| R4-2010141 | Test case design for PMI requirements with Rel-16 Type II codebook | Samsung | noted |  |  |
| R4-2010142 | Views and simulation results for PMI test cases | Samsung | revised |  | R4-2012565 |
| R4-2010143 | Revised WID on NR CA/DC with 4DL/2UL | Samsung | not concluded |  |  |
| R4-2010144 | Draft CR on introduction for completed NR CA/DC combs with 4DL/2UL within FR1 | Samsung | withdrawn |  |  |
| R4-2010145 | Draft CR on introduction for completed NR CA/DC combs with 4DL/2UL including FR2 | Samsung | not concluded |  |  |
| R4-2010146 | TP for TR38.809: IAB co-existence simulation | Samsung | approved |  |  |
| R4-2010147 | Discussion on remaining issues for IAB-MT Tx power related requirements | Samsung | noted |  |  |
| R4-2010148 | TP for TR38.809: conclusion on IAB-MT BC requirement | Samsung | approved |  |  |
| R4-2010149 | IAB-MT Receiver FRC for QPSK | Samsung | noted |  |  |
| R4-2010150 | TP for TR38.809: IAB-MT RRM general | Samsung | revised |  | R4-2012110 |
| R4-2010151 | Discussion on the new SUL band for 1880MHz - 1920MHz | Huawei, HiSilicon | noted |  |  |
| R4-2010152 | draftCR to 38101-1 on introducing new SUL band n96 | Huawei, HiSilicon | not pursued |  |  |
| R4-2010153 | draftCR to 38104 on introducing new SUL band n96 | Huawei, HiSilicon | not pursued |  |  |
| R4-2010154 | draftCR to 38141-1 on introducing new SUL band n96 | Huawei, HiSilicon | not pursued |  |  |
| R4-2010155 | draftCR to 38141-2 on introducing new SUL band n96 | Huawei, HiSilicon | not pursued |  |  |
| R4-2010156 | draftCR to 36104 on introducing new SUL band n96 | Huawei, HiSilicon | not pursued |  |  |
| R4-2010157 | draftCR to 36141 on introducing new SUL band n96 | Huawei, HiSilicon | not pursued |  |  |
| R4-2010158 | draftCR to 37104 on introducing new SUL band n96 | Huawei, HiSilicon | not pursued |  |  |
| R4-2010159 | draftCR to 37141 on introducing new SUL band n96 | Huawei, HiSilicon | not pursued |  |  |
| R4-2010160 | draftCR to 37105 on introducing new SUL band n96 | Huawei, HiSilicon | not pursued |  |  |
| R4-2010161 | draftCR to 37145-1 on introducing new SUL band n96 | Huawei, HiSilicon | not pursued |  |  |
| R4-2010162 | draftCR to 37145-2 on introducing new SUL band n96 | Huawei, HiSilicon | not pursued |  |  |
| R4-2010163 | Discussion on the new SUL band for 2300MHz - 2400MHz | Huawei, HiSilicon | noted |  |  |
| R4-2010164 | draftCR to 38101-1 on introducing new SUL band n97 | Huawei, HiSilicon | not pursued |  |  |
| R4-2010165 | draftCR to 38104 on introducing new SUL band n97 | Huawei, HiSilicon | not pursued |  |  |
| R4-2010166 | draftCR to 38141-1 on introducing new SUL band n97 | Huawei, HiSilicon | not pursued |  |  |
| R4-2010167 | draftCR to 38141-2 on introducing new SUL band n97 | Huawei, HiSilicon | not pursued |  |  |
| R4-2010168 | draftCR to 36104 on introducing new SUL band n97 | Huawei, HiSilicon | not pursued |  |  |
| R4-2010169 | draftCR to 36141 on introducing new SUL band n97 | Huawei, HiSilicon | not pursued |  |  |
| R4-2010170 | draftCR to 37104 on introducing new SUL band n97 | Huawei, HiSilicon | not pursued |  |  |
| R4-2010171 | draftCR to 37141 on introducing new SUL band n97 | Huawei, HiSilicon | not pursued |  |  |
| R4-2010172 | draftCR to 37105 on introducing new SUL band n97 | Huawei, HiSilicon | not pursued |  |  |
| R4-2010173 | draftCR to 37145-1 on introducing new SUL band n97 | Huawei, HiSilicon | not pursued |  |  |
| R4-2010174 | draftCR to 37145-2 on introducing new SUL band n97 | Huawei, HiSilicon | not pursued |  |  |
| R4-2010175 | draftCR: Introduction of NR PDSCH FR1 CA 2Rx performance requirements | CMCC | withdrawn |  |  |
| R4-2010176 | On 52.6 to 71 GHz phase noise characteristics and draft LS to RAN1 | Ericsson | noted |  |  |
| R4-2010177 | TP to TS 38.174: Addition of MT bandwidth definition in clause 3 and requirement applicability table in subclause 4.6 | Ericsson | noted |  |  |
| R4-2010178 | CR to TS 38.104: Correction of co-location requirement in subclause 7.5.3 | Ericsson | agreed |  |  |
| R4-2010179 | CR to TS 38.104: Correction of co-location requirement in subclause 7.5.3 | Ericsson | agreed |  |  |
| R4-2010180 | TP to TR 38.921: Addition of BS antenna model and parameters in subclause 4.2.3 and subclause 8.1 | Ericsson | revised |  | R4-2011830 |
| R4-2010181 | Discussion on CSI-RS L3 measurement requirement | LG Electronics UK | noted |  |  |
| R4-2010182 | draftCR: Introduction of NR PDSCH FR1 CA 2Rx performance requirements | CMCC | revised |  | R4-2012693 |
| R4-2010183 | CR on Active BWP switch and Active TCI State Switching requirements - Rel15 | Apple | revised |  | R4-2012244 |
| R4-2010184 | CR on Active BWP switch and Active TCI State Switching requirements - Rel15 | Apple | postponed |  |  |
| R4-2010185 | CR on Requirement for MAC-CE based TCI State Switch-EN-DC-Rel15 | Apple | withdrawn |  |  |
| R4-2010186 | CR on Requirement for MAC-CE based TCI State Switch-EN-DC-Rel16 | Apple | withdrawn |  |  |
| R4-2010187 | CR on Requirement for MAC-CE based TCI State Switch-SA-Rel15 | Apple | withdrawn |  |  |
| R4-2010188 | CR on Requirement for MAC-CE based TCI State Switch-SA-Rel16 | Apple | withdrawn |  |  |
| R4-2010189 | Requirements for BWP switching on multiple CCs | Apple | withdrawn |  |  |
| R4-2010190 | Requirements for UL spatial relation info switch | Apple | withdrawn |  |  |
| R4-2010191 | Discussion on RRM requirements for Multi-TRP | Apple | noted |  |  |
| R4-2010192 | On PMI reporting requirements with larger number of TX ports | Apple | withdrawn |  |  |
| R4-2010193 | On UE demod and CSI requirements for Ultra low BLER | Apple | withdrawn |  |  |
| R4-2010194 | On UE demod and CSI requirements with higher BLER | Apple | withdrawn |  |  |
| R4-2010195 | On PDSCH demodulation requirements for Multi TRP | Apple | withdrawn |  |  |
| R4-2010196 | On PMI reporting requirements with eType II codebook | Apple | withdrawn |  |  |
| R4-2010197 | CR on BWP switch on multiple CCs | Apple | agreed |  |  |
| R4-2010198 | Discussion on beam correspondence remaining issues | Samsung | noted |  |  |
| R4-2010199 | CR to TS38.101-2 on beam correspondence enhancement | Samsung | not pursued |  |  |
| R4-2010200 | Discussion on FR2 inter-band DL CA | Samsung | noted |  |  |
| R4-2010201 | Performance metric for FR2 MIMO OTA | Samsung | noted |  |  |
| R4-2010202 | Discussion on dual polarization transmission for UL TX test | Samsung | noted |  |  |
| R4-2010203 | Discussion of remaining issues for PRS-RSTD measurement | MediaTek inc. | noted |  |  |
| R4-2010204 | Discussion of remaining issues for PRS-RSRP measurement | MediaTek inc. | noted |  |  |
| R4-2010205 | Discussion on measurement gaps for positioning | MediaTek inc. | noted |  |  |
| R4-2010206 | CR for SCell activation delay in FR2 in R15 | MediaTek inc. | agreed |  |  |
| R4-2010207 | CR for SCell activation delay in FR2 in R16 | MediaTek inc. | agreed |  |  |
| R4-2010208 | CR on TCI state switch delay in R15 | MediaTek inc. | revised |  | R4-2012239 |
| R4-2010209 | CR on TCI state switch delay in R16 | MediaTek inc. | agreed |  |  |
| R4-2010210 | CR for SCell activation delay in FR2 in R16 | MediaTek inc. | merged |  |  |
| R4-2010211 | Discussion on Scell activation for NR-U | MediaTek inc. | noted |  |  |
| R4-2010212 | Discussion on TCI swtich for NR-U | MediaTek inc. | noted |  |  |
| R4-2010213 | CR on active TCI state switch delay in NR-U | MediaTek inc. | merged |  |  |
| R4-2010214 | Discussion on RLM requirement for NR-U | MediaTek inc. | noted |  |  |
| R4-2010215 | Discussion on measurements requirement for NR-U | MediaTek inc. | noted |  |  |
| R4-2010216 | CR for timing requirement for NR-U | MediaTek inc. | revised |  | R4-2012097 |
| R4-2010217 | Discussion on PL RS activation requirement via MAC CE | MediaTek inc. | noted |  |  |
| R4-2010218 | CR for introduction of pathloss reference signal switching delay | MediaTek inc. | revised |  | R4-2012148 |
| R4-2010219 | Discussion on MRTD for multiple TPxPs scenario | MediaTek inc. | noted |  |  |
| R4-2010220 | CR for L1-SINR requirement | MediaTek inc. | revised |  | R4-2012147 |
| R4-2010221 | Discussion on Inter-band CA requirement for FR2 | MediaTek inc. | noted |  |  |
| R4-2010222 | skeleton on TR38.717-04-02 for NR CA/DC with 4DL/2UL | Samsung | agreed |  |  |
| R4-2010223 | TR 38.809 V0.3.0 | Samsung | not concluded |  |  |
| R4-2010224 | modifiedMPR correction for FR2 REL15 | Nokia, Nokia Shanghai Bell | revised |  | R4-2011691 |
| R4-2010225 | modifiedMPR correction for FR2 REL16 | Nokia, Nokia Shanghai Bell | revised |  | R4-2011692 |
| R4-2010226 | TR v0.2.0 | Nokia, Nokia Shanghai Bell | agreed |  |  |
| R4-2010227 | A-MPR definition for CA\_48B | Nokia | revised |  | R4-2011699 |
| R4-2010228 | A-MPR definition for CA\_n48B | Nokia | revised |  | R4-2011727 |
| R4-2010229 | A-MPR simulation results for CA\_n7B | Nokia | noted |  |  |
| R4-2010230 | Restoring the clause structure of NR FR1 uplink contiguous intraband CA | Nokia, Nokia Shanghai Bell | approved |  |  |
| R4-2010231 | CR Restoring the clause structure of NR FR1 uplink contiguous intraband CA | Nokia, Nokia Shanghai Bell, Qualcomm Inc, Skyworks, Ericsson | agreed |  | - |
| R4-2010232 | TP for TR 37.717.21-11: DC\_2A-48A\_n5A | Nokia | approved |  |  |
| R4-2010233 | TP for TR 37.717.21-11: DC\_5A-48A\_n12A | Nokia | approved |  |  |
| R4-2010234 | TP for TR 37.717.21-11: DC\_5A-48A\_n71A | Nokia | approved |  |  |
| R4-2010235 | TP for TR 37.717.21-11: DC\_12A-48A\_n5A | Nokia | approved |  |  |
| R4-2010236 | TP for TR 37.717-11-11: DC\_8A\_n7A | Nokia | revised |  | R4-2011595 |
| R4-2010237 | LS on MPE enhancements | Nokia, Nokia Shanghai Bell | revised |  | R4-2011733 |
| R4-2010238 | UE FR2 MPE enhancements and solutions | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2010239 | Beam correspondence enhancement | Nokia, Nokia Shanghai Bell | revised |  | R4-2011738 |
| R4-2010240 | FR2 eBC requirements | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2010241 | UE Requirements for 35MHz and 45MHz channels in FR1 | Skyworks Solutions Inc. | noted |  |  |
| R4-2010242 | TP for TR 37.717-11-21 DC\_1A\_n28A-n41A | Samsung, KDDI | revised |  | R4-2011661 |
| R4-2010243 | TP for TR 37.717-11-21 DC\_1A-3A\_n28A-n41A | Samsung, KDDI | approved |  |  |
| R4-2010244 | TP for TR 37.717-11-21 DC\_3A\_n28A-n41A | Samsung, KDDI | approved |  |  |
| R4-2010245 | TP for TR 37.717-21-11 DC\_3A\_(n)41AA | Samsung, KDDI | approved |  |  |
| R4-2010246 | TP for TR 37.717-31-11 DC\_1-3\_(n)41 | Samsung, KDDI | approved |  |  |
| R4-2010247 | TP for TR 37.717-31-11 DC\_1-3-41\_n28 | Samsung, KDDI | approved |  |  |
| R4-2010248 | TP for TR 38.717-02-01 CA\_n3-n77(2A) \_UL\_n77(2A) | Samsung, KDDI | revised |  | R4-2011628 |
| R4-2010249 | TP for TR 38.717-02-01 CA\_n3-n78(2A) \_UL\_n78(2A) | Samsung, KDDI | revised |  | R4-2011629 |
| R4-2010250 | TP for TR 38.717-02-01 CA\_n28-n77(2A) \_UL\_n77(2A) | Samsung, KDDI | revised |  | R4-2011630 |
| R4-2010251 | TP for TR 38.717-02-01 CA\_n28-n78(2A) \_UL\_n78(2A) | Samsung, KDDI | revised |  | R4-2011631 |
| R4-2010252 | TP for TR 38.717-03-01 CA\_n3A-n28A-n41A | Samsung, KDDI | approved |  |  |
| R4-2010253 | TP for TR 38.717-03-01 CA\_n3A-n41A-n78A | Samsung, KDDI | approved |  |  |
| R4-2010254 | TP for TR 38.717-04-01 CA\_n3A-n28A-n41A-n78A | Samsung, KDDI | approved |  |  |
| R4-2010255 | TP for TR 38.717-04-02 CA\_n3-n28-n77-n257 and DC\_n3-n28-n77-n257 | Samsung, KDDI | approved |  |  |
| R4-2010256 | TP for TR 38.717-04-02 CA\_n3-n28-n78-n257 and DC\_n3-n28-n78-n257 | Samsung, KDDI | approved |  |  |
| R4-2010257 | Draft CR for 38.101-3 to introduce new inter-band NE-DC (1NR band +1LTE band) within FR1 | Samsung, SK Telecom, KT, LGU | endorsed |  |  |
| R4-2010258 | Draft CR for 38.101-3 to introduce new inter-band NE-DC (1NR band +1LTE band) including FR2 | Samsung, SK Telecom, KT, LGU | revised |  | R4-2011596 |
| R4-2010259 | Draft CR for 38.101-3 to introduce new inter-band NE-DC (1NR band +2LTE bands) within FR1 | Samsung, SK Telecom, KT, LGU | endorsed |  |  |
| R4-2010260 | Draft CR for 38.101-3 to introduce new inter-band NE-DC (1NR band +3LTE bands) within FR1 | Samsung, SK Telecom, KT, LGU | endorsed |  |  |
| R4-2010261 | Draft CR for 38.101-3 to introduce new inter-band NE-DC (1NR band +3LTE bands) including FR2 | Samsung, SK Telecom, KT, LGU | endorsed |  |  |
| R4-2010262 | Draft CR for 38.101-3 to introduce new inter-band NE-DC (1NR band +4LTE bands) within FR1 | Samsung, SK Telecom, KT, LGU | endorsed |  |  |
| R4-2010263 | Draft CR for 38.101-3 to introduce new inter-band NE-DC (1NR band +4LTE bands) including FR2 | Samsung, SK Telecom, KT, LGU | endorsed |  |  |
| R4-2010264 | Reply LS on Clarification on RAN4 features of NE-DC | Samsung | revised |  | R4-2011688 |
| R4-2010265 | Spectrum Utilization for 35MHz and 45MHz Channels in FR1 and their Support | Skyworks Solutions Inc. | noted |  |  |
| R4-2010266 | Revised WID: SAR schemes for UE power class 2 (PC2) for NR inter-band Carrier Aggregation and supplemental uplink (SUL) configurations with 2 bands UL | China Telecom | noted |  |  |
| R4-2010267 | New basket WID: Band combination specific requirements for UE power class 2 (PC2) for NR inter-band Carrier Aggregation with 2 bands downlink and 2 bands uplink | China Telecom | not treated |  |  |
| R4-2010268 | Discussion on RAN procedure rules for UE power class 2 (PC2) WID | China Telecom | noted |  |  |
| R4-2010269 | Work plan for SAR schemes for UE power class 2 NR inter-band CA and SUL with 2UL | China Telecom | approved |  |  |
| R4-2010270 | Discussion on SAR schemes for UE power class 2 NR inter-band CA with 2UL | China Telecom | noted |  |  |
| R4-2010271 | Future Proof UE Capability and Specification Applicability for NR UL CA | Skyworks Solutions Inc. | noted |  |  |
| R4-2010272 | Draft CR to 38.101-1: Introduce CA\_n2-n48, CA\_n2-n77, CA\_n5-n77, CA\_n66-n77 CA configurations | Verizon UK Ltd | revised |  | R4-2011632 |
| R4-2010273 | [NRU] UE TX measurements and requirements for MPR and A-MPR | Skyworks Solutions Inc. | noted |  |  |
| R4-2010274 | Discussion the test model in DSS | Samsung | noted |  |  |
| R4-2010275 | CR to 38.101-3: Introduce CA configurations for CA\_n5-n260, n5-n261, n66-n260, n66-n261 n77-n261 | Verizon UK Ltd | revised |  | R4-2011647 |
| R4-2010276 | Initial simulation results for Rel-16 NB-IoT | Samsung | noted |  |  |
| R4-2010277 | View on BS demodulation requirement for NR-U | Samsung | noted |  |  |
| R4-2010278 | Simulation results for NR HST UE demodulation | Samsung | noted |  |  |
| R4-2010279 | Discussion and simulation results for NR HST UL timing adjustment | Samsung | noted |  |  |
| R4-2010280 | Discussion and simulation results for NR HST PUSCH | Samsung | noted |  |  |
| R4-2010281 | CR on UL timing adjustment conducted performance requirement for TS 38.141-1 | Samsung | revised |  | R4-2012686 |
| R4-2010282 | Discussion and simulation results for BS URLLC requirement | Samsung | noted |  |  |
| R4-2010283 | Discussion and simulation results for BS 2-step RACH requirement | Samsung | noted |  |  |
| R4-2010284 | Clarification CR on NR-FR2-TM3.1 | Samsung | revised |  | R4-2012590 |
| R4-2010285 | Clarification CR on NR-FR2-TM3.1 | Samsung | agreed |  |  |
| R4-2010286 | CR to 38.101-1: Introduce n48 intra-band CA configurations | Verizon UK Ltd | revised |  | R4-2011597 |
| R4-2010287 | Further discussion on the applicability of minimum requirements for NR V2X | vivo | noted |  |  |
| R4-2010288 | CR on TS38.101-1 for NR V2X | vivo | revised |  | R4-2011706 |
| R4-2010289 | CR on TS38.101-3 for NR V2X | vivo | revised |  | R4-2011718 |
| R4-2010290 | Further discussion on con-current operation for NR V2X | vivo | noted |  |  |
| R4-2010291 | Discussion on system parameters for B52.6G | vivo | noted |  |  |
| R4-2010292 | Discussion on RF impairments for B52.6G | vivo | noted |  |  |
| R4-2010293 | TP to TR 38.809 Completing IAB-MT power related requirements | Nokia, Nokia Shanghai Bell | revised |  | R4-2012619 |
| R4-2010294 | CR to 38.101-2: Introduce mmWave intra-band CA configurations | Verizon UK Ltd | revised |  | R4-2011598 |
| R4-2010295 | Rel-16 Power Class 2 for EN-DC FDD+TDD UE | Verizon UK Ltd | noted |  |  |
| R4-2010296 | Discussion on IAB-MT transmit modulation quality | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2010297 | The P-MPR based solution for CA\_n2-n77, CA\_n5-n77, CA\_n66-n77 for TP for 38.717-02-01 | Verizon UK Ltd | noted |  |  |
| R4-2010298 | TP to TR 38.809 IAB-MT unwanted emission requirements | Nokia, Nokia Shanghai Bell | revised |  | R4-2012625 |
| R4-2010299 | PC2 for the P-MPR solution: DC\_2\_n77, 5\_n77, 13\_n77 and 66\_n77 for TP for 38.717-11-11 | Verizon UK Ltd | noted |  |  |
| R4-2010300 | Release 17 FR2 bandwidth class | Verizon UK Ltd | noted |  |  |
| R4-2010301 | [FR1ULCA] UE TX measurements and requirements for non-contiguous ULCA | Skyworks Solutions Inc. | noted |  |  |
| R4-2010302 | Scope of Rel-16 tests/requirements for FR2 fallback band combination | Verizon UK Ltd | noted |  |  |
| R4-2010303 | Clarification on 2Tx requirements specified at sum of emissions from antenna connecters | NTT DOCOMO INC. | noted |  |  |
| R4-2010304 | TP for TR 37.717-11-11 for DC\_66\_n77 | Verizon UK Ltd | revised |  | R4-2011599 |
| R4-2010305 | TP for TR 37.717-11-11 for DC\_13\_n77 | Verizon UK Ltd | revised |  | R4-2011600 |
| R4-2010306 | TP for TR 37.717-11-11 for DC\_5\_n77 | Verizon UK Ltd | revised |  | R4-2011601 |
| R4-2010307 | TP for TR 37.717-11-11 for DC\_2\_n77 | Verizon UK Ltd | revised |  | R4-2011602 |
| R4-2010308 | Discussion on completion of FDD-TDD EN-DC High Power UE | CHTTL | noted |  |  |
| R4-2010309 | CR to 38.101-3: Introduce CA configurations for DC\_2\_n26, DC\_5\_n261, DC\_13\_n261, DC\_48\_n261 and DC\_66\_n261 | Verizon UK Ltd | endorsed |  |  |
| R4-2010310 | Discussion on LS on UE capability on wideband carrier operation for NR-U | MediaTek inc. | noted |  |  |
| R4-2010311 | MRTD requirements for FR2 inter-band DL CA | MediaTek inc. | noted |  |  |
| R4-2010312 | Discussion on measurement capability for CSI-RS RRM | MediaTek inc. | noted |  |  |
| R4-2010313 | Cell identification requirements for CSI-RS RRM | MediaTek inc. | noted |  |  |
| R4-2010314 | Introduction of CSSF requirement for CSI-RS based L3 measurement | MediaTek inc. | postponed |  | - |
| R4-2010315 | Synchronization assumption for L3 CSI-RS measurement | MediaTek inc. | noted |  |  |
| R4-2010316 | Motivation to introduce new R17 WI on further RRM enhancement | MediaTek inc. | not treated |  |  |
| R4-2010317 | TP for TR 37.717-11-11 for DC\_66\_n261 | Verizon UK Ltd | approved |  |  |
| R4-2010318 | TP for TR 37.717-11-21: support of DC\_3\_n1-n257, DC\_3-3\_n1-n257, DC\_7\_n1-n257, DC\_7-7\_n1-n257 with 257D to 257M | CHTTL | approved |  |  |
| R4-2010319 | TP for TR 37.717-11-11 for DC\_48\_n261 | Verizon UK Ltd | approved |  |  |
| R4-2010320 | UE UL Power setting for OoBB for inter-band EN-DC within FR1 | NTT DOCOMO INC. | noted |  |  |
| R4-2010321 | CR to TS 38.101-2 on corrections to intra-band contiguous CA configurations (Rel-16) | ZTE Corporation | not pursued |  |  |
| R4-2010322 | CR to TS 38.101-2 on corrections to operating bands for intra-band CA (Rel-15) | ZTE Corporation | revised |  | R4-2011927 |
| R4-2010323 | CR to TS 38.101-2 on corrections to operating bands for intra-band CA (Rel-16) | ZTE Corporation | agreed |  |  |
| R4-2010324 | Simplification on CA | ZTE Corporation | noted |  |  |
| R4-2010325 | TP for TR 37.717-11-11 for DC\_13\_n261 | Verizon UK Ltd | approved |  |  |
| R4-2010326 | CEPT/ECC work on recommendation for receiver parameters | Ericsson | noted |  |  |
| R4-2010327 | TP for TR 37.717-11-11 for DC\_5\_n261 | Verizon UK Ltd | approved |  |  |
| R4-2010328 | TP for TR 37.717-11-11 for DC\_2\_n261 | Verizon UK Ltd | approved |  |  |
| R4-2010329 | TP for 38.717-02-01: CA\_n66-n77 and DC\_n66-n77 | Verizon UK Ltd | revised |  | R4-2011633 |
| R4-2010330 | CR on HST cell reselection requirment of interRAT higher priority carrier in TS 38.133 | vivo | postponed |  |  |
| R4-2010331 | CR on HST cell reselection requirment of interRAT higher priority carrier in TS 36.133 | vivo | postponed |  |  |
| R4-2010332 | Discussion on SS-SINR accuracy requirement in NR HST | vivo | noted |  |  |
| R4-2010333 | Discussion on CSI-RS based L3 measurement period requirement | vivo | noted |  |  |
| R4-2010334 | Discussion on synchronization assumption for CSI-RS based L3 measurement | vivo | noted |  |  |
| R4-2010335 | CR on introduction, applicablity and capability for CSI-RS inter-frequency measurement requirements | vivo | revised |  | R4-2012171 |
| R4-2010336 | Discussion on RLM/BFD relaxation in R17 Power saving | vivo | noted |  |  |
| R4-2010337 | Discussion on RRM test cases for R16 UE power saving | vivo | noted |  |  |
| R4-2010338 | TP for TR 37.717-11-21: support of DC\_3-7\_n1-n257, DC\_3-3-7\_n1-n257, DC\_3-7-7\_n1-n257, DC\_3-3-7-7\_n1-n257 with 257D to 257M | CHTTL | approved |  |  |
| R4-2010339 | TP for 38.717-02-01: CA\_n5-n77 and DC\_n5-n77 | Verizon UK Ltd | revised |  | R4-2011634 |
| R4-2010340 | 30k SSB for n34 and n39 | Ericsson | revised |  | R4-2011683 |
| R4-2010341 | 30k SSB SCS for Band n34 and n39 | Ericsson | agreed |  |  |
| R4-2010342 | Correction for 5 MHz channel bandwidth for n40 and n50 (15k SCS) | Ericsson | agreed |  |  |
| R4-2010343 | Correction for 5 MHz channel bandwidth for n50 and introduction of Annex H | Ericsson | agreed |  |  |
| R4-2010344 | Additional TX requirements for NR-U operation | Ericsson | noted |  |  |
| R4-2010345 | Introduction of additional TX requirements for NR-U operation | Ericsson | not pursued |  |  |
| R4-2010346 | Additional RX requirements for NR-U operation | Ericsson | noted |  |  |
| R4-2010347 | Introduction of additional RX requirements for NR-U operation | Ericsson | not pursued |  |  |
| R4-2010348 | Modifcation of Pcmax for UL CA with uplink Tx switching capability | Ericsson | revised |  | R4-2011732 |
| R4-2010349 | Feasibility of reporting: expected UE behaviour with duty-cycle reporting and PMPR method | Ericsson | noted |  |  |
| R4-2010350 | Completing the WI including the | Ericsson | noted |  |  |
| R4-2010351 | Introduction of EN-DC power class 2 for FDD-TDD band combinations | Ericsson | revised |  | R4-2011786 |
| R4-2010352 | Draft CR for 38.101-3 to introduce new inter-band NE-DC (1NR band +2LTE bands) including FR2 | Samsung, SK Telecom, KT, LGU | endorsed |  |  |
| R4-2010353 | TP for 38.717-02-01: CA\_n2-n77 and DC\_n2-n77 | Verizon UK Ltd | revised |  | R4-2011635 |
| R4-2010354 | TP for 38.717-02-01: CA\_n2-n48 and DC\_n2-n48 | Verizon UK Ltd | revised |  | R4-2011636 |
| R4-2010355 | draft CR for CA\_n1-n257D/E/F and CA\_n1-n257J/K/L/M | CHTTL | endorsed |  |  |
| R4-2010356 | TP for TR 38.717-02-01: CA\_n77-n260 and DC\_n77-n260 | Verizon UK Ltd | revised |  | R4-2011648 |
| R4-2010357 | Intermediate summary for e-mail discussion for Rel-17 proposal FR2 HST | Samsung | not treated |  |  |
| R4-2010358 | TP for 38.717-02-01: CA\_n48-n261 and DC\_n48-n261 | Verizon UK Ltd | revised |  | R4-2011649 |
| R4-2010359 | On the higher priority inter frequency layer relaxation indicator for the UE power savings | vivo | noted |  |  |
| R4-2010360 | CR for IDLE state measurement relaxation for UE power saving | vivo | postponed |  |  |
| R4-2010361 | Consideration on remaining issues for BWP switching over multiple CCs | vivo | noted |  |  |
| R4-2010362 | CR for RRC based simultaneously BWP switch over multiple CCs | vivo | merged |  |  |
| R4-2010363 | Further considerations on FR2 inter CA requirements. | vivo | noted |  |  |
| R4-2010364 | On remaining issues for UL Spatial Relation Info Switching | vivo | noted |  |  |
| R4-2010365 | On SCell dormancy RRM requirements | vivo | noted |  |  |
| R4-2010366 | TP for 38.717-02-01: CA\_n2-n261 and DC\_n2-n261 | Verizon UK Ltd | revised |  | R4-2011650 |
| R4-2010367 | TR skeleton for TR 37.717-11-11 Rel-17 Dual Connectivity (DC) of 1 LTE band (1DL/1UL) and 1 NR band (1DL/1UL) | CHTTL | agreed |  |  |
| R4-2010368 | TP for 38.717-02-01: CA\_n2-n260 and DC\_n2-n260 | Verizon UK Ltd | revised |  | R4-2011651 |
| R4-2010369 | TR 37.717-11-11 v0.1.0 Rel-17 Dual Connectivity (DC) of 1 LTE band (1DL/1UL) and 1 NR band (1DL/1UL) | CHTTL | not concluded |  |  |
| R4-2010370 | TR 38.921 V 0.1.0 | Huawei, HiSilicon | agreed |  |  |
| R4-2010371 | TR skeleton of TR 37.717-21-11 | Huawei, HiSilicon | agreed |  |  |
| R4-2010372 | Revised WID: Rel-17 Dual Connectivity of 2 bands LTE inter-band CA and 1 NR band | Huawei, HiSilicon | not concluded |  |  |
| R4-2010373 | draft CR on introduction of completed EN-DC of 2 bands LTE and 1 band NR from RAN4#96-e into TS 38.101-3 | Huawei, HiSilicon | not concluded |  |  |
| R4-2010374 | Correction to cell re-selection for EUTRAN-NR high speed in TS36.133 | Ericsson | agreed |  |  |
| R4-2010375 | Further considerations on RRM requirements for interband CA on FR2 | Ericsson | noted |  |  |
| R4-2010376 | Discussion on remaining issues for NR CGI reading | Ericsson | noted |  |  |
| R4-2010377 | Impact of CGI reading on RLM | Ericsson | agreed |  |  |
| R4-2010378 | Impact of CGI reading on RLM and BM | Ericsson | revised |  | R4-2012158 |
| R4-2010379 | Testing for NR HST RRM requirements | Ericsson | noted |  |  |
| R4-2010380 | Updates to general section for NR-U in 38.133 | Ericsson | postponed |  |  |
| R4-2010381 | Conditional handover test cases for NR | Ericsson | postponed |  |  |
| R4-2010382 | Fine/rough beam assumption for idle mode and measurement procedure test case | Ericsson | revised |  | R4-2012073 |
| R4-2010383 | Draft CR for NR CA including FR1 and FR2 with 2DL and xUL | NTT DOCOMO INC. | revised |  | R4-2011652 |
| R4-2010384 | TP for DC\_19\_n1 for TR 37.717-11-11 | NTT DOCOMO INC. | approved |  |  |
| R4-2010385 | Discussion on CSI-RS measurement bandwidth | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2010386 | Discussion on the CSI-RS based measurement capability | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2010387 | CSI-RS based intra-frequency measurement requirements | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2010388 | Discussion on synchronization assumption | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2010389 | Simulation results for CSI-RS based measurements | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2010390 | 38.133 CR on introduction of CSI-RS based intra-frequency measurement | Nokia, Nokia Shanghai Bell | revised |  | R4-2012176 |
| R4-2010391 | 38.133 CR on CSI-RS based intra-frequency measurement requirements | Nokia, Nokia Shanghai Bell | merged |  |  |
| R4-2010392 | 38.133 CR on the performance of CSI-RS based intra-frequency measurement | Nokia, Nokia Shanghai Bell | postponed |  |  |
| R4-2010393 | Revised WID for Rel-17 Dual Connectivity (DC) of 1 LTE band (1DL/1UL) and 1 NR band (1DL/1UL) | CHTTL | not concluded |  |  |
| R4-2010394 | TP for DC\_21\_n1 for TR 37.717-11-11 | NTT DOCOMO INC. | approved |  |  |
| R4-2010395 | draft big CR for Rel-17 Dual Connectivity (DC) of 1 LTE band (1DL/1UL) and 1 NR band (1DL/1UL) | CHTTL | not concluded |  |  |
| R4-2010396 | TP for DC\_42\_n1 for TR 37.717-11-11 | NTT DOCOMO INC. | approved |  | - |
| R4-2010397 | Revised Rel-17 WID on DC of 4 bands LTE inter-band CA (4DL1UL) and 1 NR band (1DL1UL) | Nokia, Nokia Shanghai Bell | not concluded |  |  |
| R4-2010398 | CR to introduce new combinations of LTE 4band + NR 1band for TS 38.101-3 | Nokia, Nokia Shanghai Bell | not concluded |  |  |
| R4-2010399 | draftTR 37.717-41-11 v0.0.1 | Nokia, Nokia Shanghai Bell | agreed |  |  |
| R4-2010400 | draftTR 37.717-41-11 v0.1.0 | Nokia, Nokia Shanghai Bell | not concluded |  |  |
| R4-2010401 | draftCR to introduce CADC\_n25-n260 to 38.101-3 | Nokia, T-Mobile | revised |  | R4-2011653 |
| R4-2010402 | draftCR to introduce CADC\_n41-n260 to 38.101-3 | Nokia, T-Mobile | endorsed |  |  |
| R4-2010403 | draftCR to introduce CADC\_n66-n260 to 38.101-3 | Nokia, T-Mobile | not pursued |  |  |
| R4-2010404 | draftCR to introduce DC\_2A-48C\_n66 and 2A-48D\_n66 in DL to 38.101-3 | Nokia, T-Mobile | endorsed |  |  |
| R4-2010405 | draftCR to introduce DC\_48C\_n66 and 48D\_n66 in DL to 38.101-3 | Nokia, T-Mobile | endorsed |  |  |
| R4-2010406 | TP for 37.717-11-11 to introduce DC\_48\_n25A | Nokia, T-Mobile | revised |  | R4-2011604 |
| R4-2010407 | TP for 37.717-21-11 to introduce DC\_2A-48A\_n48A | Nokia, T-Mobile | revised |  | R4-2011605 |
| R4-2010408 | TP for 37.717-21-11 to introduce DC\_2A-71A\_n71A and DC\_66A-71A\_n71A | Nokia, T-Mobile | noted |  | R4-2011606 |
| R4-2010409 | TP for 37.717-21-11 to introduce DC\_48-66A\_n25A | Nokia, T-Mobile | revised |  | R4-2011607 |
| R4-2010410 | TP for 37.717-21-11 to introduce DC\_48A-66A\_n48A | Nokia, T-Mobile | approved |  |  |
| R4-2010411 | TP for 37.717-11-21 to introduce DC\_2A\_n48A-n66A | Nokia, T-Mobile | approved |  |  |
| R4-2010412 | TP for 37.717-11-21 to introduce DC\_2A-48A\_n48A-n66A | Nokia, T-Mobile | approved |  |  |
| R4-2010413 | TP for 37.717-11-21 to introduce DC\_48A\_n25A-n48A | Nokia, T-Mobile | revised |  | R4-2011662 |
| R4-2010414 | TP for 37.717-11-21 to introduce DC\_48A\_n48A-n66A | Nokia, T-Mobile | revised |  | R4-2011663 |
| R4-2010415 | TP for 37.717-11-21 to introduce DC\_48A-66A\_n25A-n48A | Nokia, T-Mobile | approved |  |  |
| R4-2010416 | TP for 37.717-11-21 to introduce DC\_66A\_n25A-n48A | Nokia, T-Mobile | revised |  | R4-2011664 |
| R4-2010417 | TP for 37.717-31-11 to introduce DC\_2A-66A-71A\_n71A | Nokia, T-Mobile | noted |  |  |
| R4-2010418 | TP for 37.717-11-11 to introduce DC\_28A\_n1A | Nokia | noted |  |  |
| R4-2010419 | TP for 37.717-21-11 to introduce DC\_3A-8A\_n40A | Nokia | revised |  | R4-2011608 |
| R4-2010420 | TP for 37.717-21-11 to introduce DC\_3A-28A\_n1A | Nokia | revised |  | R4-2011609 |
| R4-2010421 | TP for 37.717-21-11 to introduce DC\_7A-8A\_n40A | Nokia | approved |  |  |
| R4-2010422 | TP for 37.717-21-11 to introduce DC\_7A-28A\_n1A | Nokia | revised |  | R4-2011610 |
| R4-2010423 | TP for 37.717-11-21 to introduce DC\_1A-8A\_n40A-n78A | Nokia | approved |  |  |
| R4-2010424 | TP for 37.717-11-21 to introduce DC\_3A-7A\_n1A-n40A | Nokia | approved |  |  |
| R4-2010425 | TP for 37.717-11-21 to introduce DC\_3A-7A-8A\_n40A-n78A | Nokia | approved |  |  |
| R4-2010426 | TP for 37.717-11-21 to introduce DC\_3A-7A-28A\_n1A-n40A | Nokia | approved |  |  |
| R4-2010427 | TP for 37.717-11-21 to introduce DC\_3A-8A\_n40A-n78A | Nokia | approved |  |  |
| R4-2010428 | TP for 37.717-11-21 to introduce DC\_3A-28A\_n1A-n40A | Nokia | approved |  |  |
| R4-2010429 | TP for 37.717-11-21 to introduce DC\_7A\_n40A-n78A | Nokia | revised |  | R4-2011665 |
| R4-2010430 | TP for 37.717-11-21 to introduce DC\_7A-8A\_n40A-n78A | Nokia | approved |  |  |
| R4-2010431 | TP for 37.717-11-21 to introduce DC\_7A-28A\_n1A-n40A | Nokia | approved |  |  |
| R4-2010432 | TP for 37.717-11-21 to introduce DC\_8A\_n40A-n78A | Nokia | revised |  | R4-2011666 |
| R4-2010433 | TP for 37.717-11-21 to introduce DC\_28A\_n1A-n40A | Nokia | revised |  | R4-2011667 |
| R4-2010434 | TP for 37.717-31-11 to introduce DC\_3A-7A-8A\_n40A | Nokia | approved |  |  |
| R4-2010435 | TP for 37.717-31-11 to introduce DC\_3A-7A-28A\_n1A | Nokia | approved |  |  |
| R4-2010436 | TP for 37.717-11-11 to introduce DC\_28A\_n2A and DC\_2A\_n28A | Nokia | revised |  | R4-2011611 |
| R4-2010437 | TP for 37.717-31-11 to introduce DC\_5A-7-66A\_n66A | Nokia | approved |  |  |
| R4-2010438 | NR-U - On intra-band CA and wideband operation modes | Nokia, Nokia Shanghai Bell | withdrawn |  |  |
| R4-2010439 | TP for DC\_3-19\_n1 for TR 37.717-21-11 | NTT DOCOMO INC. | approved |  |  |
| R4-2010440 | Way of working - New basket WI adding channel BW to existing NR bands | Ericsson | noted |  |  |
| R4-2010441 | Bands n41 and n48 - Add 70MH CBW | Ericsson | noted |  |  |
| R4-2010442 | Draft CR to 38.101-1 Band n41 - Additional 70MHz Channel BW | Ericsson | not pursued |  |  |
| R4-2010443 | Draft CR to 38.101-1 Band n48 - Additional 70MHz Channel BW | Ericsson | not pursued |  |  |
| R4-2010444 | Draft CR to 38.104 Band n48 - Additional 70MHz Channel BW | Ericsson | not pursued |  |  |
| R4-2010445 | TR 38xxx Introduction of NR Band 26x (47Ghz band) | Ericsson | agreed |  |  |
| R4-2010446 | Requirement overview for 47 GHz frequency band | Ericsson | noted |  |  |
| R4-2010447 | 47GHz band - Regulatory overview - System parameters | Ericsson | approved |  |  |
| R4-2010448 | TP to TR for SI IMT parameters - BS parameters | Ericsson | noted |  |  |
| R4-2010449 | TP to TR for SI IMT parameters - UE parameters | Ericsson | noted |  |  |
| R4-2010450 | Simulation resulation results - DL - SI IMT parameters | Ericsson | noted |  |  |
| R4-2010451 | Simulation resulation results - UL - SI IMT parameters | Ericsson | noted |  |  |
| R4-2010452 | TP for DC\_3-21\_n1 for TR 37.717-21-11 | NTT DOCOMO INC. | revised |  | R4-2011612 |
| R4-2010453 | TP for DC\_3-42\_n1 for TR 37.717-21-11 | NTT DOCOMO INC. | approved |  |  |
| R4-2010454 | TP for DC\_19-21\_n1 for TR 37.717-21-11 | NTT DOCOMO INC. | approved |  |  |
| R4-2010455 | On band simplification | Nokia Japan | noted |  |  |
| R4-2010456 | TP for DC\_19-42\_n1 for TR 37.717-21-11 | NTT DOCOMO INC. | revised |  | R4-2011613 |
| R4-2010457 | On switching period for NR V2X in ITS band | CATT | noted |  |  |
| R4-2010458 | TP for DC\_21-42\_n1 for TR 37.717-21-11 | NTT DOCOMO INC. | revised |  | R4-2011614 |
| R4-2010459 | NR-U 6 GHz band in Korea | LG Electronics Finland | noted |  |  |
| R4-2010460 | Correction of OCNG configuration for LAA SDR requirements | Ericsson | agreed |  |  |
| R4-2010461 | Correction of OCNG configuration for LAA SDR requirements | Ericsson | agreed |  |  |
| R4-2010462 | Correction of OCNG configuration for LAA SDR requirements | Ericsson | agreed |  |  |
| R4-2010463 | Addition of applicability for MTC UE capable of 64QAM DL | Ericsson | agreed |  | - |
| R4-2010464 | Addition of applicability for MTC UE capable of 64QAM DL | Ericsson | agreed |  |  |
| R4-2010465 | Correction of L1-SINR reporting requirements | Ericsson | agreed |  |  |
| R4-2010466 | RRM requirements for MAC-CE based PL-RS activation | Ericsson | noted |  |  |
| R4-2010467 | MRTD/MTTD requirements for Multi-TRP deployment for MIMO+CA and MIMO+DC | Ericsson | noted |  |  |
| R4-2010468 | Overview of test cases with 2-step RACH | Ericsson | noted |  |  |
| R4-2010469 | Beam management for NR-U | Ericsson | noted |  |  |
| R4-2010470 | CR: Beam management requirements with CCA | Ericsson | revised |  | R4-2012096 |
| R4-2010471 | Simulation results of MPDCCH with DMRS+CRS | Ericsson | noted |  |  |
| R4-2010472 | Simulation results of CSI-RS based PMI reporting test | Ericsson | noted |  |  |
| R4-2010473 | Introduction of enhanced MPDCCH demodulation requirements | Ericsson | revised |  | R4-2012597 |
| R4-2010474 | Introduction of CSI-RS based PMI reporting test for non-BL UEs | Ericsson | revised |  | R4-2012598 |
| R4-2010475 | Summary of simulation results for Rel-16 eMTC demodulation requirements | Ericsson | noted |  |  |
| R4-2010476 | NPDSCH demodulation requirements with multi-TB transmission | Ericsson | noted |  |  |
| R4-2010477 | NPUSCH demodulation requirements with multi-TB transmission | Ericsson | noted |  |  |
| R4-2010478 | Evaluation of WUS-PDCCH decoding performance | Ericsson | noted |  |  |
| R4-2010479 | PDSCH demodulation requirements for HST-DPS | Ericsson | noted |  |  |
| R4-2010480 | Release independence and applicability rule for NR HST demodulation requirements | Ericsson | noted |  |  |
| R4-2010481 | PDSCH requirements for Multi-DCI/Single-DCI based transmission | Ericsson | noted |  |  |
| R4-2010482 | Release independent requirements for Rel-16 performance requirement enhancement | Ericsson | noted |  |  |
| R4-2010483 | Setup for CA CQI reporting requirements | Ericsson | noted |  |  |
| R4-2010484 | TP to TR 38.921: UE IMT technology related parameters | Huawei, HiSilicon | revised |  | R4-2011828 |
| R4-2010485 | TP to TR 38.921: BS IMT technology related parameters | Huawei, HiSilicon | revised |  | R4-2011829 |
| R4-2010486 | Downlink co-existence simulation results on 6.425-7.125GHz and 10.0-10.5GHz for urban macro and indoor hotspot | Huawei, HiSilicon | noted |  |  |
| R4-2010487 | Uplink co-existence simulation results on 6.425-7.125GHz and 10.0-10.5GHz for urban macro and indoor hotspot | Huawei, HiSilicon | noted |  |  |
| R4-2010488 | TP to TR 38.921: antenna characteristics on 6.425-7.125GHz and 10.0-10.5 GHz | Huawei, HiSilicon | noted |  |  |
| R4-2010489 | Spatial emission and interference mitigation | Huawei, HiSilicon | noted |  |  |
| R4-2010490 | A-MPR for n13 | Huawei, HiSilicon | noted |  |  |
| R4-2010491 | Draft CR for TS 38.10: introduction of NR band n13 | Huawei, HiSilicon | revised |  | R4-2011802 |
| R4-2010492 | CR for TS 38.141-2: NR FR2 test model 2 | Huawei, HiSilicon | revised |  | R4-2012591 |
| R4-2010493 | CR for TS 38.141-2: NR FR2 test model 2 | Huawei, HiSilicon | agreed |  |  |
| R4-2010494 | Further discussion on R16 IAB MT features | Huawei, HiSilicon | noted |  |  |
| R4-2010495 | Consideration on 6GHz band definition | Huawei, HiSilicon | noted |  |  |
| R4-2010496 | Discussion on NR-U UE ACS | Huawei, HiSilicon | noted |  |  |
| R4-2010497 | Discussion on NR-U UE ACLR and MPR evaluation | Huawei, HiSilicon | noted |  |  |
| R4-2010498 | Spectrum utilization for NR-U | Huawei, HiSilicon | noted |  |  |
| R4-2010499 | Proposals on 100MHz CBW in NR-U | Huawei, HiSilicon | noted |  |  |
| R4-2010500 | Discussion on numerology and channel bandwidth for 52.6 GHz to 71 GHz | Huawei, HiSilicon | noted |  |  |
| R4-2010501 | Work plan on introduction of channel bandwidths 35MHz and 45MHz | Huawei, HiSilicon | approved |  |  |
| R4-2010502 | WID revision on introduction of channel bandwidths 35MHz and 45MHz | Huawei, HiSilicon | noted |  |  |
| R4-2010503 | Spectrum utilization for 35MHz and 45MHz | Huawei, HiSilicon | noted |  |  |
| R4-2010504 | Overview on introduction of channel bandwidths 35MHz and 45MHz for UE | Huawei, HiSilicon | noted |  |  |
| R4-2010505 | Overview on introduction of channel bandwidths 35MHz and 45MHz for BS | Huawei, HiSilicon | noted |  |  |
| R4-2010506 | TP for TR 38.717-02-01: CA\_n5-n25 | Huawei, HiSilicon, Bell Mobility, Telus | revised |  | R4-2011637 |
| R4-2010507 | Draft CR for 38.101-1: CA\_n5-n66 | Huawei, HiSilicon, Bell Mobility, Telus | endorsed |  |  |
| R4-2010508 | Draft CR for 38.101-1: CA\_n5A-n78(2A) | Huawei, HiSilicon, Bell Mobility, Telus | endorsed |  |  |
| R4-2010509 | TP for TR 38.717-02-01: CA\_n71-n78 | Huawei, HiSilicon, Bell Mobility, Telus | revised |  | R4-2011638 |
| R4-2010510 | Draft CR to 38.101-1 CA\_n7-n66-n78 | Huawei, HiSilicon, Bell Mobility, Telus | endorsed |  |  |
| R4-2010511 | TP for TR 37.717-11-11: DC\_4A\_n2A | Huawei, HiSilicon, Bell Mobility, Telus | revised |  | R4-2011615 |
| R4-2010512 | TP for TR 37.717-21-11: DC\_7-66\_n5 | Huawei, HiSilicon, Bell Mobility, Telus | revised |  | R4-2011616 |
| R4-2010513 | TP for TR 37.717-21-11: DC\_2-7\_n5 | Huawei, HiSilicon, Bell Mobility, Telus | approved |  |  |
| R4-2010514 | TP for DC\_3-19-42\_n1 for TR 37.717-31-11 | NTT DOCOMO INC. | approved |  |  |
| R4-2010515 | TP for DC\_3-21-42\_n1 for TR 37.717-31-11 | NTT DOCOMO INC. | approved |  |  |
| R4-2010516 | TP for DC\_19-21-42\_n1 for TR 37.717-31-11 | NTT DOCOMO INC. | approved |  |  |
| R4-2010517 | [CR] Corrections to DAPS Handover | ZTE Corporation | agreed |  |  |
| R4-2010518 | Introduction of LTE inter-band Carrier Aggregation for x bands DL (x=4, 5) with 1 band UL to TS36.101 | Nokia, Nokia Shanghai Bell | not treated |  |  |
| R4-2010519 | Correction of ACS requiremet for n259 | Nokia, Nokia Shanghai Bell | agreed |  |  |
| R4-2010520 | Workplan for Introduction of NR 47 GHz band | Nokia, Nokia Shanghai Bell | approved |  |  |
| R4-2010521 | Regulatory Background of 47 GHz band | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2010522 | Band number and System parameters of 47 GHz band | Nokia, Nokia Shanghai Bell | approved |  |  |
| R4-2010523 | UE RF requirements for 47 GHz band | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2010524 | Including 70 MHz UE RF requirement to band n41 and n48 | Nokia, Nokia Shanghai Bell | endorsed |  |  |
| R4-2010525 | Including 70 MHz B RF requirement to band n48 | Nokia, Nokia Shanghai Bell | endorsed |  |  |
| R4-2010526 | TP to TR 38.717-02-01: CA\_n7-n66 | Nokia, Bell Mobility | revised |  | R4-2011639 |
| R4-2010527 | TP to TR 38.717-02-00: CA\_n25-n38 | Nokia, Bell Mobility | revised |  | R4-2011640 |
| R4-2010528 | TP to TR 38.717-03-01: CA\_n5-n25-n66 | Nokia, Bell Mobility | approved |  |  |
| R4-2010529 | TP to TR 38.717-03-02: CA\_n5-n25-n66 | Nokia, Bell Mobility | revised |  | R4-2011677 |
| R4-2010530 | TP to TR 38.717-03-01: CA\_n5-n25-n78 | Nokia, Bell Mobility | approved |  |  |
| R4-2010531 | TP to TR 38.717-03-02: CA\_n5-n25-n78 | Nokia, Bell Mobility | approved |  |  |
| R4-2010532 | Views on band 48/n48 spectrum sharing | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2010533 | Open issues on FR2 FWA UE RF requirement | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2010534 | Discussion and draft Reply LS on power control for NR-DC | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2010535 | Introduction of p-Max to FR2 | Nokia, Nokia Shanghai Bell | not pursued |  |  |
| R4-2010536 | On default SSB for band n34, and n39 | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2010537 | Scope and TP of FR2 Inter-band DL CA in Rel-16 | Nokia, Nokia Shanghai Bell | revised |  | R4-2011742 |
| R4-2010538 | Introduction of FR2 inter-band DL CA | Nokia, Nokia Shanghai Bell | revised |  | R4-2011743 |
| R4-2010539 | TP for CA 2DL2UL n1-n77 for TR 38.717-02-01 | NTT DOCOMO INC. | approved |  | - |
| R4-2010540 | Discussion on the addition of BWs for band n83 and n84 | Huawei, HiSilicon | noted |  |  |
| R4-2010541 | draftCR to 38101-1 to add 30MHz BW for band n83 | Huawei, HiSilicon | endorsed |  |  |
| R4-2010542 | draftCR to 38104 to add 30MHz BW for band n83 | Huawei, HiSilicon | endorsed |  |  |
| R4-2010543 | draftCR to 38101-1 to add 25, 30, 40, 50MHz BW for band n84 | Huawei, HiSilicon | endorsed |  |  |
| R4-2010544 | draftCR to 38104 to add 25, 30, 40, 50MHz BW for band n84 | Huawei, HiSilicon | endorsed |  |  |
| R4-2010545 | Further on adding bandwidths for NR bands | Huawei, HiSilicon | noted |  |  |
| R4-2010546 | Discussion on the SUL band combination PC2 SAR compliance | Huawei, HiSilicon | noted |  |  |
| R4-2010547 | TP to TR 37.717-00-00 SUL\_n41A-n83A | Huawei, HiSilicon, Etisalat, CMCC | revised |  | R4-2011668 |
| R4-2010548 | TP to TR 37.717-00-00 SUL\_n79A-n83A | Huawei, CBN, CMCC, HiSilicon | revised |  | R4-2011669 |
| R4-2010549 | DraftCR to 38101-1 on CA\_n78C\_SUL\_n78A-n80A | Huawei, HiSilicon, CKH IOD UK, MediaTek, Spreadtrum | endorsed |  |  |
| R4-2010550 | DraftCR to 38101-1 on CA\_n78C\_SUL\_n78A-n84A | Huawei, HiSilicon, CKH IOD UK, MediaTek, Spreadtrum | revised |  | R4-2011670 |
| R4-2010551 | DraftCR to 38101-1 on CA\_n79C\_SUL\_n79A-n80A | Huawei, CMCC, HiSilicon, MediaTek, Spreadtrum | endorsed |  |  |
| R4-2010552 | DraftCR to 38101-1 on CA\_n41C\_SUL\_n41A-n80A | Huawei, CMCC, HiSilicon, MediaTek, Spreadtrum | endorsed |  |  |
| R4-2010553 | TP to TR 37.717-00-00 DC\_28A\_SUL\_n41A-n83A | Huawei, HiSilicon, Etisalat, CMCC | revised |  | R4-2011671 |
| R4-2010554 | TP to TR 37.717-11-11 DC\_4A\_n5A | Huawei, HiSilicon | revised |  | R4-2011617 |
| R4-2010555 | TP to TR 37.717-11-11 DC\_4A\_n7A | Huawei, HiSilicon | approved |  |  |
| R4-2010556 | TP to TR 37.717-21-11 DC\_1A-40A\_n78A | Huawei, HiSilicon | approved |  |  |
| R4-2010557 | TP to TR 37.717-21-11 DC\_3A-40A\_n78A | Huawei, HiSilicon | approved |  |  |
| R4-2010558 | TP to TR 37.717-21-11 DC\_7A-40A\_n78A | Huawei, HiSilicon | approved |  |  |
| R4-2010559 | TP to TR 37.717-21-11 DC\_8A-40A\_n78A | Huawei, HiSilicon | revised |  | R4-2011618 |
| R4-2010560 | TP for CA 2DL2UL n77-n79 for TR 38.717-02-01 | NTT DOCOMO INC. | approved |  | - |
| R4-2010561 | Search threshold applicability in euCA | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2010562 | CR clarifying S-measure thresholds for EMR carriers. | Nokia, Nokia Shanghai Bell | postponed |  | - |
| R4-2010563 | CR clarifying S-measure thresholds for EMR carriers | Nokia, Nokia Shanghai Bell | withdrawn |  |  |
| R4-2010564 | Measurement Performance Requirements test for euCA | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2010565 | CR on performance requirements tests for euCA. | Nokia, Nokia Shanghai Bell | postponed |  | - |
| R4-2010566 | CR on performance requirements tests for euCA | Nokia, Nokia Shanghai Bell | withdrawn |  |  |
| R4-2010567 | MR-DCCA and EMR RRM requirements for NR (38.133) | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2010568 | CR on UE requirement for MR-DC early measurement reporting in 38.133 | Nokia, Nokia Shanghai Bell | revised |  | R4-2012113 |
| R4-2010569 | NR inter-RAT EMR requirements for 36.133 | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2010570 | CR on UE requirement for MR-DC early measurement reporting in 36.133 | Nokia, Nokia Shanghai Bell | postponed |  |  |
| R4-2010571 | FR2 inter-band CA requirements | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2010572 | CR for FR2 inter-band CA requirements | Nokia, Nokia Shanghai Bell | revised |  | R4-2012162 |
| R4-2010573 | Discussion on UL spatial relation switch | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2010574 | TP for CA 2DL2UL n78-n79 for TR 38.717-02-01 | NTT DOCOMO INC. | revised |  | R4-2011643 |
| R4-2010575 | TP for CA 3DL1UL n1-n77-n79 for TR 38.717-03-01 | NTT DOCOMO INC. | revised |  | R4-2011674 |
| R4-2010576 | Discussion on CSI-RS based L3 measurement bandwidth | NTT DOCOMO, INC. | noted |  |  |
| R4-2010577 | Discussion on synchronization assumption for CSI-RS based L3 measurement | NTT DOCOMO, INC. | noted |  |  |
| R4-2010578 | Discussion on CSI-RS based L3 measurement requirement and capability | NTT DOCOMO, INC. | noted |  |  |
| R4-2010579 | TP for CA 3DL1UL n1-n78-n79 for TR 38.717-03-01 | NTT DOCOMO INC. | revised |  | R4-2011675 |
| R4-2010580 | TP for CA 3DL2UL n1-n77-n79 for TR 38.717-03-02 | NTT DOCOMO INC. | withdrawn |  |  |
| R4-2010581 | NBIOT standalone operation for FCC regulation considerations | MediaTek Inc. | noted |  |  |
| R4-2010582 | CR for TS 36.101: CR for category NB1 against FCC regulation in standalone mode | MediaTek Inc. | not pursued |  | - |
| R4-2010583 | CR for TS 36.101: CR for category NB1 against FCC regulation in standalone mode | MediaTek Inc. | withdrawn |  |  |
| R4-2010584 | CR for TS 36.101: CR for category NB1 against FCC regulation in standalone mode | MediaTek Inc. | withdrawn |  |  |
| R4-2010585 | Architecture discussion for NRU 6GHz | MediaTek Inc. | noted |  |  |
| R4-2010586 | Transmitter requirements consideration for NRU 6GHz | MediaTek Inc. | noted |  |  |
| R4-2010587 | MSD correction for new added CBW | MediaTek Inc. | revised |  | R4-2011779 |
| R4-2010588 | TP for CA 3DL2UL n1-n78-n79 for TR 38.717-03-02 | NTT DOCOMO INC. | withdrawn |  |  |
| R4-2010589 | CR for introduction of EESS protection for n257 into general spurious emission | NTT DOCOMO INC. | agreed |  |  |
| R4-2010590 | Scell activation and deactivation requirements in NR-U | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2010591 | RLM requirements in NR-U | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2010592 | Remaining aspects in measurement requirements in NR-U | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2010593 | CR to TS 38.133 - Handover requirements in NR-U | Nokia, Nokia Shanghai Bell | revised |  | R4-2012086 |
| R4-2010594 | CR to TS 38.133 to address NR-U inter-frequency measurements | Nokia, Nokia Shanghai Bell | revised |  | R4-2012099 |
| R4-2010595 | CR to TS 36.133 to address NR-U inter-RAT measurements | Nokia, Nokia Shanghai Bell | revised |  | R4-2012100 |
| R4-2010596 | Timing requirements in NR-U | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2010597 | CR on timing requirements in NR-U | Nokia, Nokia Shanghai Bell | not pursued |  |  |
| R4-2010598 | Remove power-class ambiguity for UL-MIMO PC2 capable UE configured for EN-DC | Ericsson | not pursued |  |  |
| R4-2010599 | Draft Reply LS to RAN5 on ambiguity in output power requirements for power class 2 UE for EN-DC | Ericsson | noted |  |  |
| R4-2010600 | CR to TS 38.124 combined correction R15 | Xiaomi | agreed |  | - |
| R4-2010601 | CR to TS 38.124 combined correction R16 | Xiaomi | agreed |  |  |
| R4-2010602 | CR to TS 38.124: additional EMC requirements for different features correction R15 | Xiaomi | not pursued |  |  |
| R4-2010603 | [UE EMC] CR to TS38.124 additional EMC requirements for different features correction R16 | Xiaomi | withdrawn |  |  |
| R4-2010604 | [UE EMC] Discussion on RX exclusion band for CA and DC cases | Xiaomi | noted |  |  |
| R4-2010605 | on remaining issue for con-current operation | Xiaomi | noted |  |  |
| R4-2010606 | on remaining issue for UE operations for licensed bands partially used for SL transmission | Xiaomi | noted |  |  |
| R4-2010607 | Discussion on HST PUSCH remain issues | Ericsson | noted |  |  |
| R4-2010608 | simulation results for NR PUSCH HST | Ericsson | noted |  |  |
| R4-2010609 | Discussion on HST UL TA remain issues | Ericsson | noted |  |  |
| R4-2010610 | simulation results for NR PUSCH UL TA HST | Ericsson | noted |  |  |
| R4-2010611 | Discussion on HST PRACH remain issues | Ericsson | noted |  |  |
| R4-2010612 | Additional bandwidth test cases for HST PUSCH | Ericsson | revised |  | R4-2012681 |
| R4-2010613 | overview of BS demodulation for NR-U | Ericsson | noted |  |  |
| R4-2010614 | CR for introduction of EESS protection for n257 into general spurious emission | NTT DOCOMO INC. | agreed |  |  |
| R4-2010615 | Remaining issues on WRC-19 resolution | NTT DOCOMO INC. | noted |  |  |
| R4-2010616 | Further study feasibility to support up to 3 us MRTD | Ericsson, KDDI Corporation, NTT DOCOMO INC | noted |  |  |
| R4-2010617 | Updates on MRTD and MTTD requirements for FR2 inter-band DL CA | Ericsson, KDDI Corporation, NTT DOCOMO INC | postponed |  |  |
| R4-2010618 | Revised RP-201294 - Basket WID on adding channel bandwidth support to existing NR bands | Ericsson | revised |  | R4-2011790 |
| R4-2010619 | Enhancement on FR2 MPE mitigation | ZTE Corporation | noted |  |  |
| R4-2010620 | On NR bands n34 and n39 supporting 30kHz SSB SCS | ZTE Corporation | noted |  |  |
| R4-2010621 | CR to TS38.104: Add 30k SSB SCS for Band n34 and n39 | ZTE Corporation | revised |  | R4-2011684 |
| R4-2010622 | CR to TS38.104: Add 30k SSB SCS for Band n34 and n39 | ZTE Corporation | agreed |  |  |
| R4-2010623 | CR to TS38.101-1: Add 30k SSB SCS for Band n34 and n39 | ZTE Corporation | not pursued |  |  |
| R4-2010624 | CR to TS38.101-1: Add 30k SSB SCS for Band n34 and n39 | ZTE Corporation | withdrawn |  |  |
| R4-2010625 | CR to TS38.101-1: Correction on the general requirement and configured transmitted power requirement for inter-band DC | ZTE Corporation | not pursued |  |  |
| R4-2010626 | CR to TS 38.101-1: Correction on the Aggregated Channel Bandwidth | ZTE Corporation | not pursued |  |  |
| R4-2010627 | CR to TS 38.101-1: Correction on the Aggregated Channel Bandwidth | ZTE Corporation | withdrawn |  |  |
| R4-2010628 | CR to TS 38.101-2: Correction on the Aggregated Channel Bandwidth | ZTE Corporation | agreed |  |  |
| R4-2010629 | CR to TS 38.101-2: Correction on the Aggregated Channel Bandwidth | ZTE Corporation | agreed |  |  |
| R4-2010630 | CR to TS 38.101-2: Correction on the PC3 MPR description | ZTE Corporation | agreed |  |  |
| R4-2010631 | CR to TS 38.101-2: Correction on the PC3 MPR description | ZTE Corporation | agreed |  |  |
| R4-2010632 | CR to TS 38.101-3: PC2 band 3+band n41 ENDC | ZTE Corporation, CMCC, Xiaomi | not pursued |  | R4-2011788 |
| R4-2010633 | CR to TS 38.307 on NR-DC release-independent | ZTE Corporation | not pursued |  |  |
| R4-2010634 | Discussion on PC2 inter-band NR CA | ZTE Corporation | noted |  |  |
| R4-2010635 | On spectrum utilization for new channel bandwidth of 35MHz and 45MHz | ZTE Corporation | noted |  |  |
| R4-2010636 | Discussion on UE RF requirement for new channel bandwidth of 35MHz and 45MHz | ZTE Corporation | noted |  |  |
| R4-2010637 | Draft CR to TS38.101-1: CA\_n28A-n41A | ZTE Corporation, CMCC | endorsed |  |  |
| R4-2010638 | Draft CR to TS38.101-1: CA\_n40A-n41C | ZTE Corporation, CMCC | endorsed |  |  |
| R4-2010639 | CR to TS 38.101-3: Clean up the MSD test point for ENDC(three band) | ZTE Corporation | agreed |  |  |
| R4-2010640 | Draft CR to TS 38.101-3: ENDC 41+n258 configurations | ZTE Corporation | endorsed |  |  |
| R4-2010641 | Draft CR to TS 38.101-3: introduction of DC\_40A\_n79C | ZTE Corporation | endorsed |  |  |
| R4-2010642 | TP for TR38.717-03-01\_CA\_n39A-n40A-n79A | ZTE Corporation | approved |  |  |
| R4-2010643 | TP for TR38.717-03-01\_CA\_n39A-n40A-n41A | ZTE Corporation | approved |  |  |
| R4-2010644 | TP for TR38.717-03-02\_CA\_n39A-n40A-n79A | ZTE Corporation | approved |  |  |
| R4-2010645 | TP for TR38.717-03-02\_CA\_n39A-n40A-n41A | ZTE Corporation | approved |  |  |
| R4-2010646 | TP for TR 37.717-33\_DC\_41A\_n79A-n258A | ZTE Corporation | approved |  |  |
| R4-2010647 | Proposal on the skeleton of IAB EMC | ZTE Corporation | approved |  |  |
| R4-2010648 | Emission for IAB EMC | ZTE Corporation | revised |  | R4-2012642 |
| R4-2010649 | References for IAB EMC | ZTE Corporation | revised |  | R4-2012643 |
| R4-2010650 | Revised WID on Rel-17 NR Inter-band CA\_DC xUL\_2DL (x=1,2) | ZTE Corporation | not concluded |  |  |
| R4-2010651 | Draft CR to reflect the completed NR inter band CA DC combinations for 2 bands DL with up to 2 bands UL into TS 38.101-1 | ZTE Corporation | not concluded |  |  |
| R4-2010652 | Draft CR to reflect the completed NR inter band CA DC combinations for 2 bands DL with up to 2 bands UL into TS 38.101-3 | ZTE Corporation | not concluded |  |  |
| R4-2010653 | Revised WID on Rel-17 NR Inter-band Carrier AggregationDual Connectivity for 3 bands DL with 2 bands UL | ZTE Corporation | not concluded |  |  |
| R4-2010654 | Draft CR to reflect the completed NR inter band CA DC combinations for 3 bands DL with 2 bands UL into TS 38.101-1 | ZTE Corporation | not concluded |  |  |
| R4-2010655 | Draft CR to reflect the completed NR inter band CA DC combinations for 3 bands DL with 2 bands UL into TS 38.101-3 | ZTE Corporation | not concluded |  |  |
| R4-2010656 | Revised WID on Rel-17 Dual Connectivity (DC) x bands (x=1,2) LTE inter-band CA (xDL/xUL) and y bands (y=3-x) NR inter-band CA | ZTE Corporation | not concluded |  |  |
| R4-2010657 | Draft CR to reflect the completed ENDC combinations for 3 bands DL with 3 bands UL into TS 38.101-3 | ZTE Corporation | not concluded |  |  |
| R4-2010658 | TR 37.717-33 v0.0.1 | ZTE Corporation | agreed |  |  |
| R4-2010659 | TR 37.717-33 v0.1.0 | ZTE Corporation | not concluded |  |  |
| R4-2010660 | Revised WID on Rel-17 Dual Connectivity (DC) of x bands (x=1,2,3) LTE inter-band CA (xDL1UL) and 3 bands NR inter-band CA (3DL1UL) | ZTE Corporation | not concluded |  |  |
| R4-2010661 | TR 37.717-11-31\_v0.0.1 | ZTE Corporation | agreed |  |  |
| R4-2010662 | TR 37.717-11-31\_v0.1.0 | ZTE Corporation | not concluded |  |  |
| R4-2010663 | CR 38.133 (8.3.2-3) Corrections to SCell activation delay requirements | Ericsson | revised |  | R4-2012235 |
| R4-2010664 | On Direct SCell Activation of Multiple Downlink SCells | Ericsson | noted |  |  |
| R4-2010665 | CR 38.133 (8.3.9-8.3.11) Direct SCell activation delay for multiple downlink SCells | Ericsson | revised |  | R4-2012115 |
| R4-2010666 | On Spatial Relation Switching Delay Requirements | Ericsson | noted |  |  |
| R4-2010667 | CR 36.133 (8.17.2.2.a) Clarification of UE behaviour | Ericsson | agreed |  | - |
| R4-2010668 | On BWP switching on multiple CCs | Ericsson | noted |  |  |
| R4-2010669 | On SCell Dormancy Switching Delay | Ericsson | noted |  |  |
| R4-2010670 | CR 38.133 SCell dormancy switching of multiple SCells | Ericsson | revised |  | R4-2012119 |
| R4-2010671 | Discussion and TP for further clarification of NR-U BW Class requirements and intra-band contiguous CA with LBT failure | MediaTek Inc. | noted |  |  |
| R4-2010672 | Revised WID NR Intra-band Rel-17 | Ericsson | not concluded |  |  |
| R4-2010673 | Revised WID LTE 3DL and one NR band Rel-17 | Ericsson | not concluded |  |  |
| R4-2010674 | Revised WID 4 bands NR CA Rel-17 | Ericsson | not concluded |  |  |
| R4-2010675 | CR introduction completed band combinations 38.717-01-01 - | Ericsson | not concluded |  |  |
| R4-2010676 | CR introduction completed band combinations 38.717-01-01 - | Ericsson | not concluded |  |  |
| R4-2010677 | CR introduction completed band combinations 37.717-31-11 - | Ericsson | not concluded |  |  |
| R4-2010678 | CR introduction completed band combinations 38.717-04-01 - | Ericsson | not concluded |  |  |
| R4-2010679 | CR introduction completed band combinations 38.717-04-01 - | Ericsson | not concluded |  |  |
| R4-2010680 | TR skeleton 38.717-01-01 v0.0.1 Rel-17 NR Intra-band | Ericsson | agreed |  |  |
| R4-2010681 | TR skeleton 37.717-31-11 v0.0.1 Rel-17 DC combinations LTE 3DL and one NR band | Ericsson | agreed |  |  |
| R4-2010682 | TR skeleton 38.717-04-01 v0.0.1 Rel-17 NR Inter-band 4 bands CA | Ericsson | agreed |  |  |
| R4-2010683 | draft CR to 38.101-1 to add new configuration and BCSs | Ericsson | revised |  | R4-2011644 |
| R4-2010684 | TP to TR 38.717-01-01 to include CA\_n71(2A) | Ericsson, T-Mobile US | revised |  | R4-2011619 |
| R4-2010685 | draft CR 38.101-1 to add CA\_n25A-n71(2A), CA\_n41A-n71(2A), CA\_n66A-n71(2A) | Ericsson, T-Mobile US | endorsed |  |  |
| R4-2010686 | TP for TR 38.717-02-00 to include CA\_n25A-n48A, CA\_n25A-n48(2A), CA\_n25A-n48C | Ericsson, T-Mobile US | revised |  | R4-2011645 |
| R4-2010687 | TP to add CA\_n25A-n48A-n66A, CA\_n25A-n48(2A)-n66A, CA\_n25A-n48C-n66A | Ericsson, T-Mobile US | approved |  |  |
| R4-2010688 | TP to add CA\_n25A-n41A-n66A-n71A, CA\_n25A-n41(2A)-n66A-n71A, CA\_n25A-n41C-n66A-n71A | Ericsson, T-Mobile US | revised |  | R4-2011676 |
| R4-2010689 | draft CR 38.101-3 to add CADC\_n41-n258 | Ericsson, T-Mobile US | endorsed |  |  |
| R4-2010690 | draft CR 38.101-3 to add CADC\_n66-n258 | Ericsson, T-Mobile US | endorsed |  |  |
| R4-2010691 | draft CR 38.101-3 to add CADC\_n25-n258 | Ericsson, T-Mobile US | endorsed |  |  |
| R4-2010692 | draft CR 38.101-3 to add CADC\_n41-n261 | Ericsson, T-Mobile US | endorsed |  |  |
| R4-2010693 | draft CR 38.101-3 to add DC\_n66-n260 | Ericsson, T-Mobile US | not pursued |  |  |
| R4-2010694 | draft CR 38.101-3 to add DC\_n66-n261 | Ericsson, T-Mobile US | not pursued |  |  |
| R4-2010695 | draft CR 38.101-3 to add CADC\_n25-n261 | Ericsson, T-Mobile US | endorsed |  |  |
| R4-2010696 | draft CR 38.101-3 to add CADC\_n25-n260 | Ericsson, T-Mobile US | not pursued |  |  |
| R4-2010697 | TP for TR 37.717-21-11 to include DC\_2A-12A\_n5A | Ericsson, US Cellular | revised |  | R4-2011620 |
| R4-2010698 | TP for TR 37.717-21-11 to include DC\_2A-5A\_n12A | Ericsson, US Cellular | revised |  | R4-2011621 |
| R4-2010699 | TP for TR 37.717-21-11 to include DC\_5A-66A\_n12A | Ericsson, US Cellular | approved |  |  |
| R4-2010700 | TP for TR 37.717-21-11 to include DC\_66A\_(n)5AA | Ericsson, US Cellular | approved |  |  |
| R4-2010701 | TP for TR 37.717-21-11 to include DC\_12A-66A\_n5A | Ericsson, US Cellular | approved |  |  |
| R4-2010702 | Correction of band combinations table in Rel-16 | Ericsson | agreed |  |  |
| R4-2010703 | CR on delay requirements for SCell dormancy | OPPO | agreed |  |  |
| R4-2010704 | Discussion on RRM requirements maintenance of measurement relaxation for UE power saving | OPPO | noted |  |  |
| R4-2010705 | CR on RRM Measurement relaxation requirements for UE power saving (TS 38.133) | OPPO | postponed |  |  |
| R4-2010706 | On PRS RSTD measurement requirements for NR positioning | OPPO | noted |  |  |
| R4-2010707 | On UE Rx-Tx time difference measurement requirements | OPPO | noted |  |  |
| R4-2010708 | Link-level simulation results for UE Rx-Tx time difference measurements | OPPO | noted |  |  |
| R4-2010709 | On new measurement gap patterns for positioning measurements | OPPO | noted |  |  |
| R4-2010710 | On MRTD requirement for FR2 DL inter-band CA | OPPO | noted |  |  |
| R4-2010711 | On RRM requirements for BWP switching on multiple CCs | OPPO | noted |  |  |
| R4-2010712 | On FR2 inter-band CA RRM requirement for CBM and/or IBM UE | OPPO | noted |  |  |
| R4-2010713 | On measurement capability of CSI-RS L3 measurement | OPPO | noted |  |  |
| R4-2010714 | On measurement requirements for CSI-RS L3 measurement | OPPO | noted |  |  |
| R4-2010715 | CR on inter-frequency CSI-RS L3 measurement requirements | OPPO | revised |  | R4-2012173 |
| R4-2010716 | On UE capability signalling for CSI-RS L3 measurement | OPPO | noted |  |  |
| R4-2010717 | Work plan for Introduction of NR band n24 | Ligado Networks | approved |  |  |
| R4-2010718 | Discussion on performance requirements for PDCCH-WUS | MediaTek inc. | noted |  |  |
| R4-2010719 | Discussion on PDSCH performance requirements for multi-DCI based multi-TRP transmission | MediaTek inc. | noted |  |  |
| R4-2010720 | Discussion on eMBB UE performance requirement with pre-emption | MediaTek inc. | noted |  |  |
| R4-2010721 | System Parameters for n24 and discussion related to regulatory emission limits for UE | Ligado Networks | approved |  |  |
| R4-2010722 | IAB-MT features | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2010723 | IAB-MT Rx interferer details | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2010724 | TP to TS 38.174: Output power requirements | Nokia, Nokia Shanghai Bell | revised |  | R4-2012620 |
| R4-2010725 | TP to TS 38.174: Unwanted emissions requirements | Nokia, Nokia Shanghai Bell | revised |  | R4-2012624 |
| R4-2010726 | Applicable numerologies | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2010727 | Reply LS to RAN1 and NR evaluations for above 52.6 GHz | Nokia, Nokia Shanghai Bell | revised |  | R4-2011904 |
| R4-2010728 | Review of FCC material on record in dockets 12-340, 11-109 regarding band 24 downlink | Ligado Networks | approved |  |  |
| R4-2010729 | Discussion on NR BS EVM equalizer averaging | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2010730 | Discussion on EVM measurement details for 2.5kHz and 0.37kHz SCSs | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2010731 | On energy detection threshold for LAA and eLAA in conformance specification | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2010732 | CR to 37.107 with correction of EDT level Rel-15 | Nokia, Nokia Shanghai Bell | revised |  | R4-2012568 |
| R4-2010733 | CR to 37.107 with correction of references to TS 37.213 Rel-16 | Nokia, Nokia Shanghai Bell | agreed |  |  |
| R4-2010734 | CR to 36.141 with correction of EDT level Rel-13 | Nokia, Nokia Shanghai Bell | revised |  | R4-2012570 |
| R4-2010735 | CR to 36.141 with correction of EDT level Rel-14 | Nokia, Nokia Shanghai Bell | withdrawn |  |  |
| R4-2010736 | CR to 36.104 with correction of EDT level Rel-13 | Nokia, Nokia Shanghai Bell | revised |  | R4-2012571 |
| R4-2010737 | CR to 36.104 with correction of EDT level Rel-14 | Nokia, Nokia Shanghai Bell | withdrawn |  |  |
| R4-2010738 | CR to TS 38.104: Introduction of NR-U into BS core specification | Nokia, Nokia Shanghai Bell | revised |  | R4-2012608 |
| R4-2010739 | CR to TS 37.107 with introduction of NR-U feature – core part | Nokia, Nokia Shanghai Bell | not concluded |  |  |
| R4-2010740 | CR to TS 37.106 with introduction of NR-U feature | Nokia, Nokia Shanghai Bell | not concluded |  |  |
| R4-2010741 | CR to TS 37.106 with correction to referencies to TS 37.213 Rel-15 | Nokia, Nokia Shanghai Bell | agreed |  |  |
| R4-2010742 | CR to TS 37.106 with correction to referencies to TS 37.213 Rel-16 | Nokia, Nokia Shanghai Bell | agreed |  |  |
| R4-2010743 | Discussion on BS core specification drafting | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2010744 | Details on introduction of 6 GHz band for NR-U operation | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2010745 | Work plan for Introduction of 1.6 GHz NR SUL Band with same uplink frequency range of Band 24 | Ligado Networks | approved |  |  |
| R4-2010746 | System Parameters for new SUL Band and discussion related to regulatory emission limits related to UE | Ligado Networks | approved |  |  |
| R4-2010747 | Work plan for modification of LTE Band 24 | Ligado Networks | approved |  |  |
| R4-2010748 | Summary of required changes to UE E-UTRA specifications for Band 24 to address updated regulatory emission limits | Ligado Networks | noted |  |  |
| R4-2010749 | Review of material on record with FCC for Band 24 downlink and summary of required changes to BS E-UTRA specifications for Band 24 | Ligado Networks | approved |  |  |
| R4-2010750 | Assessment of changes resulting from regulatory updates for Band 24 to E-UTRA RRM specifications | Ligado Networks | noted |  |  |
| R4-2010751 | UL shift for LTE/NR spectrum sharing in Band 38/n38 | OPPO | noted |  |  |
| R4-2010752 | UL shift for LTE/NR spectrum sharing in Band 40/n40 | OPPO | noted |  |  |
| R4-2010753 | Enhancements to TCI state known status in Rel-17 | NEC | not treated |  |  |
| R4-2010754 | Discussion on RRM requirements for SCell dormancy | NEC | noted |  |  |
| R4-2010755 | Reply LS on SCell Dormancy | NEC | noted |  |  |
| R4-2010756 | Discussion on new measurement gap patterns for positioning requirements | NEC | noted |  |  |
| R4-2010757 | Discussion on MRTD requirement for FR2 inter-band DL CA | NEC | noted |  |  |
| R4-2010758 | CR to TS 38.133 on MRTD values for FR2 inter-band CA | NEC | postponed |  |  |
| R4-2010759 | Discussion on requirements for BWP switch delay on multiple CC | NEC | noted |  |  |
| R4-2010760 | Discussion on CSI-RS measurement Bandwidth | NEC | noted |  |  |
| R4-2010761 | Discussion on Synchronisation assumption for CSI-RS measurements | NEC | noted |  |  |
| R4-2010762 | CR to TS 38.104: OTA receiver spurious requirements for EESS protection (rel-15) | NEC, Nokia, Ericsson | revised |  | R4-2012580 |
| R4-2010763 | CR to TS 38.104: OTA receiver spurious requirements for EESS protection (rel-16) | NEC | revised |  | R4-2012747 |
| R4-2010764 | CR to TS 38.141-2: Additional requirements for EESS protection (rel-15) | NEC | revised |  | R4-2012581 |
| R4-2010765 | CR to TS 38.141-2: Additional requirements for EESS protection (rel-16) | NEC | revised |  | R4-2012748 |
| R4-2010766 | CR on clarification of NR requirements under EN-DC | OPPO | not pursued |  |  |
| R4-2010767 | Draft LS on NR power class clarification | OPPO | revised |  | R4-2011903 |
| R4-2010768 | Discussion on Rel-16 TxD | OPPO | noted |  |  |
| R4-2010769 | Discussion on FDD+TDD HPUE SAR solutions | OPPO | noted |  |  |
| R4-2010770 | Discussion on MPE remaining issues | OPPO | noted |  |  |
| R4-2010771 | Discussion on SSB based BC | OPPO | noted |  |  |
| R4-2010772 | Discussion on V2X power class reporting | OPPO | noted |  |  |
| R4-2010773 | Discussion on SUL HPUE SAR | OPPO | noted |  |  |
| R4-2010774 | 3D-MPAC implementation of measurement probe and positioner | OPPO | noted |  |  |
| R4-2010775 | FR2 MIMO OTA performance metrics | OPPO | noted |  |  |
| R4-2010776 | Uncertainty or deviation caused by the difference of the channel model | OPPO | noted |  |  |
| R4-2010777 | Adding New CBW to existing NR bands | OPPO | noted |  |  |
| R4-2010778 | Views on DSS in band 48/n48 | OPPO | noted |  |  |
| R4-2010779 | Clarification of SNR values in RLM Test cases | ANRITSU LTD | agreed |  |  |
| R4-2010780 | Clarification of SNR values in RLM Test cases | ANRITSU LTD | agreed |  |  |
| R4-2010781 | CR for 38.104: Performance requirements for UL timing adjustment | ZTE Wistron Telecom AB | agreed |  |  |
| R4-2010782 | Draft reply LS on UE capability xDD differentiation for SUL/SDL bands | ZTE Wistron Telecom AB | revised |  | R4-2011687 |
| R4-2010783 | Further discussion on BS demodulation performance requirements for 2-Step RACH | ZTE Wistron Telecom AB | noted |  |  |
| R4-2010784 | Draft CR to TS 38.104 BS demodulation requirements for 2-step RACH | ZTE Wistron Telecom AB | revised |  | R4-2012706 |
| R4-2010785 | Simulation results for 2-step RACH BS demodulation requirements | ZTE Wistron Telecom AB | noted |  |  |
| R4-2010786 | Further discussion on NR HST BS demodulation performance | ZTE Wistron Telecom AB | noted |  |  |
| R4-2010787 | Additional simulation results for NR HST BS demodulation performance | ZTE Wistron Telecom AB | noted |  |  |
| R4-2010788 | Release independence support of new channel bandwidth from Rel-15 | ZTE Wistron Telecom AB | noted |  |  |
| R4-2010789 | Draft CR to TS 38.307 Release independence support of new channel bandwidth from Rel-15 | ZTE Wistron Telecom AB | revised |  | R4-2011685 |
| R4-2010790 | TR 38.717-02-01 v0.0.1 | ZTE Wistron Telecom AB | revised |  | R4-2011626 |
| R4-2010791 | TR 38.717-03-02 v0.0.1 | ZTE Wistron Telecom AB | agreed |  |  |
| R4-2010792 | TR 38.717-02-01 v0.1.0 | ZTE Wistron Telecom AB | not concluded |  |  |
| R4-2010793 | TR 38.717-03-02 v0.1.0 | ZTE Wistron Telecom AB | not concluded |  |  |
| R4-2010794 | Addition of missing exception for n78 | Rohde & Schwarz | not pursued |  |  |
| R4-2010795 | Addition of missing exception for n78 | Rohde & Schwarz | withdrawn |  |  |
| R4-2010796 | Correction to RMC for 256QAM | Rohde & Schwarz | not pursued |  |  |
| R4-2010797 | Correction to RMC for 256QAM | Rohde & Schwarz | withdrawn |  |  |
| R4-2010798 | Reintroduction of missing FR1 RMC | Rohde & Schwarz | not pursued |  |  |
| R4-2010799 | Reintroduction of missing FR1 RMC | Rohde & Schwarz | withdrawn |  |  |
| R4-2010800 | Correction to uplink antenna connectors | Rohde & Schwarz | not pursued |  |  |
| R4-2010801 | Correction to uplink antenna connectors | Rohde & Schwarz | withdrawn |  |  |
| R4-2010802 | Discussion on open issues of inter-band CA testability | Rohde & Schwarz | noted |  |  |
| R4-2010803 | Discussion on open issues for Tx diversity requirements | Rohde & Schwarz | noted |  |  |
| R4-2010804 | Discussion on the number of Tx connectors | Rohde & Schwarz | noted |  |  |
| R4-2010805 | Discussion on SP Type II PMI reporting requirements | Rohde & Schwarz | noted |  |  |
| R4-2010806 | On Tx diversity requirements | Huawei, HiSilicon | noted |  |  |
| R4-2010807 | draft CR for TS 38.101-1 Tx diversity requirements | Huawei, HiSilicon, OPPO | revised |  | R4-2011769 |
| R4-2010808 | Discussion and draft reply LS On EN-DC power class | Huawei, HiSilicon | noted |  |  |
| R4-2010809 | draft CR for TS 38.101-3 introduce new power class for EN-DC | Huawei, HiSilicon | revised |  | R4-2011770 |
| R4-2010810 | On UL MIMO Tx EVM requirement | Huawei, HiSilicon | noted |  |  |
| R4-2010811 | On NR eMIMO full power transmission | Huawei, HiSilicon | noted |  |  |
| R4-2010812 | draft CR for TS 38.101-1: update of eMIMO requirements for ULFPTx | Huawei, HiSilicon | revised |  | R4-2011763 |
| R4-2010813 | On Pi/2 BPSK DMRS | Huawei, HiSilicon | noted |  |  |
| R4-2010814 | CR for 38.101-1 RFC corrections (R15) | Huawei, HiSilicon | revised |  | R4-2011749 |
| R4-2010815 | CR for 38.101-1 FRC corrections (R16) | Huawei, HiSilicon | agreed |  |  |
| R4-2010816 | On FDD\_TDD EN-DC HPUE | Huawei, HiSilicon | noted |  |  |
| R4-2010817 | SNR evaluation for NR V2X | Huawei, HiSilicon | noted |  |  |
| R4-2010818 | On NR V2X SL allocated RB size numbers for different CBWs | Huawei, HiSilicon | noted |  |  |
| R4-2010819 | On switching period for LTE SL and NR SL | Huawei, HiSilicon | noted |  |  |
| R4-2010820 | On Rx remaing requirements for NR V2X con-current operation | Huawei, HiSilicon | noted |  |  |
| R4-2010821 | draft correction CR for TS 38.101-3: NR V2X con-current operation | Huawei, HiSilicon | revised |  | R4-2011715 |
| R4-2010822 | On NR V2X reference measurement channels | Huawei, HiSilicon | noted |  |  |
| R4-2010823 | draft CR for 38.101-1 NR V2X FRC | Huawei, HiSilicon | revised |  | R4-2011711 |
| R4-2010824 | draft CR for TR 38.886: NR V2X FRC | Huawei, HiSilicon | not pursued |  |  |
| R4-2010825 | CR for 38.101-3 Correction on EN-DC DL Synchronous carriers | Huawei, HiSilicon | not pursued |  |  |
| R4-2010826 | CR for 38.101-3 Correction on EN-DC synchronous carriers (R16) | Huawei, HiSilicon | withdrawn |  |  |
| R4-2010827 | Reply LS on RF testing of 4Rx capable UE | Huawei, HiSilicon | noted |  |  |
| R4-2010828 | TR skeleton 36.717-02-02 | Huawei, HiSilicon | agreed |  |  |
| R4-2010829 | Introduction of completed LTE CA for 2 bands DL with 2 bands UL into Rel-17 TS 36.101 | Huawei, HiSilicon | not concluded |  |  |
| R4-2010830 | Revised WID for LTE inter-band CA for 2 bands DL with 2 bands UL | Huawei, HiSilicon | not concluded |  |  |
| R4-2010831 | CR for 38.827 on editorial corrections | Huawei,HiSilicon | not treated |  |  |
| R4-2010832 | Discussion on relevant work of NR MIMO OTA WI | Huawei,HiSilicon | noted |  |  |
| R4-2010833 | MIMO OTA test methodology for the verification of multi-antenna reception performance of NR Ues | Huawei,Hisilicon | noted |  |  |
| R4-2010834 | Correction to NB-IoT Bands with n26 | Dish Network | agreed |  |  |
| R4-2010835 | Applicability of DL interruption for Tx switching | Nokia Japan | noted |  |  |
| R4-2010836 | Draft CR to 38.141-2: Introduction of URLLC 0.001% BLER requirement | Ericsson | revised |  | R4-2012660 |
| R4-2010837 | Draft CR to 38.141-1 on test methodology and FRCs for URLLC and test requirements for 0.001% BLER | Ericsson | revised |  | R4-2012654 |
| R4-2010838 | Remaining FR1 issues and FR2 issues for URLLC demod | Ericsson | noted |  |  |
| R4-2010839 | Simulation results for URLLC | Ericsson | noted |  |  |
| R4-2010840 | Ultra-low BLER remaining issues for FR1 and FR2 | Ericsson | noted |  |  |
| R4-2010841 | Simulation results for URLLC ultra-low BLER requirements | Ericsson | noted |  |  |
| R4-2010842 | 2-step RACH demodulation requirements | Ericsson | noted |  |  |
| R4-2010843 | IAB demodulation general aspects | Ericsson | noted |  |  |
| R4-2010844 | IAB demodulation MT aspects | Ericsson | noted |  |  |
| R4-2010845 | Key technology considerations relating to 52-71GHz specification | Ericsson | noted |  |  |
| R4-2010846 | Increase of step size for FR2 in-band blocking conformance test | Ericsson | revised |  | R4-2012592 |
| R4-2010847 | Increase of step size for FR2 in-band blocking conformance test | Ericsson | agreed |  |  |
| R4-2010848 | Discussion on EN-DC (FDD+TDD) HPUE fall back schemes | vivo | noted |  |  |
| R4-2010849 | CR for adding SAR solutions for FDD+TDD EN-DC PC2 UE | vivo | revised |  | R4-2011896 |
| R4-2010850 | On p-UE-FR2 for Rel-16 | vivo | noted |  |  |
| R4-2010851 | Further discussion on power class fall back optimization | vivo | withdrawn |  |  |
| R4-2010852 | Motivation for optimizations on power class fall back | vivo | not treated |  |  |
| R4-2010853 | [Draft] New SID: Optimizations on power class fall back | vivo, China Unicom | withdrawn |  |  |
| R4-2010854 | Discussion on remaining FR2 MPE issues | vivo | noted |  |  |
| R4-2010855 | Correction of delta Powerclass for Inter-band EN-DC | vivo, CMCC, China Unicom | agreed |  |  |
| R4-2010856 | Summary and Further Results on Impact of phase variation on beam pattern for NF test method | MVG Industries, Sony | noted |  |  |
| R4-2010857 | CR to TS 38.133: Corrections to CSI-RS configurations in A.3.14 (Rel-15) | Rohde & Schwarz | agreed |  |  |
| R4-2010858 | CR to TS 38.133: Corrections to CSI-RS configurations in A.3.14 (Rel-16) | Rohde & Schwarz | agreed |  |  |
| R4-2010859 | CR to TS 38.133: Corrections to event triggered test cases (Rel-15) | Rohde & Schwarz | agreed |  |  |
| R4-2010860 | CR to TS 38.133: Corrections to event triggered test cases (Rel-16) | Rohde & Schwarz | agreed |  |  |
| R4-2010861 | CR to TS 38.133: Corrections to inter-RAT test cases (Rel-15) | Rohde & Schwarz | agreed |  |  |
| R4-2010862 | CR to TS 38.133: Corrections to inter-RAT test cases (Rel-16) | Rohde & Schwarz | agreed |  |  |
| R4-2010863 | CR to TS 38.133: Corrections to AoA setup information in some test cases (Rel-15) | Rohde & Schwarz | agreed |  |  |
| R4-2010864 | CR to TS 38.133: Corrections to AoA setup information in some test cases (Rel-16) | Rohde & Schwarz | agreed |  |  |
| R4-2010865 | Draft CR to 36.101 to add CA\_3C-38A with UL CA\_3C | Huawei, HiSilicon | endorsed |  |  |
| R4-2010866 | Draft CR to 36.101 to add CA\_3C-20A with UL CA\_3C | Huawei, HiSilicon | endorsed |  |  |
| R4-2010867 | Draft CR to 36.101 to add CA\_3C-7A-8A with UL CA\_3C | Huawei, HiSilicon | endorsed |  |  |
| R4-2010868 | Draft CR to 36.101 to add CA\_1A-3C-38A with UL CA\_3C | Huawei, HiSilicon | endorsed |  |  |
| R4-2010869 | Draft CR to 36.101 to add CA\_3C-8A-38A with UL CA\_3C | Huawei, HiSilicon | endorsed |  |  |
| R4-2010870 | Draft CR to 36.101 to add CA\_1A-3C-20A with UL CA\_3C | Huawei, HiSilicon | endorsed |  |  |
| R4-2010871 | Draft CR to 36.101 to add CA\_3C-8A-20A | Huawei, HiSilicon | endorsed |  |  |
| R4-2010872 | TP for TR 36.717-03-01: CA\_3A-20A-38A/CA\_3C-20A-38A with UL CA\_3C | Huawei, HiSilicon | approved |  |  |
| R4-2010873 | TP for TR 36.717-03-01: CA\_8A-20A-38A | Huawei, HiSilicon | revised |  | R4-2011583 |
| R4-2010874 | TP for TR 36.717-03-01: CA\_7A-28A-66A / CA\_7C-28A-66A | Huawei, HiSilicon | approved |  |  |
| R4-2010875 | TP for TR 36.717-04-01: CA\_2A-7A-28A-66A / CA\_2A-7C-28A-66A | Huawei, HiSilicon | approved |  |  |
| R4-2010876 | TP for TR 36.717-04-01: CA\_2A-5A-7A-66A / CA\_2A-5A-7C-66A | Huawei, HiSilicon | approved |  |  |
| R4-2010877 | TP for TR 37.717-11-11: DC\_28A\_n66A | Huawei, HiSilicon | approved |  |  |
| R4-2010878 | TP for TR 37.717-11-11: DC\_4A\_n28A | Huawei, HiSilicon | revised |  | R4-2011622 |
| R4-2010879 | TP for TR 37.717-11-11: DC\_66A\_n28A | Huawei, HiSilicon | revised |  | R4-2011623 |
| R4-2010880 | TP for TR 37.717-11-11: DC\_28A\_n1A | Huawei, HiSilicon, Nokia | revised |  | R4-2011882 |
| R4-2010881 | DraftCR for 38.101-3 to add configuration DC\_40C\_n1A | Huawei, HiSilicon | endorsed |  |  |
| R4-2010882 | DraftCR for 38.101-3 to add UL configuration DC\_3C\_n78A | Huawei, HiSilicon | endorsed |  |  |
| R4-2010883 | TP for TR 37.717-21-11: DC\_7A-8A\_n28A | Huawei, HiSilicon | approved |  |  |
| R4-2010884 | TP for TR 37.717-21-11: DC\_20A-28A\_n3A | Huawei, HiSilicon | approved |  |  |
| R4-2010885 | TP for TR 37.717-21-11: DC\_28A-66A\_n66A | Huawei, HiSilicon | approved |  |  |
| R4-2010886 | TP for TR 37.717-21-11: DC\_7A-28A\_n66A / DC\_7C-28A\_n66A | Huawei, HiSilicon | approved |  |  |
| R4-2010887 | TP for TR 37.717-21-11: DC\_2A-28A\_n66A | Huawei, HiSilicon | approved |  |  |
| R4-2010888 | TP for TR 37.717-21-11: DC\_3A-28A\_n1A | Huawei, HiSilicon | approved |  |  |
| R4-2010889 | TP for TR 37.717-21-11: DC\_7A-28A\_n1A | Huawei, HiSilicon | approved |  |  |
| R4-2010890 | TP for TR 37.717-21-11: DC\_8A-40A\_n1A / DC\_8A-40C\_n1A | Huawei, HiSilicon | approved |  |  |
| R4-2010891 | DraftCR for 38.101-3 to add configuration DC\_3A-40C\_n1A | Huawei, HiSilicon | endorsed |  |  |
| R4-2010892 | DraftCR for 38.101-3 to add configuration DC\_7A-40C\_n1A | Huawei, HiSilicon | endorsed |  |  |
| R4-2010893 | DraftCR for 38.101-3 to add UL configuration DC\_3C\_n78A for DC\_3C-20A\_n78A | Huawei, HiSilicon | endorsed |  |  |
| R4-2010894 | TP for TR 37.717-21-11: DC\_1A-32A\_n3A | Huawei, HiSilicon, CKH IOD UK | approved |  |  |
| R4-2010895 | TP for TR 37.717-21-11: DC\_3A-32A\_n1A | Huawei, HiSilicon, CKH IOD UK | approved |  |  |
| R4-2010896 | TP for TR 37.717-31-11: DC\_2A-28A-66A\_n66A | Huawei, HiSilicon | approved |  |  |
| R4-2010897 | TP for TR 37.717-31-11: DC\_7A-28A-66A\_n66A / DC\_7C-28A-66A\_n66A | Huawei, HiSilicon | approved |  |  |
| R4-2010898 | TP for TR 37.717-31-11: DC\_2A-7A-28A\_n66A / DC\_2A-7C-28A\_n66A | Huawei, HiSilicon | approved |  |  |
| R4-2010899 | TP for TR 37.717-31-11: DC\_3A-7A-28A\_n1A | Huawei, HiSilicon | approved |  |  |
| R4-2010900 | TP for TR 37.717-41-11: DC\_2A-7A-28A-66A\_n66A / DC\_2A-7C-28A-66A\_n66A | Huawei, HiSilicon | revised |  | R4-2011624 |
| R4-2010901 | DraftCR for 38.101-1 to add BCS1 for CA\_n28A-n78A | Huawei, HiSilicon,CBN | endorsed |  |  |
| R4-2010902 | TP for TR 38.717-02-01: CA\_n28A-n79A | Huawei, HiSilicon,CBN | revised |  | R4-2011646 |
| R4-2010903 | DraftCR for 38.101-1 to add BCS1 for CA\_n66(2A) | Huawei, HiSilicon | revised |  | R4-2011625 |
| R4-2010904 | General aspects of demodulation requirements for unlicensed bands | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2010905 | Discussion on NR-U BS demodulation requirements | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2010906 | 2-step RACH BS demodulation simulation results | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2010907 | On 2-step RACH BS demodulation requirements | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2010908 | On RRM performance requirements for 2-step RA type | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2010909 | Draft CR on 2-step RA type Contention based random access test in FR1 for NR standalone | Nokia, Nokia Shanghai Bell | revised |  | R4-2012186 |
| R4-2010910 | CR to TS 38.101-4: HST-SFN FDD performance requirements | Intel Corporation | revised |  | R4-2012670 |
| R4-2010911 | CR to TS 38.101-4: Propagation conditions for HST scenarios | Intel Corporation | revised |  | R4-2012674 |
| R4-2010912 | IAB-MT Tx Requirements | Qualcomm Incorporated | noted |  |  |
| R4-2010913 | IAB-MT Tx Features | Qualcomm Incorporated | noted |  |  |
| R4-2010914 | Draft CR on introduction of shorter Transient Period Capability | Qualcomm Incorporated, Verizon, Dish Network, Ericsson, CMCC, Keysight Technologies, Nokia, Nokia Shanghai Bell, AT&T, ZTE, Vodafone, Orange, T-Mobile USA, Deutsche Telekom, Telecom Italia, CHTTL, China Telecom, SGS Wireless, Interdigital | revised |  | R4-2011766 |
| R4-2010915 | Short Transient Period Testing | Qualcomm Incorporated | noted |  |  |
| R4-2010916 | Draft LS on shorter transient period capability | Qualcomm Incorporated | revised |  | R4-2011767 |
| R4-2010917 | Initial considerations on IAB performance requirements | Qualcomm Incorporated | noted |  |  |
| R4-2010918 | Changes to TS 37.171 title removing references to individual RATs | NextNav | agreed |  |  |
| R4-2010919 | TP for TR 37.717-00-00 for CA\_n28A-n41A\_SUL\_n41A-n83A | Huawei, HiSilicon | revised |  | R4-2011672 |
| R4-2010920 | TP for TR 37.717-00-00 for CA\_n28A-n79A\_SUL\_n79A-n83A | Huawei, HiSilicon | revised |  | R4-2011673 |
| R4-2010921 | CR for 38.101-3 to correct spurious emission band UE co-existence for DC\_1\_n28 | Huawei, HiSilicon | not pursued |  |  |
| R4-2010922 | CR for 38.101-3 to correct spurious emission band UE co-existence for DC\_1\_n28 (Rel-16) | Huawei, HiSilicon | withdrawn |  |  |
| R4-2010923 | CR for 38.101-3 to remove PHS system, 860~890 and 1400~1427 protection for EN-DC band combination with band n1, n8 and n50 | Huawei, HiSilicon | revised |  | R4-2011773 |
| R4-2010924 | CR for 38.101-1 to remove PHS system and 860~890 protection for NR CA band combination with band n1 and band n8 | Huawei, HiSilicon | revised |  | R4-2011780 |
| R4-2010925 | CR for 38.101-1 to add the missing region for NS\_18 and maintenance the ∆mprc | Huawei, HiSilicon | revised |  | R4-2011774 |
| R4-2010926 | CR for 38.101-1 to add the missing MSD for CA\_n41A-n78A | Huawei, HiSilicon | revised |  | R4-2011750 |
| R4-2010927 | CR for 38.101-1 to add the missing MSD for CA\_n41A-n78A | Huawei, HiSilicon | agreed |  |  |
| R4-2010928 | Discussion and reply draft LS on structure of NR CA reference sensitivity requirements in 38.101-1 | Huawei, HiSilicon | noted |  |  |
| R4-2010929 | Discussion on remaining AMPR requirements for PC3 V2X UE | Huawei, HiSilicon | noted |  |  |
| R4-2010930 | CR for 38.101-1 to specify AMPR requirements for PC3 NR V2X in band n47 | Huawei, HiSilicon | not pursued |  |  |
| R4-2010931 | General discussion about Rel-17 band combinations for Uu and V2X con-current operation | Huawei, HiSilicon | noted |  |  |
| R4-2010932 | Further discussion on RF requirements about DC\_12\_n71 | Huawei, HiSilicon | noted |  |  |
| R4-2010933 | Changes to TS 37.171 title removing references to individual RATs | NextNav | agreed |  |  |
| R4-2010934 | Changes to TS 37.171 title removing references to individual RATs | NextNav | agreed |  |  |
| R4-2010935 | Changes to TS 37.171 title removing references to individual RATs | NextNav | agreed |  |  |
| R4-2010936 | LTE/NR spectrum sharing in band 48/n48 | Ericsson GmbH, Eurolab | noted |  |  |
| R4-2010937 | Update to NB-IOT aggregate power control tolerance for TDD | Huawei, HiSilicon | agreed |  |  |
| R4-2010938 | Discussion on remaining issues for UE parameters | ZTE Corporation | noted |  |  |
| R4-2010939 | Discussion on remaining issues for BS parameters | ZTE Corporation | noted |  |  |
| R4-2010940 | TP to TR38.912 uplink ACIR model | ZTE Corporation | revised |  | R4-2011831 |
| R4-2010941 | DL simulation results for 6425-7125MHz and 10-10.5GHz | ZTE Corporation | noted |  |  |
| R4-2010942 | UL simulation results for 6425-7125MHz and 10-10.5GHz | ZTE Corporation | noted |  |  |
| R4-2010943 | Impacts on BS RF requirement of new introduced numerology | ZTE Corporation | noted |  |  |
| R4-2010944 | CR to 36.104: Introduction of LTE based 5G terrestrial broadcast numerologies | ZTE Corporation | revised |  | R4-2012605 |
| R4-2010945 | CR to 36.101: Introduction of LTE based 5G terrestrial broadcast numerologies | ZTE Corporation | revised |  | R4-2012606 |
| R4-2010946 | Discussion on system parameters for 52.6GHz-71GHz | ZTE Corporation | noted |  |  |
| R4-2010947 | Discussion on signalling for brand new channel bandwidth | ZTE Corporation | noted |  |  |
| R4-2010948 | Discussion on BS RF requirement for new channel bandwidth of 35MHz and 45MHz | ZTE Corporation | noted |  |  |
| R4-2010949 | Discussion on IAB MT feature list | ZTE Corporation | noted |  |  |
| R4-2010950 | Further discussion on IAB-MT power requirement | ZTE Corporation | noted |  |  |
| R4-2010951 | Further discussion on IAB-MT transmitted signal quality | ZTE Corporation | noted |  |  |
| R4-2010952 | Further discussion on IAB-MT unwanted emission | ZTE Corporation | noted |  |  |
| R4-2010953 | TP to TS 38.174 on IAB TX IMD | ZTE Corporation | revised |  | R4-2012626 |
| R4-2010954 | IAB-MT REFSENS and FRC design | ZTE Corporation | noted |  |  |
| R4-2010955 | ACS and In-band blocking for IAB MT | ZTE Corporation | noted |  |  |
| R4-2010956 | TP to TR 38.809 IAB-MT RX IMD | ZTE Corporation | revised |  | R4-2012756 |
| R4-2010957 | TP to TS 38.174: IAB RX IM requirement (section 7.7 and 10.8) | ZTE Corporation | revised |  | R4-2012633 |
| R4-2010958 | Discussion on 6GHz for NR-U | ZTE Corporation | noted |  |  |
| R4-2010959 | Discussion on NR-U BS Tx requirements | ZTE Corporation | noted |  |  |
| R4-2010960 | NR-U BS RX ACS, IBB, OOBB, IMD requirements | ZTE Corporation | noted |  |  |
| R4-2010961 | Introduction of NR-U BS RX requirement into TS38.104 | ZTE Corporation | merged |  |  |
| R4-2010962 | Introduction of Band n46 in 36.104 | ZTE Corporation | not concluded |  |  |
| R4-2010963 | Update to NB-IOT aggregate power control tolerance for TDD | Huawei, HiSilicon | agreed |  |  |
| R4-2010964 | Simulation reuslts for MPDCCH | Huawei, HiSilicon | noted |  |  |
| R4-2010965 | Simulation results for PMI reporting test in eMTC | Huawei, HiSilicon | noted |  |  |
| R4-2010966 | Discussion and simulation results on LTE-based 5G terrestrial broadcast | Huawei, HiSilicon | noted |  |  |
| R4-2010967 | CR addition on LTE-based 5G terrestrial broadcast | Huawei, HiSilicon | revised |  | R4-2012602 |
| R4-2010968 | Simulation results for NPUSCH format 1 with multi-TB interleaved transmission. | Huawei, HiSilicon | noted |  |  |
| R4-2010969 | Simulation results for NPDSCH with multi-TB interleaved transmission. | Huawei, HiSilicon | noted |  |  |
| R4-2010970 | Discussions on test parameters for NPDSCH with multi-TB interleaved transmission. | Huawei, HiSilicon | noted |  |  |
| R4-2010971 | CR: Introduce NPDSCH performance requirements for multi-TB interleaved transmission. | Huawei, HiSilicon | revised |  | R4-2012599 |
| R4-2010972 | CR: Introduce NPUSCH format 1 performance requirements for multi-TB interleaved transmission. | Huawei, HiSilicon | revised |  | R4-2012600 |
| R4-2010973 | CR: Introduce NPUSCH format 1 test requirements for multi-TB interleaved transmission for TS 36.141 | Huawei, HiSilicon | revised |  | R4-2012601 |
| R4-2010974 | Summary of simulation results for LTE NPUSCH format 1 with multi-TB interleaved transmission. | Huawei, HiSilicon | revised |  | R4-2012751 |
| R4-2010975 | Summary of simulation results for LTE NPDSCH with multi-TB interleaved transmission. | Huawei, HiSilicon | noted |  |  |
| R4-2010976 | Discussion on URLLC UE demodulation requirements with ultra-low BLER | Huawei, HiSilicon | noted |  |  |
| R4-2010977 | Simulation results on URLLC UE demodulation requireemnts with ultra-low BLER | Huawei, HiSilicon | noted |  |  |
| R4-2010978 | Discussion on URLLC BS demodulation requireemnts with ultra-low BLER | Huawei, HiSilicon | noted |  |  |
| R4-2010979 | Simulation results on URLLC BS demodulation requirements with ultra-low BLER | Huawei, HiSilicon | noted |  |  |
| R4-2010980 | Discussion on CSI requireements with ultra low-BLER | Huawei, HiSilicon | noted |  |  |
| R4-2010981 | Discussion on URLLC UE demodulation requirements with higher BLER | Huawei, HiSilicon | noted |  |  |
| R4-2010982 | Simulation results on URLLC UE demodulation requirements with higher BLER | Huawei, HiSilicon | noted |  |  |
| R4-2010983 | Discussion on URLLC BS demodulation requirements with higher BLER | Huawei, HiSilicon | noted |  |  |
| R4-2010984 | Simulation results on BS demodulation reuqirements with higher BLER | Huawei, HiSilicon | noted |  |  |
| R4-2010985 | CR to TS 38.101-4: Applicability rules for URLLC CSI requirements | Huawei, HiSilicon | revised |  | R4-2012653 |
| R4-2010986 | CR to TS 38.101-4: Applicability rules for URLLC UE demodulation requirements | Huawei, HiSilicon | revised |  | R4-2012651 |
| R4-2010987 | CR to TS 38.101-4: Performance requirements for URLLC PDSCH repetitions over multiple slots | Huawei, HiSilicon | revised |  | R4-2012650 |
| R4-2010988 | CR to TS 38.104: Performance requirements for URLLC PUSCH repetition Type A | Huawei, HiSilicon | revised |  | R4-2012655 |
| R4-2010989 | CR to TS 38.141-1: Performance requirements for URLLC BS demodulation requirements with higher BLER | Huawei, HiSilicon | revised |  | R4-2012656 |
| R4-2010990 | CR to TS 38.141-1: Applicability of URLLC BS demodulation requirements | Huawei, HiSilicon | revised |  | R4-2012661 |
| R4-2010991 | CR to TS 38.141-2: FRC for URLLC BS performance requirements | Huawei, HiSilicon | revised |  | R4-2012657 |
| R4-2010992 | Summary of simulation results of NR BS demod (FR1) | Huawei, HiSilicon | noted |  |  |
| R4-2010993 | Summary of simulation results of NR UE demod (FR1) | Huawei, HiSilicon | noted |  |  |
| R4-2010994 | Work plan for Physical layer enhancements for NR ultra-reliable and low latency communication | Huawei, HiSilicon | noted |  |  |
| R4-2010995 | Discussion on the performance requirements for NR power saving | Huawei, HiSilicon | noted |  |  |
| R4-2010996 | Discussion on PDSCH requirements for NR DL 256QAM for FR2 | Huawei, HiSilicon | noted |  |  |
| R4-2010997 | Discussion on SDR requirements for NR DL 256QAM for FR2 | Huawei, HiSilicon | noted |  |  |
| R4-2010998 | Discussion on CQI reporting requirements for NR DL 256QAM for FR2 | Huawei, HiSilicon | noted |  |  |
| R4-2010999 | Simulation results on NR UE HST performance requirements for SFN | Huawei, HiSilicon | noted |  |  |
| R4-2011000 | Simulation results on NR UE HST performance requirements for single-tap | Huawei, HiSilicon | noted |  |  |
| R4-2011001 | CR on HST single-tap and HST multi-path fading requirements | Huawei, HiSilicon | revised |  | R4-2012671 |
| R4-2011002 | Simulation results on NR UE HST performance requirements for multi-path fading channel | Huawei, HiSilicon | noted |  |  |
| R4-2011003 | Discussion on UE performance requirements for DPS transmission scheme | Huawei, HiSilicon | noted |  |  |
| R4-2011004 | Discussion on feature lists and applicability for different scenarios | Huawei, HiSilicon | noted |  |  |
| R4-2011005 | Summary of ideal and impairment results for NR HST demodulation requirements | Huawei, HiSilicon | noted |  |  |
| R4-2011006 | CR on applicability rules for HST scenarios | Huawei, HiSilicon | revised |  | R4-2012675 |
| R4-2011007 | Discussion on the NR HST PUSCH performance requirements | Huawei, HiSilicon | noted |  |  |
| R4-2011008 | Discussion on the UL timing adjustment | Huawei, HiSilicon | noted |  |  |
| R4-2011009 | Discussion and simulation results on NR 2-step RACH BS performance requirements | Huawei, HiSilicon | noted |  |  |
| R4-2011010 | Discussion on PDSCH CA normal demodulation requirements | Huawei, HiSilicon | noted |  |  |
| R4-2011011 | draftCR: Introduction of performance requirements for NR FR1 PDSCH CA with 4Rx | Huawei, HiSilicon | revised |  | R4-2012694 |
| R4-2011012 | Discussion on open issues of PDSCH performance requirements of multi-TRP in eMIMO | Huawei, HiSilicon | noted |  |  |
| R4-2011013 | Discussion on test setup and parameter configuration for enhanced Type II codebook PMI reporting test | Huawei, HiSilicon | noted |  |  |
| R4-2011014 | CR for TS 38.101-4: Applicability for NR PMI requirements with Tx ports larger than 8 and up to 32 | Huawei, HiSilicon | agreed |  |  |
| R4-2011015 | Simulaiton results for Type I codebook PMI reporting test | Huawei, HiSilicon | noted |  |  |
| R4-2011016 | Discussion on Type II codebook based PMI reporting test | Huawei, HiSilicon | noted |  |  |
| R4-2011017 | CR for TS 38.141-1: Introduction of test tolerance for HST PRACH and update measurement setup of performance requirements for NR HST | Huawei, HiSilicon | revised |  | R4-2012684 |
| R4-2011018 | CR for TS 38.141-2: Introduction of test tolerance for NR HST PRACH | Huawei, HiSilicon | revised |  | R4-2012685 |
| R4-2011019 | Discussion on open issues of NR HST PRACH | Huawei, HiSilicon | noted |  |  |
| R4-2011020 | Discusson on UE performance requirements for Rel-16 NR-U | Huawei, HiSilicon | noted |  |  |
| R4-2011021 | Discusson on BS performance requirements for Rel-16 NR-U | Huawei, HiSilicon | noted |  |  |
| R4-2011022 | Discusson on work scope of performance requirements for Rel-16 sidelink | Huawei, HiSilicon | noted |  |  |
| R4-2011023 | Discusson on spec structure of performance requirements for Rel-16 sidelink | Huawei, HiSilicon | noted |  |  |
| R4-2011024 | Discusson on test scenarios of performance requirements for Rel-16 sidelink | Huawei, HiSilicon | noted |  |  |
| R4-2011025 | Discusson on UE power imbalance performance requirements for FR1 CA and EN-DC | Huawei, HiSilicon | noted |  |  |
| R4-2011026 | Discusson on CA CQI reporting requirements | Huawei, HiSilicon | noted |  |  |
| R4-2011027 | Motivation paper of new WID on performance requirements for UE advanced receiver in Rel-17 | Huawei, HiSilicon | not treated |  |  |
| R4-2011028 | New WID proposal: Performance requirements for UE advanced receiver in Rel-17 | Huawei, HiSilicon | not treated |  |  |
| R4-2011029 | Discussion on ATG network | ZTE Corporation | not treated |  |  |
| R4-2011030 | IAB-MT feature list remaining issue | Ericsson | noted |  |  |
| R4-2011031 | IAB-MT Transmit signal quality | Ericsson | noted |  |  |
| R4-2011032 | IAB-MT maximum output power for FR1 | Ericsson | noted |  |  |
| R4-2011033 | IAB-MT unwanted emission for FR2 and FR1 | Ericsson | noted |  |  |
| R4-2011034 | Proposals for REFSENS FRC and REFSENS requirement for IAB-MT | Ericsson | noted |  |  |
| R4-2011035 | TP for TS ACS, inband blocking and out of band blocking | Ericsson | revised |  | R4-2012631 |
| R4-2011036 | TP to TR 38.809: ACS and IBB | Ericsson | revised |  | R4-2012632 |
| R4-2011037 | TP to TR 38.809: RX spurious | Ericsson | revised |  | R4-2012634 |
| R4-2011038 | TP to TS 38.174: RX spurious | Ericsson | revised |  | R4-2012635 |
| R4-2011039 | Work plan and RF analysis on introduction of B24 for M1/M2 and NB1/NB2 | Ericsson | noted |  |  |
| R4-2011040 | draft CR: FR1 CA and EN-DC power imbalance requirements | NTT DOCOMO, INC. | revised |  | R4-2012697 |
| R4-2011041 | Views on 256QAM UE requirements for FR2 | NTT DOCOMO, INC. | noted |  |  |
| R4-2011042 | Views on 256QAM SDR requirements for FR2 | NTT DOCOMO, INC. | noted |  |  |
| R4-2011043 | Views on CA PDSCH requirements | NTT DOCOMO, INC. | noted |  |  |
| R4-2011044 | Views on HST applicability rules | NTT DOCOMO, INC. | noted |  |  |
| R4-2011045 | Views on FR1 power imbalance requirements | NTT DOCOMO, INC. | noted |  |  |
| R4-2011046 | Views on URLLC requirements with higher BLER | NTT DOCOMO, INC. | noted |  |  |
| R4-2011047 | CR on maintaining handover tests in Rel-15 | Huawei, HiSilicon | revised |  | R4-2012075 |
| R4-2011048 | CR on maintaining handover tests in Rel-16 | Huawei, HiSilicon | agreed |  |  |
| R4-2011049 | Discussion on interruption issues for DAPS handover | Huawei, HiSilicon | noted |  |  |
| R4-2011050 | CR on maintaining DAPS handover requirements | Huawei, HiSilicon | merged |  |  |
| R4-2011051 | Discussion on DAPS handover test cases | Huawei, HiSilicon | noted |  |  |
| R4-2011052 | CR on inter-band DAPS handover tests | Huawei, HiSilicon | postponed |  |  |
| R4-2011053 | CR on PSBCH-RSRP accuracy requirements for NR V2X | Huawei, HiSilicon | postponed |  |  |
| R4-2011054 | Discussion on remaining issues for NR V2X | Huawei, HiSilicon | noted |  |  |
| R4-2011055 | List of RRM test cases for NR V2X | Huawei, HiSilicon | noted |  |  |
| R4-2011056 | Discussion on RRM test setup for NR V2X | Huawei, HiSilicon | noted |  |  |
| R4-2011057 | Discussion on L1-SINR measurement accuracy requirements | Huawei, HiSilicon | noted |  |  |
| R4-2011058 | CR on L1-SINR measurement accuracy requirements | Huawei, HiSilicon | noted |  |  |
| R4-2011059 | Discussion on activation delay requirements for non-maintained PL-RS | Huawei, HiSilicon | noted |  |  |
| R4-2011060 | CR on activation delay requirements for non-maintained PL-RS | Huawei, HiSilicon | merged |  |  |
| R4-2011061 | Discussion on MRTD requirements for multi-TRP transmissions | Huawei, HiSilicon | noted |  |  |
| R4-2011062 | Discussion on MRTD requirements for FR2 inter-band DL CA | Huawei, HiSilicon | noted |  |  |
| R4-2011063 | Discussion on RRM remaining issues for FR2 inter-band CA | Huawei, HiSilicon | noted |  |  |
| R4-2011064 | CR on maintaining measurement restriction requirements for NR CA | Huawei, HiSilicon | revised |  | R4-2012163 |
| R4-2011065 | Discussion on CSI-RS based L3 measurement requirements | Huawei, HiSilicon | noted |  |  |
| R4-2011066 | Discussion on RRM core requirements for FR2 FWA UE | Huawei, HiSilicon | noted |  |  |
| R4-2011067 | CR on RRM requirements for new FR2 FWA UE | Huawei, HiSilicon | revised |  | R4-2012200 |
| R4-2011068 | Discussion on RRM performance impacts for new FR2 FWA UE | Huawei, HiSilicon | noted |  |  |
| R4-2011069 | CR on BWP switching delay on mulitple CCs | Huawei, Hisilicon | revised |  | R4-2012153 |
| R4-2011070 | Discussion on BWP switching on multiple CCs | Huawei, Hisilicon | noted |  |  |
| R4-2011071 | Discussion on FR2 RLM requirement for IAB | Huawei, Hisilicon | noted |  |  |
| R4-2011072 | TP to TS 38.174 on RRC release with redirection for IAB-MT | Huawei, Hisilicon | merged |  |  |
| R4-2011073 | CR on active TCI state switching for NR-U | Huawei, Hisilicon | revised |  | R4-2012089 |
| R4-2011074 | CR on introduction of intra-frequency measurements requirements for NR-U | Huawei, Hisilicon | revised |  | R4-2012101 |
| R4-2011075 | CR on introduction of Active BWP switching delay requirements for NR-U | Huawei, Hisilicon | revised |  | R4-2012255 |
| R4-2011076 | CR on introduction of RRC\_IDLE state moblity requirements for NR-U | Huawei, Hisilicon | revised |  | R4-2012093 |
| R4-2011077 | Discussion on RRC re-establishment for NR-U | Huawei, Hisilicon | revised |  | R4-2012087 |
| R4-2011078 | Discussion on Active TCI state switching for NR-U | Huawei, Hisilicon | noted |  |  |
| R4-2011079 | Discussion on beam management requirements for NR-U | Huawei, Hisilicon | noted |  |  |
| R4-2011080 | Discussion on BWP switch requirements for NR-U | Huawei, Hisilicon | noted |  |  |
| R4-2011081 | Discussion on cell re-selection requirements for NR-U | Huawei, Hisilicon | noted |  |  |
| R4-2011082 | Discussion on measurement capability of NR-U | Huawei, Hisilicon | noted |  |  |
| R4-2011083 | Discussion on measurement requirement for NR-U | Huawei, Hisilicon | noted |  |  |
| R4-2011084 | Discussion on RLM requirements for NR-U | Huawei, Hisilicon | noted |  |  |
| R4-2011085 | Discussion on RRC re-establishment for NR-U | Huawei, Hisilicon | noted |  |  |
| R4-2011086 | Discussion on RSSI and CO measurement for NR-U | Huawei, Hisilicon | noted |  |  |
| R4-2011087 | Discussion on SCell activation and deactivation requirements for NR-U | Huawei, Hisilicon | noted |  |  |
| R4-2011088 | CR on serving cell measurement on non-anchor carrier for NB-IoT | Huawei, Hisilicon | agreed |  |  |
| R4-2011089 | CR on PUR requirements for NB-IoT | Huawei, Hisilicon | revised |  | R4-2012193 |
| R4-2011090 | Discussion on performance part of Rel-16 NB-IoT | Huawei, Hisilicon | noted |  |  |
| R4-2011091 | Test cases list for Rel-16 NB-IoT | Huawei, Hisilicon | revised |  | R4-2012195 |
| R4-2011092 | Discussion on reporting criteria in 38.133 | Huawei, Hisilicon | noted |  |  |
| R4-2011093 | CR on reporting criteria for EN-DC in 38.133 R15 | Huawei, Hisilicon | revised |  | R4-2012245 |
| R4-2011094 | CR on reporting criteria for EN-DC in 38.133 R15 | Huawei, Hisilicon | agreed |  |  |
| R4-2011095 | CR on test cases for Active TCI state switch delay R15 | Huawei, Hisilicon | revised |  | R4-2012076 |
| R4-2011096 | CR on test cases for Active TCI state switch delay R15 | Huawei, Hisilicon | agreed |  |  |
| R4-2011097 | CR on NB-IoT Intra frequency with serving cell measurement relaxation test case 4.2.38 R15 | Huawei, Hisilicon | revised |  | R4-2012085 |
| R4-2011098 | CR on NB-IoT Intra frequency with serving cell measurement relaxation test case 4.2.38 R16 (Cat A) | Huawei, Hisilicon | agreed |  |  |
| R4-2011099 | Addition of new default configurations for RMC scheduling | Huawei, Hisilicon | revised |  | R4-2012067 |
| R4-2011100 | Addition of new default configurations for RMC scheduling\_r16 | Huawei, Hisilicon | agreed |  |  |
| R4-2011101 | Correction to beam failure detection and link recovery test cases | Huawei, Hisilicon | revised |  | R4-2012077 |
| R4-2011102 | Correction to beam failure detection and link recovery test cases\_r16 | Huawei, Hisilicon | agreed |  |  |
| R4-2011103 | Correction to BWP switching delay test cases | Huawei, Hisilicon | revised |  | R4-2012078 |
| R4-2011104 | Correction to BWP switching delay test cases\_r16 | Huawei, Hisilicon | agreed |  |  |
| R4-2011105 | Correction to FR1 intra-frequency measurement with gap test cases | Huawei, Hisilicon | agreed |  | - |
| R4-2011106 | Correction to FR1 intra-frequency measurement with gap test cases\_r16 | Huawei, Hisilicon | agreed |  |  |
| R4-2011107 | Correction to inter-RAT HO test cases | Huawei, Hisilicon | revised |  | R4-2012080 |
| R4-2011108 | Correction to inter-RAT HO test cases\_r16 | Huawei, Hisilicon | agreed |  |  |
| R4-2011109 | Correction to inter-RAT measurement on NR serving carrier | Huawei, Hisilicon | postponed |  |  |
| R4-2011110 | Correction to inter-RAT measurement on NR serving carrrier\_r16 | Huawei, Hisilicon | withdrawn |  |  |
| R4-2011111 | Discussion on measurement relaxation in power saving | Huawei, Hisilicon | noted |  |  |
| R4-2011112 | CR on measurement relaxation for power saving | Huawei, Hisilicon | postponed |  |  |
| R4-2011113 | Test case list for measurement relaxation in power saving | Huawei, Hisilicon | noted |  |  |
| R4-2011114 | Test case list for Tx switching between two uplink carriers | Huawei, Hisilicon | noted |  |  |
| R4-2011115 | Discussion on CSI-RS based L3 measurement requirements | Huawei, Hisilicon | noted |  |  |
| R4-2011116 | CR on CSI-RS based intra-frequency measurement requirements | Huawei, Hisilicon | revised |  | R4-2012172 |
| R4-2011117 | Discussion on SS-SINR in NR HST | Huawei, Hisilicon | noted |  |  |
| R4-2011118 | CR on SS-SINR in NR HST | Huawei, Hisilicon | endorsed |  |  |
| R4-2011119 | Correction on inter-RAT measurement in HST | Huawei, Hisilicon | not pursued |  |  |
| R4-2011120 | Discussion on test case list in NR high speed scenarios | Huawei, Hisilicon | noted |  |  |
| R4-2011121 | Discussion on SRS carrier switching interruption | Huawei, Hisilicon | noted |  |  |
| R4-2011122 | Correction on the interruption requirements due to SRS carrier switching | Huawei, Hisilicon | revised |  | R4-2012238 |
| R4-2011123 | Discussion on CSSF for inter-frequency measurement without gap in FR2 inter-band CA sceneario | Huawei, Hisilicon | noted |  |  |
| R4-2011124 | CSSF for inter-frequency measurement without gap in FR2 inter-band CA sceneario | Huawei, Hisilicon | revised |  | R4-2012167 |
| R4-2011125 | Correction on inter-frequency without gap measurement requirements | Huawei, Hisilicon | not pursued |  |  |
| R4-2011126 | Discussion on spatial relation switch for uplink channels and SRS | Huawei, Hisilicon | noted |  |  |
| R4-2011127 | Draft CR on DAPS handover | Huawei, Hisilicon | agreed |  |  |
| R4-2011128 | Discussion on DAPS handover test cases | Huawei, Hisilicon | noted |  |  |
| R4-2011129 | Test cases for inter-frequency DAPS | Huawei, Hisilicon | postponed |  | - |
| R4-2011130 | Correction on UE measurement capability in NR idle mode R15 | Huawei, Hisilicon | agreed |  |  |
| R4-2011131 | Correction on UE measurement capability in NR idle mode R16 | Huawei, Hisilicon | agreed |  |  |
| R4-2011132 | CR on correction to CSSF within gap R15 | Huawei, Hisilicon | agreed |  |  |
| R4-2011133 | CR on correction to CSSF within gap R16 | Huawei, Hisilicon | agreed |  |  |
| R4-2011134 | CR to measurement capability for NE-DC in 36133 R15 | Huawei, Hisilicon | agreed |  |  |
| R4-2011135 | CR to measurement capability for NE-DC in 36133 R16 | Huawei, Hisilicon | agreed |  |  |
| R4-2011136 | Discussion on remaining issues in SCell activation and BWP switching | Huawei, Hisilicon | noted |  |  |
| R4-2011137 | CR on SCell activation requirements R15 | Huawei, Hisilicon | revised |  | R4-2012241 |
| R4-2011138 | CR on SCell activation requirements R16 | Huawei, Hisilicon | agreed |  |  |
| R4-2011139 | CR on BWP switching delay requirements R15 | Huawei, Hisilicon | revised |  | R4-2012242 |
| R4-2011140 | CR on UL BWP configuration for RRM test cases R15 | Huawei, Hisilicon | revised |  | R4-2012068 |
| R4-2011141 | CR on UL BWP configuration for RRM test cases R16 | Huawei, Hisilicon | agreed |  |  |
| R4-2011142 | CR to add UE beam assumption for TC in A.5.6 R15 | Huawei, Hisilicon | revised |  | R4-2012262 |
| R4-2011143 | CR to add UE beam assumption for TC in A.5.6 R16 | Huawei, Hisilicon | agreed |  |  |
| R4-2011144 | CR on reporting criteria for CLI | Huawei, Hisilicon | agreed |  |  |
| R4-2011145 | Discussion on early measurement in NR | Huawei, Hisilicon | noted |  |  |
| R4-2011146 | CR on EMR in 38.133 | Huawei, Hisilicon | postponed |  |  |
| R4-2011147 | Discussion on LTE | Huawei, Hisilicon | noted |  |  |
| R4-2011148 | CR to introduce EMR in 36.133 | Huawei, Hisilicon | revised |  | R4-2012114 |
| R4-2011149 | Discussion on remaining issues in direct SCell activation | Huawei, Hisilicon | noted |  |  |
| R4-2011150 | CR on direct SCell activation | Huawei, Hisilicon | revised |  | R4-2012116 |
| R4-2011151 | CR on interruption for direct activation of multiple SCells 36133 | Huawei, Hisilicon | agreed |  |  |
| R4-2011152 | Discussion on SCell dormancy | Huawei, Hisilicon | noted |  |  |
| R4-2011153 | CR on requirements for SCell dormancy | Huawei, Hisilicon | revised |  | R4-2012120 |
| R4-2011154 | CR on interruption requirements for SCell dormancy 36133 | Huawei, Hisilicon | revised |  | R4-2012121 |
| R4-2011155 | CR for general applicability of PRS measurement requirements | Huawei, Hisilicon | revised |  | R4-2012125 |
| R4-2011156 | Discussion on RSTD measurement | Huawei, Hisilicon | noted |  |  |
| R4-2011157 | Discussion on PRS-RSRP measurement | Huawei, Hisilicon | noted |  |  |
| R4-2011158 | CR for measurement requirements for PRS-RSRP | Huawei, Hisilicon | revised |  | R4-2012134 |
| R4-2011159 | Discussion on Rx-Tx time difference measurement | Huawei, Hisilicon | noted |  |  |
| R4-2011160 | Simulation results for UE Rx-Tx time difference | Huawei, Hisilicon | noted |  |  |
| R4-2011161 | Further simulation results for RSTD and PRS-RSRP | Huawei, Hisilicon | noted |  |  |
| R4-2011162 | Impact of positioning on existing RRM requirements | Huawei, Hisilicon | noted |  |  |
| R4-2011163 | CR on CSSF and measurement gap related requirements for positioning | Huawei, Hisilicon | postponed |  |  |
| R4-2011164 | CR on measurement gap related requirements for positioning 36.133 | Huawei, Hisilicon | revised |  | R4-2012139 |
| R4-2011165 | Discussion on the scope gNB requirements for NR positioning | Huawei, Hisilicon, CMCC | noted |  |  |
| R4-2011166 | Discussion on gNB positioning measurement requirements | Huawei, Hisilicon | noted |  |  |
| R4-2011167 | Discussion on positioning SRS transmission during DRX inactive time | Huawei, Hisilicon | noted |  |  |
| R4-2011168 | CR to add CSI-RS related reporting criteria for ECID | Huawei, Hisilicon | revised |  | R4-2012144 |
| R4-2011169 | Discussion on NR CGI reading requirements | Huawei, Hisilicon | noted |  |  |
| R4-2011170 | CR to 36.133 for CGI reading | Huawei, Hisilicon | revised |  | R4-2012159 |
| R4-2011171 | CR on multiple SCell activation requirements | Huawei, Hisilicon | merged |  |  |
| R4-2011172 | On CSI-RS measurement capability and time windowing | Huawei, Hisilicon | noted |  |  |
| R4-2011173 | On synchronization assumption for CSI-RS measurement requirements | Huawei, Hisilicon | noted |  |  |
| R4-2011174 | CR on reporting criteria for CSI-RS measurement | Huawei, Hisilicon | merged |  |  |
| R4-2011175 | Motivation for further RRM enhancement in Rel-17 | Huawei, Hisilicon | not treated |  |  |
| R4-2011176 | New WID on further RRM enhancement | Huawei, Hisilicon | not treated |  |  |
| R4-2011177 | Discussion on remaining issues in eMTC RRM requirements | Huawei, Hisilicon | noted |  |  |
| R4-2011178 | CR on RSS based measurement requriements | Huawei, Hisilicon | revised |  | R4-2012187 |
| R4-2011179 | CR on RLM requriements based on enhanced MPDCCH | Huawei, Hisilicon | revised |  | R4-2012189 |
| R4-2011180 | CR on PUR related requirements | Huawei, Hisilicon | revised |  | R4-2012188 |
| R4-2011181 | Discussion on accuracy requirements for RSS based measurement | Huawei, Hisilicon | noted |  |  |
| R4-2011182 | CR for accuracy requirements for RSS based measurement | Huawei, Hisilicon | not pursued |  |  |
| R4-2011183 | Discussion on test cases for Rel-16 eMTC RRM | Huawei, Hisilicon | noted |  |  |
| R4-2011184 | Further discussion on power class fall back optimization | vivo | noted |  |  |
| R4-2011185 | [Draft] New WID: Optimizations on power class fall back | vivo | not treated |  |  |
| R4-2011186 | CR to TS 38.817-02: Clarification on calculation of step frequencies for defining the Category B radiated Tx spurious emission limits in FR2 | Nokia, Nokia Shanghai Bell | revised |  | R4-2012585 |
| R4-2011187 | CR to TS 37.145-2: Correction on procedure for spurious unwanted emissions measurement using orthogonal cut grid | Nokia, Nokia Shanghai Bell | agreed |  |  |
| R4-2011188 | CR to TS 37.145-2: Correction on procedure for spurious unwanted emissions measurement using orthogonal cut grid | Nokia, Nokia Shanghai Bell | agreed |  |  |
| R4-2011189 | CR to TS 36.141: Corrections of table note for shortened TTI test models | Nokia, Nokia Shanghai Bell | agreed |  |  |
| R4-2011190 | CR to TS 36.141: Corrections of table note for shortened TTI test models | Nokia, Nokia Shanghai Bell | agreed |  |  |
| R4-2011191 | CR to TS 37.141: Clarification on manufacturer's declaration of the number of supported NB-IoT carriers | Nokia, Nokia Shanghai Bell | revised |  | R4-2012573 |
| R4-2011192 | CR to TS 37.141: Clarification on manufacturer's declaration of the number of supported NB-IoT carriers | Nokia, Nokia Shanghai Bell | agreed |  |  |
| R4-2011193 | CR to TS 37.141: Clarification on manufacturer's declaration of the number of supported NB-IoT carriers | Nokia, Nokia Shanghai Bell | agreed |  |  |
| R4-2011194 | CR to TS 37.141: Clarification on manufacturer's declaration of the number of supported NB-IoT carriers | Nokia, Nokia Shanghai Bell | agreed |  |  |
| R4-2011195 | TP to TR 38.921: Dense urban system level simulation assumptions for study on IMT parameters for frequency ranges 6.425-7.125GHz and 10.0-10.5GHz | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2011196 | Urban Macro and Indoor Hotspot Downlink Coexistence Simulation Results for Frequency Ranges 6.425-7.125GHz and 10.0-10.5GHz | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2011197 | Urban Macro and Indoor Hotspot Uplink Coexistence Simulation Results for Frequency Ranges 6.425-7.125GHz and 10.0-10.5GHz | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2011198 | Recommendation on Small cell outdoor/Micro urban AAS BS Maximum Output Power for Frequency Ranges 6.425-7.125GHz and 10.0-10.5GHz | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2011199 | Work Plan for Study on High-power UE operation for fixed-wireless/vehicle-mounted use cases in Band 12, Band 5, and Band n71 | Nokia, Nokia Shanghai Bell | approved |  |  |
| R4-2011200 | TR 37.xxx V0.0.1: High-power UE operation for fixed-wireless/vehicle-mounted use cases in Band 12, Band 5, and Band n71 | Nokia, Nokia Shanghai Bell | withdrawn |  |  |
| R4-2011201 | TP to TR 37.xxx: Simulation assumptions for coexistence study on High-power UE operation for fixed-wireless/vehicle-mounted use cases in Band 12, Band 5, and Band n71 | Nokia, Nokia Shanghai Bell | withdrawn |  |  |
| R4-2011202 | Time domain techniques for FR1 Spatial Correlation validation | Spirent Communications | revised |  | R4-2012711 |
| R4-2011203 | Plane Wave Synthesizer | ROHDE & SCHWARZ | noted |  |  |
| R4-2011204 | Work plan for Rel-17 NR MIMO OTA WI | CAICT,vivo,OPPO | revised |  | R4-2012710 |
| R4-2011205 | Discussions on test cases for Rel-16 MTC | Ericsson | noted |  |  |
| R4-2011206 | Discussions on RSS measurement accuracy for Rel-16 MTC | Ericsson | noted |  |  |
| R4-2011207 | Introduction of measurement accuracy requirements for RSS based RSRP measurements for cat-M1/M2 | Ericsson | revised |  | R4-2012191 |
| R4-2011208 | Correction of eMTC DL channel quality report mapping table and RSS measurement requirements | Ericsson | revised |  | R4-2012190 |
| R4-2011209 | Discussions on test cases for Rel-16 NB-IOT | Ericsson | noted |  |  |
| R4-2011210 | Discussions on test cases for Rel-16 UE power saving | Ericsson | noted |  |  |
| R4-2011211 | Correction CR to Rel-16 UE power saving requirements | Ericsson | revised |  | R4-2012123 |
| R4-2011212 | Remaining discussions on IDLE mode cell re-selection requirements for NR-U | Ericsson | noted |  |  |
| R4-2011213 | RRC\_IDLE state inter-RAT moblity requirements for NR-U | Ericsson | revised |  | R4-2012094 |
| R4-2011214 | CR on introduction of RRC\_IDLE state moblity requirements for NR-U | Ericsson | not pursued |  |  |
| R4-2011215 | CR to TR 37.941: Completion of MU terms for PWS. | ROHDE & SCHWARZ | revised |  | R4-2012700 |
| R4-2011216 | On FR2 NR MIMO OTA Testing Methodology | Keysight Technologies UK Ltd | revised |  | R4-2012712 |
| R4-2011217 | On minimizing the impact of polarization basis mismatch between the TE and DUT on the RF testing | Keysight Technologies UK Ltd | noted |  |  |
| R4-2011218 | On Test methodology for high DL power and low UL power test cases | Keysight Technologies UK Ltd | noted |  |  |
| R4-2011219 | TR 37.xxx V0.0.1: High-power UE operation for fixed-wireless/vehicle-mounted use cases in Band 12, Band 5, and Band n71 | Nokia France | agreed |  |  |
| R4-2011220 | TP to TR 37.xxx: Simulation assumptions for coexistence study on High-power UE operation for fixed-wireless/vehicle-mounted use cases in Band 12, Band 5, and Band n71 | Nokia France | revised |  | R4-2011833 |
| R4-2011221 | Intermediate summary for e-mail discussion on OTA aspects of the Rel.17 RAN4 non-spectrum package | Moderator(Qualcomm Incorporated) | not treated |  |  |
| R4-2011222 | Revised WID on Band combinations for SA NR Supplementary uplink (SUL), NSA NR SUL, NSA NR SUL with UL sharing from the UE perspective (ULSUP) | Huawei, HiSilicon | not concluded |  |  |
| R4-2011223 | TR 37.717-00-00 v0.0.1 | Huawei, HiSilicon | agreed |  |  |
| R4-2011224 | TR 37.717-00-00 v0.1.0 | Huawei, HiSilicon | not concluded |  |  |
| R4-2011225 | Draft CR on Introduction of completed SUL band combinations into TS 38.101-1 | Huawei, HiSilicon | not concluded |  |  |
| R4-2011226 | Draft CR on Introduction of completed SUL band combinations into TS 38.101-3 | Huawei, HiSilicon | not concluded |  |  |
| R4-2011227 | Revised WID on NR inter-band CA for 5 bands DL with x bands UL (x=1, 2) | Huawei, HiSilicon | not concluded |  |  |
| R4-2011228 | TR 38.717-05-01 v0.0.1 | Huawei, HiSilicon | agreed |  |  |
| R4-2011229 | TR 38.717-05-01 v0.1.0 | Huawei, HiSilicon | not concluded |  |  |
| R4-2011230 | Draft CR on Introduction of completed 5 bands inter-band CA into TS 38.101-1 | Huawei, HiSilicon | withdrawn |  |  |
| R4-2011231 | Mirror CR to TR 37.941: Completion of MU terms for PWS. | ROHDE & SCHWARZ | revised |  | R4-2012701 |
| R4-2011232 | Reply LS to NGMN on 5G NR Over The Air test methodologies and performance requirements | vivo | revised |  | R4-2012708 |
| R4-2011233 | Views on NR MIMO OTA WI | vivo, CAICT | noted |  |  |
| R4-2011234 | 3GPP TS 38.1xy v0.0.1 skeleton | vivo, CAICT | revised |  | R4-2012709 |
| R4-2011235 | Views and reply LS on RF testing of 4Rx UEs | vivo | noted |  |  |
| R4-2011236 | On enhanced test methods for FR2 RF | vivo, CAICT | noted |  |  |
| R4-2011237 | Motivation for WI: NR FR1 UE SA and EN-DC TRP and TRS | vivo | not treated |  |  |
| R4-2011238 | New WID: NR FR1 UE SA and EN-DC TRP and TRS | vivo, OPPO, CMCC, CAICT, Rohde & Schwarz | not treated |  |  |
| R4-2011239 | Analysis of open issues in BWP switching requirement due to consistent UL failure | Ericsson, Qualcomm | noted |  |  |
| R4-2011240 | BWP switching delay requirement due to consistent UL failure in 38.133 | Ericsson, Qualcomm | not pursued |  |  |
| R4-2011241 | Analysis of RACH in HO and RRC connection control requirements in NR-U | Ericsson, Qualcomm | noted |  |  |
| R4-2011242 | Correction to RACH delay in HO delay requirements in NR-U | Ericsson, Qualcomm | merged |  |  |
| R4-2011243 | Correction to RACH delay in HO delay requirements in NR-U | Ericsson, Qualcomm | agreed |  |  |
| R4-2011244 | Correction to RACH delay in RRC release requirements in NR-U in 38.133 | Ericsson, Qualcomm | agreed |  |  |
| R4-2011245 | Correction to RACH delay in RRC release requirements in NR-U in 36.133 | Ericsson, Qualcomm | agreed |  |  |
| R4-2011246 | Open issues related to UE timing requirements in NR-U | Ericsson | noted |  |  |
| R4-2011247 | UE transmit timing requirements in NR-U | Ericsson | not pursued |  |  |
| R4-2011248 | Partial overlap timer-based and RRC-based BWP switching delay on multiple CCs | Ericsson | merged |  |  |
| R4-2011249 | SRS for positioning during DRX inactive time | Ericsson | noted |  |  |
| R4-2011250 | Analysis of interruption requirements under dual DRX | Ericsson | noted |  |  |
| R4-2011251 | Interruption requirements under dual DRX | Ericsson | postponed |  |  |
| R4-2011252 | Analysis of RRM core requirements for FR2 FWA UE power class | Ericsson, SoftBank | noted |  |  |
| R4-2011253 | RRM core requirements for FR2 FWA UE power class in 38.133 | Ericsson, SoftBank | merged |  |  |
| R4-2011254 | RRM core requirements for FR2 FWA UE power class in 38.133 | Ericsson, SoftBank | revised |  | R4-2012201 |
| R4-2011255 | CR to TS 37.145-2: internal TR references corrections (wrt. TR 37.941 for OTA BS testing), Rel-15 | Huawei | revised |  | R4-2012704 |
| R4-2011256 | CR to TS 37.145-2: internal TR references corrections (wrt. TR 37.941 for OTA BS testing), Rel-16 | Huawei | agreed |  |  |
| R4-2011257 | CR to TR 37.941: editorial cleanup, Rel-15 | Huawei | revised |  | R4-2012698 |
| R4-2011258 | CR to TR 37.941: editorial cleanup, Rel-16 | Huawei | agreed |  |  |
| R4-2011259 | CR to TR 37.941: new Annex for Excel spreadsheets with MU derivation, Rel-15 | Huawei | revised |  | R4-2012702 |
| R4-2011260 | CR to TR 37.941: new Annex for Excel spreadsheets with MU derivation, Rel-16 | Huawei | agreed |  |  |
| R4-2011261 | CR to TS 37.105: Introduction of requirements for NR + UTRA combinations, Rel-16 | Huawei | revised |  | R4-2012582 |
| R4-2011262 | CR to TS 37.145-1: Introduction of new BS capability set for NR+EUTRA+UTRA, Rel-16 | Huawei | revised |  | R4-2012583 |
| R4-2011263 | CR to TS 37.145-2: Introduction of new BS capability set for NR+EUTRA+UTRA, Rel-16 | Huawei | revised |  | R4-2012584 |
| R4-2011264 | CR to TS 38.113: direct field strength measurements for the EMC RE, Rel-15 | Huawei | revised |  | R4-2012577 |
| R4-2011265 | CR to TS 38.113: direct field strength measurements for the EMC RE, Rel-16 | Huawei | agreed |  |  |
| R4-2011266 | IAB EMC specification: Emission (7.1) | Huawei | revised |  | R4-2012641 |
| R4-2011267 | IAB EMC specification: Exclusion bands (4.4) | Huawei | revised |  | R4-2012640 |
| R4-2011268 | Initial discussion on the BS-related aspects for 52.6 - 71 GHz range SI | Huawei | noted |  |  |
| R4-2011269 | CR to TS 37.105 + motivation: Rel-13 non-AAS CRs mirroring to Rel-13 AAS | Huawei | revised |  | R4-2012574 |
| R4-2011270 | CR to TS 37.105: Rel-13 non-AAS CRs mirroring, Rel-14 | Huawei | agreed |  |  |
| R4-2011271 | CR to TS 37.105: Rel-13 non-AAS CRs mirroring, Rel-15 | Huawei | agreed |  |  |
| R4-2011272 | CR to TS 37.105: Rel-13 non-AAS CRs mirroring, Rel-16 | Huawei | agreed |  |  |
| R4-2011273 | CR to TS 37.105: Rel-14 non-AAS CRs mirroring, Rel-14 | Huawei | revised |  | R4-2012755 |
| R4-2011274 | CR to TS 37.105: Rel-14 non-AAS CRs mirroring, Rel-15 | Huawei | agreed |  |  |
| R4-2011275 | CR to TS 37.105: Rel-14 non-AAS CRs mirroring, Rel-16 | Huawei | agreed |  |  |
| R4-2011276 | CR to TS 37.105: Rel-15 non-AAS CRs mirroring, Rel-15 | Huawei | agreed |  |  |
| R4-2011277 | CR to TS 37.105: Rel-15 non-AAS CRs mirroring, Rel-16 | Huawei | agreed |  |  |
| R4-2011278 | CR to TS 37.105: Rel-15 non-AAS CRs mirroring, Rel-15 | Huawei | agreed |  |  |
| R4-2011279 | Summary of simulation results of NR BS demod with higher BLER (FR1) | Huawei, HiSilicon | noted |  |  |
| R4-2011280 | Summary of simulation results of NR UE demod with higher BLER (FR1) | Huawei, HiSilicon | noted |  |  |
| R4-2011281 | Views on test methods for high DL power and low UL power TCs | ROHDE & SCHWARZ | noted |  |  |
| R4-2011282 | TPs to TS on IAB EMC section 1 (Scope) | Ericsson | revised |  | R4-2012636 |
| R4-2011283 | TP to TR 38.809 on IAB EMC emission requirements | Ericsson | revised |  | R4-2012637 |
| R4-2011284 | TPs to TS on IAB EMC section 9 (Immunity) | Ericsson | revised |  | R4-2012638 |
| R4-2011285 | CR to 38.104: Annex B and C clarification on equlisation calculation (B.6, C.6) | Keysight Technologies UK Ltd, Rohde & Schwarz | revised |  | R4-2012586 |
| R4-2011286 | CR to 38.141-1: Annex H clarification on equlisation calculation (H.6) | Keysight Technologies UK Ltd, Rohde & Schwarz | revised |  | R4-2012587 |
| R4-2011287 | CR to 38.141-2: Annex L clarification on equlisation calculation (L.6) | Keysight Technologies UK Ltd, Rohde & Schwarz | revised |  | R4-2012588 |
| R4-2011288 | CR to 38.104: Annex B and C clarification on equlisation calculation (B.6, C.6) | Keysight Technologies UK Ltd, Rohde & Schwarz,Nokia | revised |  | R4-2012752 |
| R4-2011289 | CR to 38.141-1: Annex H clarification on equlisation calculation (H.6) | Keysight Technologies UK Ltd, Rohde & Schwarz,Nokia | revised |  | R4-2012753 |
| R4-2011290 | CR to 38.141-2: Annex L clarification on equlisation calculation (L.6) | Keysight Technologies UK Ltd, Rohde & Schwarz,Nokia | revised |  | R4-2012754 |
| R4-2011291 | Further Analysis on EVM equalizer frequency domain calculation for NR BS conformance testing | Keysight Technologies UK Ltd, Rohde & Schwarz | noted |  |  |
| R4-2011292 | Work plan for Study on supporting NR from 52.6 GHz to 71 GHz | Qualcomm Incorporated | noted |  |  |
| R4-2011293 | TP to TS 38.174 -IAB TX dynamic range | Huawei | revised |  | R4-2012621 |
| R4-2011294 | IAB-MT Sensitivity parameters | Huawei | noted |  |  |
| R4-2011295 | TP to TS 38.174 -IAB RX sensitivity and dynamic range | Huawei | revised |  | R4-2012628 |
| R4-2011296 | TP to TR 38.809 -IAB RX sensitivity | Huawei | revised |  | R4-2012629 |
| R4-2011297 | IAB-MT Emissions | Huawei | noted |  |  |
| R4-2011298 | IAB-MT in band selectivity and blocking | Huawei | noted |  |  |
| R4-2011299 | TP to TS 38.174: IAB-MT class definitions | Huawei | noted |  |  |
| R4-2011300 | TP to TR 38.809 -IAB-MT Class definitions | Huawei | revised |  | R4-2012615 |
| R4-2011301 | Out of band CLTA maximum height and adjacent band site solutions | Huawei | noted |  |  |
| R4-2011302 | gNB Positioning System Simulation on SRS signals | Ericsson | noted |  |  |
| R4-2011303 | gNB Positioning Requirement Analysis | Ericsson | noted |  |  |
| R4-2011304 | CR to 38.133: Correction to TCI state switch delay requirements | ZTE | not treated |  |  |
| R4-2011305 | CR to 38.133 correction to TCI state switch delay requirements | ZTE | withdrawn |  |  |
| R4-2011306 | CR to 38.133: Correction to RRC basd BWP switch delay requirements | ZTE | revised |  | R4-2012243 |
| R4-2011307 | CR to 38.133 correction to RRC based BWP switch delay requirements | ZTE | agreed |  |  |
| R4-2011308 | CR to 38.133: Correction to interruption requirements for per-FR gap in FR2 | ZTE | revised |  | R4-2012065 |
| R4-2011309 | CR to 38.133 correction to interruption requirements for per-FR gap in FR2 | ZTE | agreed |  |  |
| R4-2011310 | Remaining open issues on NR CGI reading with autonomous gaps | ZTE | noted |  |  |
| R4-2011311 | CR to 38.133 on CGI reading of NR cell | ZTE | agreed |  |  |
| R4-2011312 | CR to 36.133 on CGI reading of E-UTRA cell in NE-DC | ZTE | agreed |  |  |
| R4-2011313 | Remaining open issues on NR SRS carrier switching RRM requirements | ZTE | noted |  |  |
| R4-2011314 | Remaining open issue on configuration of CSI-RS based L3 measurement | ZTE | noted |  |  |
| R4-2011315 | Remaining open issues on UE measurement capability of CSI-RS based L3 measurement | ZTE | noted |  |  |
| R4-2011316 | Remaining open issues on measurement requirements for CSI-RS based L3 mobility | ZTE | noted |  |  |
| R4-2011317 | Remaining open issues on NR EMR | ZTE | noted |  |  |
| R4-2011318 | Remaining open issues on NR inter-RAT EMR measurements | ZTE | noted |  |  |
| R4-2011319 | Remaining open issues on NR SCell dormancy | ZTE | noted |  |  |
| R4-2011320 | Motivation on NR RRM requirement enhancements in Rel-17 | ZTE | not treated |  |  |
| R4-2011321 | New WID on NR RRM requirement enhancements in Rel-17 | ZTE | not treated |  |  |
| R4-2011322 | MRTD requirements for CBM in FR2 inter-band CA | Intel Corporation | noted |  |  |
| R4-2011323 | Discussion on NR V2X work scope | Intel Corporation | noted |  |  |
| R4-2011324 | Discussion on NR V2X test scenarios | Intel Corporation | noted |  |  |
| R4-2011325 | CR to TS 36.133: Corrections to subclause 4.2.2.5.6 | Nokia, Nokia Shanghai Bell | not pursued |  |  |
| R4-2011326 | On NR IAB general demodulation requirements | Nokia, Nokia Shanghai Bell | withdrawn |  |  |
| R4-2011327 | On NR IAB-node UL demodulation requirements | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2011328 | On NR IAB-node DL demodulation requirements | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2011329 | CR to TS 38.133: Corrections to Table 9.4.3.3-2 in subclause 9.4.3.3 (Requirements when DRX is used) | Nokia, Nokia Shanghai Bell | agreed |  |  |
| R4-2011330 | [NRU] LO Leakage Exception Issue and NRU Mask Measurement Procedure | Skyworks Solutions Inc. | noted |  |  |
| R4-2011331 | Discussions on SS-SINR measurements for Rel-16 high speed train | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2011332 | Revised WID: Rel17 LTE inter-band CA for 2 bands DL with 1 band UL | Qualcomm Incorporated | not concluded |  |  |
| R4-2011333 | Introduction of Rel-17 LTE inter-band CA for 2 bands DL with 1 band UL combinations in TS36.101 | Qualcomm Incorporated | not concluded |  |  |
| R4-2011334 | TR skeleton for TR 36.717-02-01 Rel-17 LTE inter-band CA for 2 bands DL and 1 band UL CA | Qualcomm Incorporated | agreed |  |  |
| R4-2011335 | Consideratons on performance requiremetns for FR2 MIMO OTA | Qualcomm Incorporated | noted |  |  |
| R4-2011336 | Further considerations on NB-IoT to meet FCC regulatory requirements | Qualcomm Incorporated | noted |  |  |
| R4-2011337 | Simulation results of L1-SINR measurement accuracy | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2011338 | Remaining issues in the core requirements of CSI-RS L3 measurements and draft LS to RAN2 on new UE capability | Qualcomm CDMA Technologies | noted |  |  |
| R4-2011339 | Discussion on release independent update for the Rel.16 EN-DC and NR CA/DC combinations from the basket | CHTTL | noted |  |  |
| R4-2011340 | draftCR for 38.104: High reliability and low latency BS demod requirements | Nokia, Nokia Shanghai Bell | revised |  | R4-2012659 |
| R4-2011341 | Applicability of DTRxSRS to SRS carrier switching and power class 2 | Qualcomm Incorporated | noted |  |  |
| R4-2011342 | Correction to configured power with allowance for SRS switching | Qualcomm Incorporated | agreed |  |  |
| R4-2011343 | Correction to configured power with allowance for SRS switching | Qualcomm Incorporated | agreed |  |  |
| R4-2011344 | Simulation results for NR-U bands n46 and n96 | Qualcomm Incorporated | revised |  | R4-2011895 |
| R4-2011345 | Remaining UE RF requirements for stand-alone single carrier NR-U | Qualcomm Incorporated | noted |  |  |
| R4-2011346 | Introduction of NR-based access to unlicensed spectrum | Qualcomm Incorporated | not pursued |  |  |
| R4-2011347 | Introduction of NR-based access to unlicensed spectrum | Qualcomm Incorporated, Nokia | revised |  | R4-2011701 |
| R4-2011348 | LS response on measurement capability for EMR | Ericsson | revised |  | R4-2012112 |
| R4-2011349 | On SCell activation delay in NR-U | Ericsson | noted |  |  |
| R4-2011350 | On active TCI state switching requirements in NR-U | Ericsson | noted |  |  |
| R4-2011351 | On RLM in NR-U | Ericsson | noted |  |  |
| R4-2011352 | Introduction of RLM requirements for NR-U | Ericsson | revised |  | R4-2012095 |
| R4-2011353 | On intra-frequency and inter-frequency measurements in NR-U including RSSI and CO | Ericsson | noted |  |  |
| R4-2011354 | On NR-U terminology reflecting LBT and the related number of SSBs to monitor | Ericsson | noted |  |  |
| R4-2011355 | On UE Rx-Tx measurements and measurement reporting | Ericsson | noted |  |  |
| R4-2011356 | Measurement report mapping and additional path reporting for UE Rx-Tx | Ericsson | revised |  | R4-2012131 |
| R4-2011357 | On RSTD measurements and measurement reporting | Ericsson | noted |  |  |
| R4-2011358 | Measurement report mapping and additional path reporting for RSTD | Ericsson | revised |  | R4-2012132 |
| R4-2011359 | On PRS-RSRP measurements | Ericsson | noted |  |  |
| R4-2011360 | LS on new measurement gaps for NR positioning | Ericsson | noted |  |  |
| R4-2011361 | Introduction of new measurement gaps for PRS-based measurements | Ericsson | postponed |  |  |
| R4-2011362 | Link-level simulation results for NR UE Rx-Tx | Ericsson | noted |  |  |
| R4-2011363 | Reporting criteria for NR positioning measurements | Ericsson | revised |  | R4-2012145 |
| R4-2011364 | General introduction of NR positioning measurements | Ericsson | agreed |  | - |
| R4-2011365 | Evaluations of Rel-15 Type II PMI testing | Ericsson | noted |  |  |
| R4-2011366 | Evaluations of Rel-16 Type II PMI testing | Ericsson | noted |  |  |
| R4-2011367 | Addition of Rel-16 SP Type I PMI tests, FRCs, and spatial correlation matrices | Ericsson | agreed |  |  |
| R4-2011368 | Simulation results for NR UE HST Single tap | Ericsson | noted |  |  |
| R4-2011369 | Addition of Rel-16 HST FRCs | Ericsson | revised |  | R4-2012672 |
| R4-2011370 | Simulation on UE URLLC performance requirements for Ultra low BLER | Ericsson | noted |  |  |
| R4-2011371 | Discussion and simulation on UE URLLC demodulation performance requirements with higher BLER | Ericsson | noted |  |  |
| R4-2011372 | Discussion and simulation on URLLC UE CQI reporting requirements for CQI table 3 | Ericsson | noted |  |  |
| R4-2011373 | Overview on NR-U features for UE performance requirements | Ericsson | noted |  |  |
| R4-2011374 | UE demodulation requirements for FR2 DL 256QAM | Ericsson | noted |  |  |
| R4-2011375 | Definitions and immunity of IAB EMC | Nokia, Nokia Shanghai Bell | revised |  | R4-2012639 |
| R4-2011376 | NR HST test case discussion | Qualcomm, Inc. | noted |  |  |
| R4-2011377 | 38.133 CR on additional RRM tests for NR HST | Qualcomm, Inc. | postponed |  |  |
| R4-2011378 | NR HST remaining requirement | Qualcomm, Inc. | noted |  |  |
| R4-2011379 | NR V2X RRM core and performance requirement remaining issues | Qualcomm, Inc. | noted |  |  |
| R4-2011380 | CR: Addition and correction of NR V2X RRM core requirement | Qualcomm, Inc. | postponed |  |  |
| R4-2011381 | NR V2X Demod requirement | Qualcomm, Inc. | noted |  |  |
| R4-2011382 | CR: RRM test cases for NR V2X | Qualcomm, Inc. | postponed |  |  |
| R4-2011383 | NR V2X RRM test case discussion | Qualcomm, Inc. | noted |  |  |
| R4-2011384 | 5G broadcast PMCH demod simulation result collection | Qualcomm, Inc. | noted |  |  |
| R4-2011385 | CGI reading core requirement discussion | Qualcomm, Inc. | noted |  |  |
| R4-2011386 | SCS carrier switching core requirement discussion | Qualcomm, Inc. | noted |  |  |
| R4-2011387 | FR2 Minimum output power measurement period definition | Keysight Technologies UK Ltd | revised |  | R4-2011693 |
| R4-2011388 | CR to TS 37.145-2: Out-of-band co-location test antenna definition | Nokia, Nokia Shanghai Bell | not pursued |  |  |
| R4-2011389 | CR to TS 37.145-2: Out-of-band co-location test antenna definition | Nokia, Nokia Shanghai Bell | withdrawn |  |  |
| R4-2011390 | Inter-band CA UE requirement fragmentation | Qualcomm Incorporated | noted |  |  |
| R4-2011391 | Discussions on CLTA maximum height | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2011392 | CR to TS 38.141-2: Out-of-band co-location test antenna definition | Nokia, Nokia Shanghai Bell | not pursued |  |  |
| R4-2011393 | CR to TS 38.141-2: Out-of-band co-location test antenna definition | Nokia, Nokia Shanghai Bell | withdrawn |  |  |
| R4-2011394 | On correlation between wanted and in-band unwanted emissions | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2011395 | Views on CA CQI Reporting Tests | Qualcomm Incorporated | noted |  |  |
| R4-2011396 | Draft CR for TS 38.141-2: Introduction of performance requirements of PUSCH repetition type A and PUSCH mapping type B for URLLC | NTT DOCOMO, INC. | revised |  | R4-2012658 |
| R4-2011397 | Simulation results on the NR HST PUSCH performance requirements | Huawei, HiSilicon | noted |  |  |
| R4-2011398 | Simulation results on the UL timing adjustment | Huawei, HiSilicon | noted |  |  |
| R4-2011399 | On NR IAB general demodulation requirements | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2011400 | Test frequencies for NB-IOT UE in standalone operation | Sony | noted |  |  |
| R4-2011401 | CR on Corrections in 38.101-4 | Qualcomm Incorporated | revised |  | R4-2012593 |
| R4-2011402 | FR2 Minimum output power measurement period definition | Keysight Technologies UK Ltd | agreed |  |  |
| R4-2011403 | Draft CR on FR1 PDSCH Mapping Type B and Processing Capability 2 Requirements | Qualcomm Incorporated | revised |  | R4-2012652 |
| R4-2011404 | Revised WID: LTE Advanced inter-band CA Rel-17 for x bands DL (x=4, 5) with 1 band UL | Nokia, Nokia Shanghai Bell | not concluded |  |  |
| R4-2011405 | Updated scope of TR: LTE inter-band CA for 4/5 bands DL with 1 band UL | Nokia, Nokia Shanghai Bell | approved |  |  |
| R4-2011406 | TR 36.717-04-01 v0.0.1 | Nokia, Nokia Shanghai Bell | agreed |  |  |
| R4-2011407 | CR to 37.141: Correction to applicability of additional BC3 requirement (Rel-15) | Nokia, Nokia Shanghai Bell | agreed |  |  |
| R4-2011408 | CR to 37.141: Correction to applicability of additional BC3 requirement (Rel-16) | Nokia, Nokia Shanghai Bell | agreed |  |  |
| R4-2011409 | CR to 36.104: Introduction of NR-U co-existence requirements | Nokia, Nokia Shanghai Bell | revised |  | R4-2012768 |
| R4-2011410 | CR to 37.104: Introduction of NR-U co-existence requirements | Nokia, Nokia Shanghai Bell | revised |  | R4-2012766 |
| R4-2011411 | CR to 37.105: Introduction of NR-U co-existence requirements | Nokia, Nokia Shanghai Bell | revised |  | R4-2012767 |
| R4-2011412 | BS RF requirements for 47 GHz band | Nokia, Nokia Shanghai Bell | approved |  |  |
| R4-2011413 | Draft CR on FR2 PDSCH CA Requirements | Qualcomm Incorporated | revised |  | R4-2012695 |
| R4-2011414 | Beam correspondence – SRS configuration corrections in section 5.2.1.3.7 | Keysight Technologies UK Ltd | agreed |  |  |
| R4-2011415 | CR for introduction of EESS protection into additional spurious emission | NTT DOCOMO INC. | not pursued |  |  |
| R4-2011416 | CR on scheduling restriction for CSI-RS based intra-frequency measurement | Qualcomm CDMA Technologies | revised |  | R4-2012174 |
| R4-2011417 | Views on RF requirement for FWA | Sony, Ericsson | noted |  |  |
| R4-2011418 | CR for introduction of EESS protection into additional spurious emission | NTT DOCOMO INC. | withdrawn |  |  |
| R4-2011419 | Draft CR on FDD HST Single-Tap and Multipath Fading Requirements | Qualcomm Incorporated | revised |  | R4-2012673 |
| R4-2011420 | Inter-band DL CA in FR2: CBM/IBM capability and associated spherical coverage EIS tests | Sony, Ericsson | noted |  |  |
| R4-2011421 | Views on test cases for eMIMO | Qualcomm Incorporated | noted |  |  |
| R4-2011422 | Views on n48 DSS | Google Inc. | noted |  |  |
| R4-2011423 | Views on testability enhancement for UE FR2 test | Sony, Ericsson | noted |  |  |
| R4-2011424 | Views on FR2 DL 256QAM UE Demodulation Tests | Qualcomm Incorporated | noted |  |  |
| R4-2011425 | Views on FR2 DL 256QAM SDR Tests | Qualcomm Incorporated | noted |  |  |
| R4-2011426 | discussion on CGI reading with autonomous gap | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2011427 | Response LS on CGI reading with autonomous gaps | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2011428 | discussion on BWP switch on multiple CCs | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2011429 | MRTD for FR2 inter-band DL CA | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2011430 | 38133 CR on inter-band FR2 CA MRTD | Nokia, Nokia Shanghai Bell | postponed |  |  |
| R4-2011431 | discussion on CA scenarios in Tansmit Timing requirement for IAB-MT | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2011432 | Test cases for LTE conditional HO | Nokia, Nokia Shanghai Bell | postponed |  | - |
| R4-2011433 | Views on FR2 DL 256QAM CSI Reporting Tests | Qualcomm Incorporated | noted |  |  |
| R4-2011434 | Views on Tests for High Speed Train Scenarios | Qualcomm Incorporated | noted |  |  |
| R4-2011435 | LS on Test Methodology for UE URLLC Ultra Low BLER Tests | Qualcomm Incorporated | revised |  | R4-2012647 |
| R4-2011436 | Views on NR CA PDSCH Demodulation Performance Tests | Qualcomm Incorporated | noted |  |  |
| R4-2011437 | Parameters and simulation results on PMI reporting requirements with larger number of Tx ports | Qualcomm Incorporated | noted |  |  |
| R4-2011438 | Views on Power Imbalance Tests | Qualcomm Incorporated | noted |  |  |
| R4-2011439 | Phase noise and RF impairments modeling for beyond 52GHz | FUTUREWEI | noted |  |  |
| R4-2011440 | Numerology considerations for beyond 52GHz | FUTUREWEI | noted |  |  |
| R4-2011441 | P-MPR consideration | FUTUREWEI | noted |  |  |
| R4-2011442 | Beam squint considerations | FUTUREWEI | noted |  |  |
| R4-2011443 | Views on URLLC Ultra-low BLER Demodulation Test Cases | Qualcomm Incorporated | noted |  |  |
| R4-2011444 | Views on URLLC Ultra-low BLER CSI Reporting Test Cases | Qualcomm Incorporated | noted |  |  |
| R4-2011445 | Views on URLLC High BLER Demodulation Test Cases | Qualcomm Incorporated | noted |  |  |
| R4-2011446 | Views on URLLC High BLER CSI Reporting Test Cases | Qualcomm Incorporated | noted |  |  |
| R4-2011447 | NR-U - On intra-band CA and wideband operation modes | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2011448 | Remaining Details on FR2 Inter-band DL CA | Futurewei Technologies | noted |  |  |
| R4-2011449 | MPR and NS\_04 A-MPR for 29 dBm PC1.5 | T-Mobile USA Inc., Qorvo | revised |  | R4-2011782 |
| R4-2011450 | CR to TS38.101-2 on ULFPTx and UE SRS port configuration clarification | Qualcomm Incorporated | revised |  | R4-2011764 |
| R4-2011451 | CR to 38.101-2: DL CA BW Enhancement and CA REFSENS | Qualcomm Incorporated | revised |  | R4-2011740 |
| R4-2011452 | LS on UL power boost mode and IBE relaxation | Qualcomm Incorporated | revised |  | R4-2011745 |
| R4-2011453 | CR to 38.101-2: FR2 UE EIRP increase with IBE relaxation | Qualcomm Incorporated | revised |  | R4-2011905 |
| R4-2011454 | FR2 intra-band non-contiguous UL CA feature | Qualcomm Incorporated | revised |  | R4-2011744 |
| R4-2011455 | Discussion on 48G RF components | Qualcomm Incorporated | noted |  |  |
| R4-2011456 | FR2 testability enhancement for UE emissions | Qualcomm Incorporated | noted |  |  |
| R4-2011457 | FR2 testability enhancement for polarization mismatch | Qualcomm Incorporated | noted |  |  |
| R4-2011458 | On Japan FWA EIRP requirement | Qualcomm Incorporated | noted |  |  |
| R4-2011459 | TxD for 29dBm PC1.5 | T-Mobile USA Inc. | noted |  |  |
| R4-2011460 | CR to 38.101-3 - Correction DC\_42\_n79 simultaneous Tx/Rx operation | Skyworks Solutions Inc. | not pursued |  |  |
| R4-2011461 | Motivation for update of SI to support irregular channel bandwidth | Huawei, HiSilicon | not treated |  |  |
| R4-2011462 | SID on efficient utilization of licensed spectrum that is no aligned with existing NR channel bandwidth | Huawei, HiSilicon | not treated |  |  |
| R4-2011463 | Motivation for new WI on supporting overlapping CA for LTE | Huawei, HiSilicon | not treated |  |  |
| R4-2011464 | New WID proposal: supporting overlapping CA for LTE | Huawei, HiSilicon | not treated |  |  |
| R4-2011465 | Motivation for new WI on Rel-17 NR FR1 RF | Huawei, HiSilicon | not treated |  |  |
| R4-2011466 | New WID proposal: RF requirements enhancement for NR frequency range 1 (FR1) in Rel-17 | Huawei, HiSilicon | not treated |  |  |
| R4-2011467 | Discussion on Rel-16 feature list | Huawei, HiSilicon | noted |  |  |
| R4-2011468 | Further discussion on update of ULSUP-TDM time mask requirements | Huawei, HiSilicon | noted |  |  |
| R4-2011469 | CR to 38.101-3 on time masks for ULSUP in R16 | Huawei, HiSilicon | withdrawn |  |  |
| R4-2011470 | Response to LS on UE capability xDD differentiation for SUL/SDL bands | Huawei, HiSilicon | noted |  |  |
| R4-2011471 | CR for intra-band UL CA non-contiguous CA requirement | Huawei, HiSilicon | revised |  | R4-2011728 |
| R4-2011472 | on FR1 UL CA DC location | Huawei, HiSilicon | noted |  |  |
| R4-2011473 | on FR1 UL CA UE capability | Huawei, HiSilicon | noted |  |  |
| R4-2011474 | on FR1 UL non-contiguous CA MPR requirement Rel-16 | Huawei, HiSilicon | noted |  |  |
| R4-2011475 | On transient period UE capability | Huawei, HiSilicon | noted |  |  |
| R4-2011476 | CR for correction on intra-band UL CA contiguous CA requirement | Huawei, HiSilicon | revised |  | R4-2011918 |
| R4-2011477 | CR for intra-band UL contiguous CA DC location | Huawei, HiSilicon | revised |  | R4-2011723 |
| R4-2011478 | On intra-band NC UL CA\_FR2 | Huawei, HiSilicon | noted |  |  |
| R4-2011479 | On beam correspondence enhancement | Huawei, HiSilicon | noted |  |  |
| R4-2011480 | CR on modified MPR for FR2 | Huawei, HiSilicon | not pursued |  |  |
| R4-2011481 | CR for modified MPR\_Rel-16 | Huawei, HiSilicon | withdrawn |  |  |
| R4-2011482 | CR for intra-band UL CA non-contiguous CA requirement | Huawei, HiSilicon | revised |  | R4-2011725 |
| R4-2011483 | On inter band DL CA\_FR2 | Huawei, HiSilicon | noted |  |  |
| R4-2011484 | CR on channel space for CA | Huawei, HiSilicon | not pursued |  |  |
| R4-2011485 | CR for 38.101-1 channel space for CA\_Rel16 | Huawei, HiSilicon | withdrawn |  |  |
| R4-2011486 | CR on channel space for CA | Huawei, HiSilicon | not pursued |  |  |
| R4-2011487 | CR for 38.101-2 channel space for CA\_Rel16 | Huawei, HiSilicon | withdrawn |  |  |
| R4-2011488 | on new FR2 FWA UE RF requirement+LS RAN2 | Huawei, HiSilicon | noted |  |  |
| R4-2011489 | on power class fallback enhancement | Huawei, HiSilicon | noted |  |  |
| R4-2011490 | CR on inter-band ENDC Pcmax | Huawei, HiSilicon | agreed |  |  |
| R4-2011491 | on PTRS configuration for EVM requirement+LS to RAN5 | Huawei, HiSilicon | noted |  |  |
| R4-2011492 | CR on PTRS configuration for UL RMC-Rel-15 | Huawei, HiSilicon | withdrawn |  |  |
| R4-2011493 | CR on PTRS configuration for UL RMC-Rel-16 | Huawei, HiSilicon | withdrawn |  |  |
| R4-2011494 | on PN model for 60GHz+reply LS RAN1 | Huawei, HiSilicon | noted |  |  |
| R4-2011495 | CR on minumum output power | Huawei, HiSilicon | not pursued |  |  |
| R4-2011496 | CR for 38.101-1 on minimum output power-Rel-16 | Huawei, HiSilicon | withdrawn |  |  |
| R4-2011497 | CR on correction for AMPR NS\_38,NS\_40 and NS\_41 | Huawei, HiSilicon | not pursued |  |  |
| R4-2011498 | CR for 38.101-1 on corrections for AMPR-Rel-16 | Huawei, HiSilicon | withdrawn |  |  |
| R4-2011499 | Revised WID for LTE inter-band CA for 3 bands DL with 1 bands UL | Huawei,HiSilicon | not concluded |  |  |
| R4-2011500 | CR to 38.101-3 on time masks for ULSUP in R16 | Huawei Technologies France | revised |  | R4-2011730 |
| R4-2011501 | Introduction of completed R16 3DL band combinations to TS 36.101 | Huawei,HiSilicon | not concluded |  |  |
| R4-2011502 | Introduction of completed R16 3DL band combinations to TS 36.101 | Huawei,HiSilicon | not concluded |  |  |
| R4-2011503 | TR skeleton for Rel-17 LTE inter-band CA for 3 bands DL with 1 band UL | Huawei, HiSilicon | agreed |  |  |
| R4-2011504 | NPUSCH format 1 performance for Multi-TB scheduling | Nokia, Nokia Shanghai Bell | revised |  | R4-2012750 |
| R4-2011505 | NPUSCH format 1 performance for Multi-TB scheduling | Nokia, Nokia Shanghai Bell | withdrawn |  |  |
| R4-2011506 | On new measurement gap patterns for NR positioning | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2011507 | On gNB measurement accuracy requirements for NR positioning | Nokia, Nokia Shanghai Bell | noted |  |  |
| R4-2011508 | Initial considerations on band n24 impact on E911 emergency calls | Apple Inc. | noted |  |  |
| R4-2011509 | Initial considerations on band 24 impact on E911 emergency calls | Apple Inc. | noted |  |  |
| R4-2011510 | PSD for FR2 inter-band CA with IBM | NTT DOCOMO INC. | noted |  |  |
| R4-2011511 | Discussion on FR2 NC UL CA requirements | Qualcomm India Pvt Ltd | noted |  |  |
| R4-2011512 | on FR1 intra-band NC CA Tx requirement | Huawei, HiSilicon | noted |  |  |
| R4-2011513 | CR on PTRS configuration for UL RMC | Huawei, HiSilicon | not pursued |  |  |
| R4-2011514 | CR on PTRS configuration for UL RMC-Rel-16 | Huawei, HiSilicon | withdrawn |  |  |
| R4-2011515 | CR to 38.101-3 - Correction to cross band isolation MSD tables and DC\_42\_n79 | Skyworks Solutions Inc., Mediatek | revised |  | R4-2011778 |
| R4-2011516 | General discussion on IAB demodulation performance requirements | Huawei Technologies France | noted |  |  |
| R4-2011517 | Initial discussion on IAB DU demodulation performance requirements | Huawei Technologies France | noted |  |  |
| R4-2011518 | Initial discussion on IAB MT demodulation performance requirements | Huawei Technologies France | noted |  |  |
| R4-2011519 | Further Considerations on the EVM Definition for Antenna Ports Including Transparent Transmit Diversity | Lenovo, Motorola Mobility | noted |  |  |
| R4-2011520 | On the Transmit EVM Requirement for UL MIMO Transmission | Lenovo, Motorola Mobility | noted |  |  |
| R4-2011521 | CR to 36.101 Removal band 10 protection | Skyworks Solutions Inc. | agreed |  |  |
| R4-2011522 | Class B and Class C NR CA Back-off Measurements for A-MPR | Skyworks Solutions Inc. | noted |  |  |
| R4-2011523 | Transient Period Capability for NR FR1 | Skyworks Solutions Inc. | noted |  |  |
| R4-2011524 | Mandatory Single Uplink Operation for EN-DC | Skyworks Solutions Inc. | noted |  |  |
| R4-2011525 | CR to 36.101 Removal of CA\_NS\_08 | Skyworks Solutions Inc. | not pursued |  | - |
| R4-2011526 | CR to 36.101 Correction to CA\_NS\_10 | Skyworks Solutions Inc. | agreed |  |  |
| R4-2011527 | DeltaTRxSRS for LTE Pcmax | Skyworks Solutions Inc. | noted |  |  |
| R4-2011528 | CR to 38.101-1 - Correction to CA BCS and cross band isolation MSD tables | Skyworks Solutions Inc. | revised |  | R4-2011775 |
| R4-2011529 | CR to 38.101-1 Correction to NS\_18 | Skyworks Solutions Inc. | not pursued |  |  |
| R4-2011530 | Agenda for RAN4 #96-e | ETSI | revised | R4-2009500 | R4-2011578 |
| R4-2011531 | E-meeting arrangements and guidelines | RAN4 Chairman | revised | - | R4-2011533 |
| R4-2011532 | LTE/NR spectrum sharing in band 48/n48 frequency range | Apple Inc., Comcast | noted | R4-2009935 | - |
| R4-2011533 | E-meeting arrangements and guidelines | RAN4 Chairman | approved | R4-2011531 | - |
| R4-2011534 | Email discussion summary for [96e][101] NR\_NewRAT\_SysParameters | Moderator (ZTE) | revised | - | R4-2011841 |
| R4-2011535 | Email discussion summary for [96e][102] NR\_NewRAT\_UE\_RF\_Part\_1 | Moderator (Nokia) | revised | - | R4-2011842 |
| R4-2011536 | Email discussion summary for [96e][103] NR\_NewRAT\_UE\_RF\_Part\_2 | Moderator (Apple) | revised | - | R4-2011843 |
| R4-2011537 | Email discussion summary for [96e][104] NR\_NewRAT\_UE\_RF\_Part\_3 | Moderator (Huawei) | revised | - | R4-2011844 |
| R4-2011538 | Email discussion summary for [96e][105] LTE\_Maintenance | Moderator ( Skyworks) | revised | - | R4-2011845 |
| R4-2011539 | Email discussion summary for [96e][106] NR\_unlic\_SysParameters | Moderator (Ericsson) | revised | - | R4-2011846 |
| R4-2011540 | Email discussion summary for [96e][107] NR\_unlic\_UE\_RF | Moderator (Qualcomm) | revised | - | R4-2011847 |
| R4-2011541 | Email discussion summary for [96e][108] 5G\_V2X\_NRSL\_UE\_RF | Moderator (LG Electronics) | revised | - | R4-2011848 |
| R4-2011542 | Email discussion summary for [96e][109] 5G\_V2X\_NRSL\_SysParameters | Moderator (vivo) | revised | - | R4-2011849 |
| R4-2011543 | Email discussion summary for [96e][110] 5G\_V2X\_NRSL\_UE\_Concurrent | Moderator (Huawei) | revised | - | R4-2011850 |
| R4-2011544 | Email discussion summary for [96e][111] LTE\_NR\_DC\_CA\_enh\_RF | Moderator (Ericsson) | revised | - | R4-2011851 |
| R4-2011545 | Email discussion summary for [96e][112] NR\_eMIMO\_UE\_RF | Moderator (Samsung) | revised | - | R4-2011852 |
| R4-2011546 | Email discussion summary for [96e][113] NR\_RF\_FR1\_Part\_1 | Moderator (Huawei) | revised | - | R4-2011853 |
| R4-2011547 | Email discussion summary for [96e][114] NR\_RF\_FR1\_Part\_2 | Moderator (China Telecom) | revised | - | R4-2011854 |
| R4-2011548 | Email discussion summary for [96e][115] NR\_RF\_FR2\_req\_enh\_Part\_1 | Moderator (OPPO) | revised | - | R4-2011855 |
| R4-2011549 | Email discussion summary for [96e][116] NR\_RF\_FR2\_req\_enh\_Part\_2 | Moderator (Apple) | revised | - | R4-2011856 |
| R4-2011550 | Email discussion summary for [96e][117] NR\_RF\_FR2\_req\_enh\_Part\_3 | Moderator (Qualcomm) | revised | - | R4-2011857 |
| R4-2011551 | Email discussion summary for [96e][118] NR\_RF\_FR2\_req\_enh\_Part\_4 | Moderator (Nokia) | revised | - | R4-2011858 |
| R4-2011552 | Email discussion summary for [96e][119] NR\_transient\_period | Moderator (CMCC) | revised | - | R4-2011859 |
| R4-2011553 | Email discussion summary for [96e][120] NR\_TxD | Moderator (vivo) | revised | - | R4-2011860 |
| R4-2011554 | Email discussion summary for [96e][121] NR\_R16\_Maintenance | Moderator (Dish Network) | revised | - | R4-2011861 |
| R4-2011555 | Email discussion summary for [96e][122] R16\_UE\_ feature | Moderator (CMCC) | revised | - | R4-2011862 |
| R4-2011556 | Email discussion summary for [96e][123] LTE\_NR\_B41\_Bn41\_PC29dBm | Moderator (T-Mobile USA) | revised | - | R4-2011863 |
| R4-2011557 | Email discussion summary for [96e][124] ENDC\_UE\_PC2\_FDD\_TDD | Moderator (China Unicom) | revised | - | R4-2011864 |
| R4-2011558 | Email discussion summary for [96e][125] NR\_n48\_LTE\_48\_coex | Moderator (Apple) | revised | - | R4-2011865 |
| R4-2011559 | Email discussion summary for [96e][126] NR\_Baskets\_Part\_1 | Moderator (Nokia) | noted | - | - |
| R4-2011560 | Email discussion summary for [96e][127] NR\_Baskets\_Part\_2 | Moderator (Nokia) | noted | - | - |
| R4-2011561 | Email discussion summary for [96e][128] NR\_SAR\_PC2\_interB\_SUL\_2BUL | Moderator (China Telecom) | revised | - | R4-2011866 |
| R4-2011562 | Email discussion summary for [96e][129] NR\_bands\_R17\_BWs | Moderator (Ericsson) | revised | - | R4-2011867 |
| R4-2011563 | Email discussion summary for [96e][130] NR\_FR1\_35MHz\_45MHz\_BW | Moderator (Huawei) | revised | - | R4-2011868 |
| R4-2011564 | Email discussion summary for [96e][131] NR\_LTE\_V2X\_PC5\_combos | Moderator (CATT) | revised | - | R4-2011869 |
| R4-2011565 | Email discussion summary for [96e][132] NR\_FR2\_FWA\_Bn257\_Bn258 | Moderator (SoftBank) | revised | - | R4-2011870 |
| R4-2011566 | Email discussion summary for [96e][133] NR\_n13 | Moderator (Huawei) | revised | - | R4-2011871 |
| R4-2011567 | Email discussion summary for [96e][134] NR\_SUL\_bands | Moderator (CMCC) | revised | - | R4-2011872 |
| R4-2011568 | Email discussion summary for [96e][135] NR\_47GHz\_Band | Moderator (Nokia) | revised | - | R4-2011873 |
| R4-2011569 | Email discussion summary for [96e][136] NR\_LTE\_band\_n24 | Moderator (Ligado Networks) | revised | - | R4-2011874 |
| R4-2011570 | Email discussion summary for [96e][137] NR\_SUL\_bands\_1.6GHz | Moderator (Ligado Networks) | noted | - | - |
| R4-2011571 | Email discussion summary for [96e][138] DSS\_bands | Moderator (Reliance Jio) | revised | - | R4-2011876 |
| R4-2011572 | Email discussion summary for [96e][139] FS\_6425\_10500MHz \_NR | Moderator (Ericsson) | revised | - | R4-2011877 |
| R4-2011573 | Email discussion summary for [96e][140] FS\_NR\_52\_to\_71GHz | Moderator (Qualcomm) | revised | - | R4-2011878 |
| R4-2011574 | Email discussion summary for [96e][141] LTE\_Baskets | Moderator (Ericsson) | noted | - | - |
| R4-2011575 | Email discussion summary for [96e][142] LTE\_bands\_R17\_M1\_M2\_NB1\_NB2 | Moderator (Ericsson) | revised | - | R4-2011879 |
| R4-2011576 | Email discussion summary for [96e][143] FS\_LTE\_NR\_HPUE\_FWVM | Moderator (Nokia) | revised | - | R4-2011880 |
| R4-2011577 | Email discussion summary for [96e][144] BC\_simplification | Moderator (NTT DoCoMo) | revised | - | R4-2011881 |
| R4-2011578 | Agenda for RAN4 #96-e | ETSI | approved | R4-2011530 | - |
| R4-2011579 | TP for TR 36.717-03-01: CA\_3-8-41 | VODAFONE Group Plc | approved | R4-2009710 | - |
| R4-2011580 | TP for TR 36.717-03-01 CA\_3-20-38 | VODAFONE Group Plc | approved | R4-2009711 | - |
| R4-2011581 | TP for TR 36.717-03-01: CA\_3-40-41 | VODAFONE Group Plc | approved | R4-2009712 | - |
| R4-2011582 | TP for TR 36.717-04-01: CA\_1-3-20-38 | VODAFONE Group Plc | approved | R4-2009713 | - |
| R4-2011583 | TP for TR 36.717-03-01: CA\_8A-20A-38A | Huawei, HiSilicon | approved | R4-2010873 | - |
| R4-2011584 | TP for TR 37.717-21-11: DC\_1-32\_n28 | VODAFONE Group Plc | approved | R4-2009714 | - |
| R4-2011585 | TP for TR 37.717-21-11: DC\_7-32\_n28 | VODAFONE Group Plc | approved | R4-2009715 | - |
| R4-2011586 | TP for TR 37.717-21-11: DC\_20-32\_n28 | VODAFONE Group Plc | approved | R4-2009717 | - |
| R4-2011587 | TP for TR 37.717-31-11: DC\_3-20-32\_n78 | VODAFONE Group Plc | withdrawn | - | - |
| R4-2011588 | TP for TR 37.717-31-11: DC\_7-20-32\_n1 | VODAFONE Group Plc | withdrawn | - | - |
| R4-2011589 | TP for TR 37.717-11-11 for DC\_2A\_n28A | Huawei, HiSilicon | withdrawn | - | - |
| R4-2011590 | TP for 37.717-11-11 for DC\_28A\_n2A | Huawei, HiSilicon | withdrawn | - | - |
| R4-2011591 | TP for TR 38.717-01-01: CA\_3DL\_n77(3A)\_1UL\_n77A | SoftBank Corp. | withdrawn | - | - |
| R4-2011592 | TP for TR 37.717-11-11: DC\_42\_n3 | SoftBank Corp. | approved | R4-2009978 | - |
| R4-2011593 | TP for TR 37.717-21-11: EN-DC\_3-11\_n77 | SoftBank Corp. | approved | R4-2009995 | - |
| R4-2011594 | Draft CR for TS 38.101-3: Support of n77(2A) for DC\_41-42\_n77 | SoftBank Corp. | endorsed | R4-2010007 | - |
| R4-2011595 | TP for TR 37.717-11-11: DC\_8A\_n7A | Nokia | approved | R4-2010236 | - |
| R4-2011596 | Draft CR for 38.101-3 to introduce new inter-band NE-DC (1NR band +1LTE band) including FR2 | Samsung, SK Telecom, KT, LGU | endorsed | R4-2010258 | - |
| R4-2011597 | CR to 38.101-1: Introduce n48 intra-band CA configurations | Verizon UK Ltd | endorsed | R4-2010286 | - |
| R4-2011598 | CR to 38.101-2: Introduce mmWave intra-band CA configurations | Verizon UK Ltd | endorsed | R4-2010294 | - |
| R4-2011599 | TP for TR 37.717-11-11 for DC\_66\_n77 | Verizon UK Ltd | approved | R4-2010304 | - |
| R4-2011600 | TP for TR 37.717-11-11 for DC\_13\_n77 | Verizon UK Ltd | approved | R4-2010305 | - |
| R4-2011601 | TP for TR 37.717-11-11 for DC\_5\_n77 | Verizon UK Ltd | approved | R4-2010306 | - |
| R4-2011602 | TP for TR 37.717-11-11 for DC\_2\_n77 | Verizon UK Ltd | approved | R4-2010307 | - |
| R4-2011603 | TP for DC\_42\_n1 for TR 37.717-11-11 | NTT DOCOMO INC. | withdrawn | - | - |
| R4-2011604 | TP for 37.717-11-11 to introduce DC\_48\_n25A | Nokia, T-Mobile | approved | R4-2010406 | - |
| R4-2011605 | TP for 37.717-21-11 to introduce DC\_2A-48A\_n48A | Nokia, T-Mobile | approved | R4-2010407 | - |
| R4-2011606 | TP for 37.717-21-11 to introduce DC\_2A-71A\_n71A and DC\_66A-71A\_n71A | Nokia, T-Mobile | withdrawn | R4-2010408 | - |
| R4-2011607 | TP for 37.717-21-11 to introduce DC\_48-66A\_n25A | Nokia, T-Mobile | approved | R4-2010409 | - |
| R4-2011608 | TP for 37.717-21-11 to introduce DC\_3A-8A\_n40A | Nokia | approved | R4-2010419 | - |
| R4-2011609 | TP for 37.717-21-11 to introduce DC\_3A-28A\_n1A | Nokia | approved | R4-2010420 | - |
| R4-2011610 | TP for 37.717-21-11 to introduce DC\_7A-28A\_n1A | Nokia | approved | R4-2010422 | - |
| R4-2011611 | TP for 37.717-11-11 to introduce DC\_28A\_n2A and DC\_2A\_n28A | Nokia | approved | R4-2010436 | - |
| R4-2011612 | TP for DC\_3-21\_n1 for TR 37.717-21-11 | NTT DOCOMO INC. | approved | R4-2010452 | - |
| R4-2011613 | TP for DC\_19-42\_n1 for TR 37.717-21-11 | NTT DOCOMO INC. | approved | R4-2010456 | - |
| R4-2011614 | TP for DC\_21-42\_n1 for TR 37.717-21-11 | NTT DOCOMO INC. | approved | R4-2010458 | - |
| R4-2011615 | TP for TR 37.717-11-11: DC\_4A\_n2A | Huawei, HiSilicon, Bell Mobility, Telus | approved | R4-2010511 | - |
| R4-2011616 | TP for TR 37.717-21-11: DC\_7-66\_n5 | Huawei, HiSilicon, Bell Mobility, Telus | approved | R4-2010512 | - |
| R4-2011617 | TP to TR 37.717-11-11 DC\_4A\_n5A | Huawei, HiSilicon | approved | R4-2010554 | - |
| R4-2011618 | TP to TR 37.717-21-11 DC\_8A-40A\_n78A | Huawei, HiSilicon | approved | R4-2010559 | - |
| R4-2011619 | TP to TR 38.717-01-01 to include CA\_n71(2A) | Ericsson, T-Mobile US | approved | R4-2010684 | - |
| R4-2011620 | TP for TR 37.717-21-11 to include DC\_2A-12A\_n5A | Ericsson, US Cellular | approved | R4-2010697 | - |
| R4-2011621 | TP for TR 37.717-21-11 to include DC\_2A-5A\_n12A | Ericsson, US Cellular | approved | R4-2010698 | - |
| R4-2011622 | TP for TR 37.717-11-11: DC\_4A\_n28A | Huawei, HiSilicon | approved | R4-2010878 | - |
| R4-2011623 | TP for TR 37.717-11-11: DC\_66A\_n28A | Huawei, HiSilicon | approved | R4-2010879 | - |
| R4-2011624 | TP for TR 37.717-41-11: DC\_2A-7A-28A-66A\_n66A / DC\_2A-7C-28A-66A\_n66A | Huawei, HiSilicon | approved | R4-2010900 | - |
| R4-2011625 | DraftCR for 38.101-1 to add BCS1 for CA\_n66(2A) | Huawei, HiSilicon | endorsed | R4-2010903 | - |
| R4-2011626 | TR 38.717-02-01 v0.0.1 | ZTE Wistron Telecom AB | agreed | R4-2010790 | - |
| R4-2011627 | Draft CR for TS 38.101-1: Support of DC\_n3-n77 and DC\_n28\_n77 | SoftBank Corp. | endorsed | R4-2010006 | - |
| R4-2011628 | TP for TR 38.717-02-01 CA\_n3-n77(2A) \_UL\_n77(2A) | Samsung, KDDI | not concluded | R4-2010248 | - |
| R4-2011629 | TP for TR 38.717-02-01 CA\_n3-n78(2A) \_UL\_n78(2A) | Samsung, KDDI | not concluded | R4-2010249 | - |
| R4-2011630 | TP for TR 38.717-02-01 CA\_n28-n77(2A) \_UL\_n77(2A) | Samsung, KDDI | not concluded | R4-2010250 | - |
| R4-2011631 | TP for TR 38.717-02-01 CA\_n28-n78(2A) \_UL\_n78(2A) | Samsung, KDDI | not concluded | R4-2010251 | - |
| R4-2011632 | Draft CR to 38.101-1: Introduce CA\_n2-n48, CA\_n2-n77, CA\_n5-n77, CA\_n66-n77 CA configurations | Verizon UK Ltd | not concluded | R4-2010272 | - |
| R4-2011633 | TP for 38.717-02-01: CA\_n66-n77 and DC\_n66-n77 | Verizon UK Ltd | noted | R4-2010329 | - |
| R4-2011634 | TP for 38.717-02-01: CA\_n5-n77 and DC\_n5-n77 | Verizon UK Ltd | noted | R4-2010339 | - |
| R4-2011635 | TP for 38.717-02-01: CA\_n2-n77 and DC\_n2-n77 | Verizon UK Ltd | noted | R4-2010353 | - |
| R4-2011636 | TP for 38.717-02-01: CA\_n2-n48 and DC\_n2-n48 | Verizon UK Ltd | noted | R4-2010354 | - |
| R4-2011637 | TP for TR 38.717-02-01: CA\_n5-n25 | Huawei, HiSilicon, Bell Mobility, Telus | approved | R4-2010506 | - |
| R4-2011638 | TP for TR 38.717-02-01: CA\_n71-n78 | Huawei, HiSilicon, Bell Mobility, Telus | approved | R4-2010509 | - |
| R4-2011639 | TP to TR 38.717-02-01: CA\_n7-n66 | Nokia, Bell Mobility | approved | R4-2010526 | - |
| R4-2011640 | TP to TR 38.717-02-00: CA\_n25-n38 | Nokia, Bell Mobility | approved | R4-2010527 | - |
| R4-2011641 | TP for CA 2DL2UL n1-n77 for TR 38.717-02-01 | NTT DOCOMO INC. | withdrawn | - | - |
| R4-2011642 | TP for CA 2DL2UL n77-n79 for TR 38.717-02-01 | NTT DOCOMO INC. | withdrawn | - | - |
| R4-2011643 | TP for CA 2DL2UL n78-n79 for TR 38.717-02-01 | NTT DOCOMO INC. | approved | R4-2010574 | - |
| R4-2011644 | draft CR to 38.101-1 to add new configuration and BCSs | Ericsson | endorsed | R4-2010683 | - |
| R4-2011645 | TP for TR 38.717-02-00 to include CA\_n25A-n48A, CA\_n25A-n48(2A), CA\_n25A-n48C | Ericsson, T-Mobile US | approved | R4-2010686 | - |
| R4-2011646 | TP for TR 38.717-02-01: CA\_n28A-n79A | Huawei, HiSilicon,CBN | approved | R4-2010902 | - |
| R4-2011647 | CR to 38.101-3: Introduce CA configurations for CA FR1+FR2 combos | Verizon UK Ltd | revised | R4-2010275 | R4-2011912 |
| R4-2011648 | TP for TR 38.717-02-01: CA\_n77-n260 and DC\_n77-n260 | Verizon UK Ltd | noted | R4-2010356 | - |
| R4-2011649 | TP for 38.717-02-01: CA\_n48-n261 and DC\_n48-n261 | Verizon UK Ltd | noted | R4-2010358 | - |
| R4-2011650 | TP for 38.717-02-01: CA\_n2-n261 and DC\_n2-n261 | Verizon UK Ltd | noted | R4-2010366 | - |
| R4-2011651 | TP for 38.717-02-01: CA\_n2-n260 and DC\_n2-n260 | Verizon UK Ltd | noted | R4-2010368 | - |
| R4-2011652 | Draft CR for NR CA including FR1 and FR2 with 2DL and xUL | NTT DOCOMO INC. | endorsed | R4-2010383 | - |
| R4-2011653 | draftCR to introduce CADC\_n25-n260 to 38.101-3 | Nokia, T-Mobile | endorsed | R4-2010401 | - |
| R4-2011654 | TP for TR 37.717-11-21: EN-DC\_1\_n3-n77 | SoftBank Corp. | approved | R4-2009998 | - |
| R4-2011655 | TP for TR 37.717-11-21: EN-DC\_8\_n3-n77 | SoftBank Corp. | approved | R4-2009999 | - |
| R4-2011656 | TP for TR 37.717-11-21: EN-DC\_11\_n3-n28 | SoftBank Corp. | approved | R4-2010001 | - |
| R4-2011657 | TP for TR 37.717-11-21: EN-DC\_1-42\_n28-n77 | SoftBank Corp. | approved | R4-2010002 | - |
| R4-2011658 | TP for TR 37.717-11-21: EN-DC\_3-42\_n28-n77 | SoftBank Corp. | approved | R4-2010003 | - |
| R4-2011659 | TP for TR 37.717-11-21: EN-DC\_8-42\_n28-n77 | SoftBank Corp. | approved | R4-2010004 | - |
| R4-2011660 | TP for TR 37.717-11-21: EN-DC\_1-3-8\_n28-n77 | SoftBank Corp. | approved | R4-2010005 | - |
| R4-2011661 | TP for TR 37.717-11-21 DC\_1A\_n28A-n41A | Samsung, KDDI | approved | R4-2010242 | - |
| R4-2011662 | TP for 37.717-11-21 to introduce DC\_48A\_n25A-n48A | Nokia, T-Mobile | approved | R4-2010413 | - |
| R4-2011663 | TP for 37.717-11-21 to introduce DC\_48A\_n48A-n66A | Nokia, T-Mobile | approved | R4-2010414 | - |
| R4-2011664 | TP for 37.717-11-21 to introduce DC\_66A\_n25A-n48A | Nokia, T-Mobile | revised | R4-2010416 | R4-2011883 |
| R4-2011665 | TP for 37.717-11-21 to introduce DC\_7A\_n40A-n78A | Nokia | approved | R4-2010429 | - |
| R4-2011666 | TP for 37.717-11-21 to introduce DC\_8A\_n40A-n78A | Nokia | revised | R4-2010432 | R4-2011884 |
| R4-2011667 | TP for 37.717-11-21 to introduce DC\_28A\_n1A-n40A | Nokia | approved | R4-2010433 | - |
| R4-2011668 | TP to TR 37.717-00-00 SUL\_n41A-n83A | Huawei, HiSilicon, Etisalat, CMCC | not concluded | R4-2010547 | - |
| R4-2011669 | TP to TR 37.717-00-00 SUL\_n79A-n83A | Huawei, CBN, CMCC, HiSilicon, ABS | not concluded | R4-2010548 | - |
| R4-2011670 | DraftCR to 38101-1 on CA\_n78C\_SUL\_n78A-n84A | Huawei, HiSilicon, CKH IOD UK, MediaTek, Spreadtrum | not concluded | R4-2010550 | - |
| R4-2011671 | TP to TR 37.717-00-00 DC\_28A\_SUL\_n41A-n83A | Huawei, HiSilicon, Etisalat, CMCC | not concluded | R4-2010553 | - |
| R4-2011672 | TP for TR 37.717-00-00 for CA\_n28A-n41A\_SUL\_n41A-n83A | Huawei, HiSilicon | not concluded | R4-2010919 | - |
| R4-2011673 | TP for TR 37.717-00-00 for CA\_n28A-n79A\_SUL\_n79A-n83A | Huawei, HiSilicon, CBN, ABS | not concluded | R4-2010920 | - |
| R4-2011674 | TP for CA 3DL1UL n1-n77-n79 for TR 38.717-03-01 | NTT DOCOMO INC. | approved | R4-2010575 | - |
| R4-2011675 | TP for CA 3DL1UL n1-n78-n79 for TR 38.717-03-01 | NTT DOCOMO INC. | approved | R4-2010579 | - |
| R4-2011676 | TP to add CA\_n25A-n41A-n66A-n71A, CA\_n25A-n41(2A)-n66A-n71A, CA\_n25A-n41C-n66A-n71A | Ericsson, T-Mobile US | approved | R4-2010688 | - |
| R4-2011677 | TP to TR 38.717-03-02: CA\_n5-n25-n66 | Nokia, Bell Mobility | approved | R4-2010529 | - |
| R4-2011678 | WF on FR2 Beam Correspondence | Apple | approved | - | - |
| R4-2011679 | LS on Rel-16 RAN4 UE features lists for NR and LTE | RAN4 | approved | - | - |
| R4-2011680 | RAN4 UE features list for Rel-16 | CMCC | approved | - | - |
| R4-2011681 | Reply LS on RAN1 UE feature lists for 5G V2X service | RAN4 | approved | - | - |
| R4-2011682 | WF on 30k SCS support for n34 and n39 SSB | CMCC | approved | - | - |
| R4-2011683 | 30k SSB for n34 and n39 | Ericsson | agreed | R4-2010340 | - |
| R4-2011684 | CR to TS38.104: Add 30k SSB SCS for Band n34 and n39 | ZTE Corporation | agreed | R4-2010621 | - |
| R4-2011685 | Draft CR to TS 38.307 Release independence support of new channel bandwidth from Rel-15 | ZTE Wistron Telecom AB | endorsed | R4-2010789 | - |
| R4-2011686 | WF on UE capability xDD differentiation for SUL/SDL bands | Nokia | approved | - | - |
| R4-2011687 | Reply LS on UE capability xDD differentiation for SUL/SDL bands | RAN4 | approved | R4-2010782 | - |
| R4-2011688 | Reply LS on Clarification on RAN4 features of NE-DC | RAN4 | approved | R4-2010264 | - |
| R4-2011689 | CR to capture WRC-19 impact on NR bands in TR38.817-01 | Apple Inc. | agreed | R4-2009954 | - |
| R4-2011690 | CR for R15 38.101-2: Correction of in-band emission tables | CATT | agreed | R4-2009800 | - |
| R4-2011691 | modifiedMPR correction for FR2 REL15 | Nokia, Nokia Shanghai Bell | agreed | R4-2010224 | - |
| R4-2011692 | modifiedMPR correction for FR2 REL16 | Nokia, Nokia Shanghai Bell | agreed | R4-2010225 | - |
| R4-2011693 | FR2 Minimum output power measurement period definition | Keysight Technologies UK Ltd | agreed | R4-2011387 | - |
| R4-2011694 | WF on remaining issues on WRC-19 resolutions | Nokia | noted | - | - |
| R4-2011695 | WF on NR SCC UL power drop behavior in FR2 | Anritsu Corporation | approved | - | - |
| R4-2011696 | CR for TS 36.101: CR for category NB1 against FCC regulation in standalone mode | MediaTek Inc. | withdrawn | - | - |
| R4-2011697 | Coexistence cleanup for 36101 Rel16 | Apple Inc. | agreed | R4-2009938 | - |
| R4-2011698 | CR to 36.101 Removal of CA\_NS\_08 | Skyworks Solutions Inc. | withdrawn | - | - |
| R4-2011699 | A-MPR definition for CA\_48B | Nokia | revised | R4-2010227 | R4-2011921 |
| R4-2011700 | LS reply to RAN1on UE capability on wideband carrier operation for NR-U | MediaTek | revised | - | R4-2011931 |
| R4-2011701 | Introduction of NR-based access to unlicensed spectrum | Qualcomm Incorporated, Nokia | revised | R4-2011347 | R4-2011943 |
| R4-2011702 | Draft CR to 38.101-3 on out-of-band blocking for NSA operation | Ericsson | withdrawn | - | - |
| R4-2011703 | WF on A-MPR for NS\_33 | Huawei | approved | - | - |
| R4-2011704 | WF on A-MPR for NS\_52 | Qualcomm | approved | - | - |
| R4-2011705 | Correction on 5G V2X UE RF requirements in rel-16 | LG Electronics France | agreed | R4-2010137 | - |
| R4-2011706 | CR on TS38.101-1 for NR V2X | vivo | agreed | R4-2010288 | - |
| R4-2011707 | CR for TS 38.101-1: Removal of table 6.5E.3.4.3-1 and table 6.5E.3.4.3-2 | Qualcomm Incorporated | agreed | R4-2010026 | - |
| R4-2011708 | WF on REFSENS requirements for NR V2X UE at licensed band/unlicensed bands | LG Electronics | approved | - | - |
| R4-2011709 | WF on NR V2X FRC parameters | Huawei, HiSilicon | noted | - | - |
| R4-2011710 | LS to RAN5 on measurement point for 5G V2X UE | RAN4 | approved | - | - |
| R4-2011711 | CR for 38.101-1 NR V2X FRC | Huawei, HiSilicon | endorsed | R4-2010823 | - |
| R4-2011712 | WF on BS impact of NR V2X | CATT | revised | - | R4-2011915 |
| R4-2011713 | LS on definition of NR V2X con-current operation | RAN4 | approved | - | - |
| R4-2011714 | WF on NR-V2X switching period | CATT | noted | - | - |
| R4-2011715 | draft correction CR for TS 38.101-3: NR V2X con-current operation | Huawei, HiSilicon | not pursued | R4-2010821 | - |
| R4-2011716 | CR for 38.886, Switching period for NR V2X in ITS band | CATT | not pursued | R4-2009829 | - |
| R4-2011717 | Correction on 5G V2X con-current UE RF requirements in rel-16 | LG Electronics France | agreed | R4-2010138 | - |
| R4-2011718 | CR on TS38.101-3 for NR V2X | vivo | agreed | R4-2010289 | - |
| R4-2011719 | Clarification on the network and UE behaviors between | Huawei, HiSilicon | noted | - | - |
| R4-2011720 | CR for 38.101-3 Switching time mask for inter-band EN-DC UEs only supporting single switched UL | Huawei, HiSilicon | revised | - | R4-2011933 |
| R4-2011721 | Reply LS on power control for NR-DC | RAN4 | approved | - | - |
| R4-2011722 | LS on additional DC location reporting for intra-band UL CA | Qualcomm | revised | - | R4-2011906 |
| R4-2011723 | CR for intra-band UL contiguous CA DC location | Huawei, HiSilicon | agreed | R4-2011477 | - |
| R4-2011724 | LS on FR1 intra-band UL CA UE capability | RAN4 | approved | - | - |
| R4-2011725 | CR for intra-band UL CA non-contiguous CA requirement | Huawei, HiSilicon | agreed | R4-2011482 | - |
| R4-2011726 | CR on CA\_NS\_04 and CA\_NS\_06 AMPR and ASE requirements | Skyworks | withdrawn | - | - |
| R4-2011727 | A-MPR definition for CA\_n48B, CA\_n41B and CA\_n41C | Nokia, Skyworks | revised | R4-2010228 | R4-2011935 |
| R4-2011728 | CR for intra-band UL CA non-contiguous CA requirement | Huawei, HiSilicon | agreed | R4-2011471 | - |
| R4-2011729 | Correction to FR1 UL contiguous CA MPR regions | Nokia Corporation | agreed | R4-2009588 | - |
| R4-2011730 | CR to 38.101-3 on time masks for ULSUP in R16 | Huawei Technologies France | agreed | R4-2011500 | - |
| R4-2011731 | WF on remaining issues for Tx switching between two uplink carriers | China Telecom | approved | - | - |
| R4-2011732 | Modification of Pcmax for UL CA with uplink Tx switching capability | Ericsson | not pursued | R4-2010348 | - |
| R4-2011733 | LS on MPE enhancements | RAN4 | approved | R4-2010237 | - |
| R4-2011734 | WF on MPE enhancements | OPPO | approved | - | - |
| R4-2011735 | Introduction of MPE related P-MPR operation in sub-clause 6.2.4 | InterDigital, Inc. | agreed | - | - |
| R4-2011736 | Introduction of the P-MPR 2 bits report mapping in 38.133 | InterDigital, Inc. | agreed | R4-2009598 | - |
| R4-2011737 | TP to TR38.831: beam correspondence enhancement | Apple | approved | - | - |
| R4-2011738 | Beam correspondence enhancement | Nokia, Nokia Shanghai Bell | revised | R4-2010239 | R4-2011928 |
| R4-2011739 | CR to 38.101-2 (Rel-16) intra-band non-cont. DL CA | Intel Corporation | agreed | R4-2009754 | - |
| R4-2011740 | CR to 38.101-2: DL CA BW Enhancement and CA REFSENS | Qualcomm Incorporated | agreed | R4-2011451 | - |
| R4-2011741 | LS on UE capability for FR2 inter-band CA | RAN4 | approved | - | - |
| R4-2011742 | Scope and TP of FR2 Inter-band DL CA in Rel-16 | Nokia, Nokia Shanghai Bell | noted | R4-2010537 | - |
| R4-2011743 | Introduction of FR2 inter-band DL CA | Nokia, Nokia Shanghai Bell | revised | R4-2010538 | R4-2011914 |
| R4-2011744 | FR2 intra-band non-contiguous UL CA feature | Qualcomm Incorporated | agreed | R4-2011454 | - |
| R4-2011745 | LS on UL power boost mode and IBE relaxation | RAN4 | approved | R4-2011452 | - |
| R4-2011746 | LS on clarification for the UE behavior when UL shift is optional | RAN4 | approved | - | - |
| R4-2011747 | WF on EVM measurement for UL-MIMO | Anritsu | approved | - | - |
| R4-2011748 | WF on Handling of additional requirements for UE co-ex in CA/DC | Softbank | withdrawn | - | - |
| R4-2011749 | CR for 38.101-1 RFC corrections (R15) | Huawei, HiSilicon | agreed | R4-2010814 | - |
| R4-2011750 | CR for 38.101-1 to add the missing MSD for CA\_n41A-n78A | Huawei, HiSilicon | agreed | R4-2010926 | - |
| R4-2011751 | Reply LS on RF testing of 4Rx capable UE | RAN4 | approved | - | - |
| R4-2011752 | Correction of applicability of 2Rx requirements | vivo | agreed | - | - |
| R4-2011753 | Correction of applicability of 2Rx requirements | vivo | agreed | - | - |
| R4-2011754 | WF on structure of NR CA reference sensitivity requirements in 38.101-1 | Huawei | approved | - | - |
| R4-2011755 | Reply LS on structure of NR CA reference sensitivity requirements in 38.101-1 | Huawei | withdrawn | - | - |
| R4-2011756 | CR for missing DC\_1A\_n40A Cross Band Noise MSD for large NR UL BW in 38.101-3 | Qualcomm Incorporated | not pursued | R4-2009623 | - |
| R4-2011757 | CR for missing IMD MSD in 38.101-3 for DC\_1A-41A\_n78A, DC\_7A-28A\_n78A | Qualcomm Incorporated | agreed | R4-2009625 | - |
| R4-2011758 | (reserved) | Main session | reserved | - | - |
| R4-2011759 | Corrections of Japan-related EN-DC co-ex tables for REL-15 combo | SoftBank Corp., NTT docomo INC., KDDI Corporation, Huawei, HiSilicon | agreed | R4-2010123 | - |
| R4-2011760 | CR to 38.101-3 MSD due to UL harmonics and intermodulation interference | Apple Inc. | revised | R4-2009964 | R4-2011938 |
| R4-2011761 | WF on Remaining Issues for ULFPTx | Samsung | withdrawn | - | - |
| R4-2011762 | CR to TS38.101-1 on introduction of Uplink Full Power Transmission | Samsung, Qualcomm | agreed | R4-2010097 | - |
| R4-2011763 | draft CR for TS 38.101-1: update of eMIMO requirements for ULFPTx | Huawei, HiSilicon | not pursued | R4-2010812 | - |
| R4-2011764 | CR to TS38.101-2 on ULFPTx and UE SRS port configuration clarification | Qualcomm Incorporated | revised | R4-2011450 | R4-2011920 |
| R4-2011765 | (reserved) | Main session | reserved | - | - |
| R4-2011766 | Draft CR on introduction of shorter Transient Period Capability | Qualcomm Incorporated, Verizon, Dish Network, Ericsson, CMCC, Keysight Technologies, Nokia, Nokia Shanghai Bell, AT&T, ZTE, Vodafone, Orange, T-Mobile USA, Deutsche Telekom, Telecom Italia, CHTTL, China Telecom, SGS Wireless, Interdigital | endorsed | R4-2010914 | - |
| R4-2011767 | Draft LS on shorter transient period capability | Qualcomm Incorporated | withdrawn | R4-2010916 | - |
| R4-2011768 | WF on Rel-16 TxD | Samsung | approved | - | - |
| R4-2011769 | draft CR for TS 38.101-1 Tx diversity requirements | Huawei, HiSilicon, OPPO | not pursued | R4-2010807 | - |
| R4-2011770 | draft CR for TS 38.101-3 introduce new power class for EN-DC | Huawei, HiSilicon | endorsed | R4-2010809 | - |
| R4-2011771 | Correction to ASEM for NS\_27 | Anritsu Corporation | agreed | R4-2009666 | - |
| R4-2011772 | CR Restoring the clause structure of NR FR1 uplink contiguous intraband CA | Nokia, Nokia Shanghai Bell, Qualcomm Inc, Skyworks, Ericsson | withdrawn | - | - |
| R4-2011773 | CR for 38.101-1 to remove PHS system and 860~890 protection for NR CA band combination with band n1 and band n8 | Huawei, HiSilicon | agreed | R4-2010923 | - |
| R4-2011774 | CR for 38.101-1 to add the missing region for NS\_18 and maintenance the ∆mprc | Huawei, HiSilicon | agreed | R4-2010925 | - |
| R4-2011775 | CR to 38.101-1 - Correction to CA BCS and cross band isolation MSD tables | Skyworks Solutions Inc. | agreed | R4-2011528 | - |
| R4-2011776 | Correction for REL16 FR2 contiguous intra-band CA configuration table | Apple Inc. | agreed | R4-2009949 | - |
| R4-2011777 | WF on handling new channel BW | Qualcomm | approved | - | - |
| R4-2011778 | CR to 38.101-3 - Correction to cross band isolation MSD tables and DC\_42\_n79 | Skyworks Solutions Inc., Mediatek | agreed | R4-2011515 | - |
| R4-2011779 | MSD correction for new added CBW | MediaTek Inc. | withdrawn | R4-2010587 | - |
| R4-2011780 | CR for 38.101-3 to remove PHS system, 860~890 and 1400~1427 protection for EN-DC band combination with band n1, n8 and n50 | Huawei, HiSilicon | agreed | R4-2010924 | - |
| R4-2011781 | draft CR to TS 38.307 on release independent update for the Rel.16 EN-DC and NR CA/DC | ZTE | endorsed | - | - |
| R4-2011782 | MPR and NS\_04 A-MPR for 29 dBm PC1.5 | T-Mobile USA Inc., Qorvo | noted | R4-2011449 | - |
| R4-2011783 | CR for 38.101-1: Introduction of Power Class 1.5 | T-Mobile USA | agreed | R4-2010060 | - |
| R4-2011784 | WF on EN-DC FDD+TDD PC2 HPUE | China Unicom | agreed | - | - |
| R4-2011785 | CR to TS 38.101-3: PC2 band 3+band n78 ENDC | China Unicom | revised | R4-2010088 | R4-2011923 |
| R4-2011786 | Introduction of EN-DC power class 2 for FDD-TDD band combinations | Ericsson | not pursued | R4-2010351 | - |
| R4-2011787 | LS on UE capability for PC2 inter-band EN-DC (LTE FDD+NR TDD) | RAN4 | approved | - | - |
| R4-2011788 | CR to TS 38.101-3: PC2 band 3+band n41 ENDC | ZTE Corporation, CMCC, Xiaomi | revised | R4-2010632 | R4-2011924 |
| R4-2011789 | WF on UE PC2 for NR inter-band CA and SUL configurations | China Telecom | approved | - | - |
| R4-2011790 | Revised RP-201294 - Basket WID on adding channel bandwidth support to existing NR bands | Ericsson | endorsed | R4-2010618 | - |
| R4-2011791 | WF on release independence and signalling for 35 MHz and 45 MHz | Huawei | approved | - | - |
| R4-2011792 | WF on Spectrum utilization for 35 MHz and 45 MHz | ZTE | approved | - | - |
| R4-2011793 | WF on UE RF requirements | Skyworks | approved | - | - |
| R4-2011794 | WF on new band combinations for V2X con-current operation | CATT | approved | - | - |
| R4-2011795 | TR 37.875 skeleton for V2X new band combinations | CATT | agreed | R4-2009833 | - |
| R4-2011796 | TP on harmonics and IMD analysis for V2X\_(n)39A\_(n)47A con-current operation | CATT | approved | R4-2009834 | - |
| R4-2011797 | CR for TS 38.101-1, Introduce new band combination of V2X\_n39A\_n47A | CATT | not pursued | - | - |
| R4-2011798 | CR for TS 38.101-3, Introduce new band combination of V2X\_39A\_n47A and V2X\_n39A\_47A | CATT | not pursued | - | - |
| R4-2011799 | Draft CR for FR2 FWA RF requirements | Huawei | not pursued | - | - |
| R4-2011800 | LS to RAN2 on FR2 FWA options | SoftBank | noted | - | - |
| R4-2011801 | WF on A-MPR for n13 | Qualcomm | approved | - | - |
| R4-2011802 | Draft CR for TS 38.10: introduction of NR band n13 | Huawei, HiSilicon | endorsed | R4-2010491 | - |
| R4-2011803 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 38.101-1 | CMCC | not pursued | R4-2009633 | - |
| R4-2011804 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 38.104 | CMCC | not pursued | R4-2009634 | - |
| R4-2011805 | Introduction of 1880-1920MHz SUL band into Rel-16 TS 36.104 | CMCC | not pursued | R4-2009635 | - |
| R4-2011806 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 36.141 | CMCC | not pursued | R4-2009636 | - |
| R4-2011807 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 37.104 | CMCC | not pursued | R4-2009637 | - |
| R4-2011808 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 37.105 | CMCC | not pursued | R4-2009638 | - |
| R4-2011809 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 37.141 | CMCC | not pursued | R4-2009639 | - |
| R4-2011810 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 37.145-1 | CMCC | not pursued | R4-2009640 | - |
| R4-2011811 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 37.145-2 | CMCC | not pursued | R4-2009641 | - |
| R4-2011812 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 38.141-1 | CMCC | not pursued | R4-2009642 | - |
| R4-2011813 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 38.141-2 | CMCC | not pursued | R4-2009643 | - |
| R4-2011814 | introduction of 2300-2400MHz SUL band into Rel-17 TS 38.101-1 | CMCC | not pursued | R4-2009644 | - |
| R4-2011815 | Introduction of 2300-2400MHz SUL band into Rel-17 TS 38.104 | CMCC | not pursued | R4-2009645 | - |
| R4-2011816 | WF on UE testability above 43.5 GHz | R&S, Apple | approved | - | - |
| R4-2011817 | WF on link budget parameters for Tx/Rx of n262 | Huawei, HiSilicon, Apple | approved | - | - |
| R4-2011818 | WF on UE RF requirement for 47 GHz band | Qualcomm | approved | - | - |
| R4-2011819 | WF on CR work split | Ligado Networks | approved | - | - |
| R4-2011820 | WF on UE related work for n24 | Ligado Networks | approved | - | - |
| R4-2011821 | WF on UE related work for Modification of Band 24 | Ligado Networks | approved | - | - |
| R4-2011822 | LTE/NR spectrum sharing in Band 40/n40 | Reliance Jio | endorsed | R4-2009589 | - |
| R4-2011823 | LTE/NR spectrum sharing in Band 40/n40 | Reliance Jio | endorsed | R4-2009590 | - |
| R4-2011824 | LTE/NR spectrum sharing in Band 40/n40 | Reliance Jio | endorsed | R4-2009591 | - |
| R4-2011825 | 7.5 kHz UL shift for LTE/NR spectrum sharing in Band 38/n38 | VODAFONE Group Plc | not concluded | R4-2009859 | - |
| R4-2011826 | CR to introduce 7.5 kHz UL shift for LTE/NR spectrum sharing in Band 38/n38 | VODAFONE Group Plc | not concluded | R4-2009707 | - |
| R4-2011827 | WF on the Simulations for the SI on 6.425-7.125GHz and 10.0-10.5GHz | Nokia | approved | - | - |
| R4-2011828 | TP to TR 38.921: UE IMT technology related parameters | Huawei, HiSilicon | noted | R4-2010484 | - |
| R4-2011829 | TP to TR 38.921: BS IMT technology related parameters | Huawei, HiSilicon, Ericsson, Nokia, ZTE | approved | R4-2010485 | - |
| R4-2011830 | TP to TR 38.921: Addition of BS antenna model and parameters in subclause 4.2.3 and subclause 8.1 | Ericsson, Huawei, Nokia, ZTE | approved | R4-2010180 | - |
| R4-2011831 | TP to TR38.912 uplink ACIR model | ZTE Corporation | noted | R4-2010940 | - |
| R4-2011832 | WF on adding B24 for M1/M2 and NB1/NB2 | Ericsson | approved | - | - |
| R4-2011833 | TP to TR 37.xxx: Simulation assumptions for coexistence study on High-power UE operation for fixed-wireless/vehicle-mounted use cases in Band 12, Band 5, and Band n71 | Nokia France | approved | R4-2011220 | - |
| R4-2011834 | WF on wild card approach | ZTE | noted | - | - |
| R4-2011835 | WF on modified procedure for DC including FR2 and further simplification on band combinations | Nokia | approved | - | - |
| R4-2011836 | WF on alternative to creating new BCSs | T-Mobile USA | noted | - | - |
| R4-2011837 | WF on PA and antenna assumptions for 60 GHz BS | Huawei | approved | - | - |
| R4-2011838 | WF on numerologies for FS\_NR\_52\_to\_71GHz | Intel | approved | - | - |
| R4-2011839 | WF on PTRS evaluation and RAN4 aspects | Nokia | approved | - | - |
| R4-2011840 | WF on power amplifier model in 60 GHz | Skyworks | approved | - | - |
| R4-2011841 | Email discussion summary for [96e][101] NR\_NewRAT\_SysParameters | Moderator (ZTE) | noted | R4-2011534 | - |
| R4-2011842 | Email discussion summary for [96e][102] NR\_NewRAT\_UE\_RF\_Part\_1 | Moderator (Nokia) | noted | R4-2011535 | - |
| R4-2011843 | Email discussion summary for [96e][103] NR\_NewRAT\_UE\_RF\_Part\_2 | Moderator (Apple) | noted | R4-2011536 | - |
| R4-2011844 | Email discussion summary for [96e][104] NR\_NewRAT\_UE\_RF\_Part\_3 | Moderator (Huawei) | revised | R4-2011537 | R4-2011937 |
| R4-2011845 | Email discussion summary for [96e][105] LTE\_Maintenance | Moderator ( Skyworks) | revised | R4-2011538 | R4-2011940 |
| R4-2011846 | Email discussion summary for [96e][106] NR\_unlic\_SysParameters | Moderator (Ericsson) | noted | R4-2011539 | - |
| R4-2011847 | Email discussion summary for [96e][107] NR\_unlic\_UE\_RF | Moderator (Qualcomm) | noted | R4-2011540 | - |
| R4-2011848 | Email discussion summary for [96e][108] 5G\_V2X\_NRSL\_UE\_RF | Moderator (LG Electronics) | noted | R4-2011541 | - |
| R4-2011849 | Email discussion summary for [96e][109] 5G\_V2X\_NRSL\_SysParameters | Moderator (vivo) | noted | R4-2011542 | - |
| R4-2011850 | Email discussion summary for [96e][110] 5G\_V2X\_NRSL\_UE\_Concurrent | Moderator (Huawei) | noted | R4-2011543 | - |
| R4-2011851 | Email discussion summary for [96e][111] LTE\_NR\_DC\_CA\_enh\_RF | Moderator (Ericsson) | noted | R4-2011544 | - |
| R4-2011852 | Email discussion summary for [96e][112] NR\_eMIMO\_UE\_RF | Moderator (Samsung) | noted | R4-2011545 | - |
| R4-2011853 | Email discussion summary for [96e][113] NR\_RF\_FR1\_Part\_1 | Moderator (Huawei) | noted | R4-2011546 | - |
| R4-2011854 | Email discussion summary for [96e][114] NR\_RF\_FR1\_Part\_2 | Moderator (China Telecom) | noted | R4-2011547 | - |
| R4-2011855 | Email discussion summary for [96e][115] NR\_RF\_FR2\_req\_enh\_Part\_1 | Moderator (OPPO) | noted | R4-2011548 | - |
| R4-2011856 | Email discussion summary for [96e][116] NR\_RF\_FR2\_req\_enh\_Part\_2 | Moderator (Apple) | noted | R4-2011549 | - |
| R4-2011857 | Email discussion summary for [96e][117] NR\_RF\_FR2\_req\_enh\_Part\_3 | Moderator (Qualcomm) | noted | R4-2011550 | - |
| R4-2011858 | Email discussion summary for [96e][118] NR\_RF\_FR2\_req\_enh\_Part\_4 | Moderator (Nokia) | noted | R4-2011551 | - |
| R4-2011859 | Email discussion summary for [96e][119] NR\_transient\_period | Moderator (CMCC) | noted | R4-2011552 | - |
| R4-2011860 | Email discussion summary for [96e][120] NR\_TxD | Moderator (vivo) | noted | R4-2011553 | - |
| R4-2011861 | Email discussion summary for [96e][121] NR\_R16\_Maintenance | Moderator (Dish Network) | noted | R4-2011554 | - |
| R4-2011862 | Email discussion summary for [96e][122] R16\_UE\_ feature | Moderator (CMCC) | noted | R4-2011555 | - |
| R4-2011863 | Email discussion summary for [96e][123] LTE\_NR\_B41\_Bn41\_PC29dBm | Moderator (T-Mobile USA) | noted | R4-2011556 | - |
| R4-2011864 | Email discussion summary for [96e][124] ENDC\_UE\_PC2\_FDD\_TDD | Moderator (China Unicom) | noted | R4-2011557 | - |
| R4-2011865 | Email discussion summary for [96e][125] NR\_n48\_LTE\_48\_coex | Moderator (Apple) | noted | R4-2011558 | - |
| R4-2011866 | Email discussion summary for [96e][128] NR\_SAR\_PC2\_interB\_SUL\_2BUL | Moderator (China Telecom) | noted | R4-2011561 | - |
| R4-2011867 | Email discussion summary for [96e][129] NR\_bands\_R17\_BWs | Moderator (Ericsson) | noted | R4-2011562 | - |
| R4-2011868 | Email discussion summary for [96e][130] NR\_FR1\_35MHz\_45MHz\_BW | Moderator (Huawei) | noted | R4-2011563 | - |
| R4-2011869 | Email discussion summary for [96e][131] NR\_LTE\_V2X\_PC5\_combos | Moderator (CATT) | noted | R4-2011564 | - |
| R4-2011870 | Email discussion summary for [96e][132] NR\_FR2\_FWA\_Bn257\_Bn258 | Moderator (SoftBank) | noted | R4-2011565 | - |
| R4-2011871 | Email discussion summary for [96e][133] NR\_n13 | Moderator (Huawei) | noted | R4-2011566 | - |
| R4-2011872 | Email discussion summary for [96e][134] NR\_SUL\_bands | Moderator (CMCC) | noted | R4-2011567 | - |
| R4-2011873 | Email discussion summary for [96e][135] NR\_47GHz\_Band | Moderator (Nokia) | noted | R4-2011568 | - |
| R4-2011874 | Email discussion summary for [96e][136] NR\_LTE\_band\_n24 | Moderator (Ligado Networks) | noted | R4-2011569 | - |
| R4-2011875 | Email discussion summary for [96e][137] NR\_SUL\_bands\_1.6GHz | Moderator (Ligado Networks) | withdrawn | - | - |
| R4-2011876 | Email discussion summary for [96e][138] DSS\_bands | Moderator (Reliance Jio) | noted | R4-2011571 | - |
| R4-2011877 | Email discussion summary for [96e][139] FS\_6425\_10500MHz \_NR | Moderator (Ericsson) | noted | R4-2011572 | - |
| R4-2011878 | Email discussion summary for [96e][140] FS\_NR\_52\_to\_71GHz | Moderator (Qualcomm) | noted | R4-2011573 | - |
| R4-2011879 | Email discussion summary for [96e][142] LTE\_bands\_R17\_M1\_M2\_NB1\_NB2 | Moderator (Ericsson) | noted | R4-2011575 | - |
| R4-2011880 | Email discussion summary for [96e][143] FS\_LTE\_NR\_HPUE\_FWVM | Moderator (Nokia) | noted | R4-2011576 | - |
| R4-2011881 | Email discussion summary for [96e][144] BC\_simplification | Moderator (NTT DoCoMo) | noted | R4-2011577 | - |
| R4-2011882 | TP for TR 37.717-11-11: DC\_28A\_n1A | Huawei, HiSilicon, Nokia | approved | R4-2010880 | - |
| R4-2011883 | TP for 37.717-11-21 to introduce DC\_66A\_n25A-n48A | Nokia, T-Mobile | approved | R4-2011664 | - |
| R4-2011884 | TP for 37.717-11-21 to introduce DC\_8A\_n40A-n78A | Nokia | approved | R4-2011666 | - |
| R4-2011885 | TR 37.717-11-21 v0.1.0 TR skeleton: LTE(xDL/1UL)+ NR(2DL/1UL) DC in Rel-17 | LG Electronics Polska | not concluded | - | - |
| R4-2011886 | TR 38.717-03-01 on Rel-17 NR inter-band Carrier Aggregation (CA) for 3 Down Link (DL) / 1 Up Link (UL) | CATT | not concluded | - | - |
| R4-2011887 | Draft TR 38.717-04-01 v0.1.0 Rel-17 NR Inter-band 4 bands CA | Ericsson | not concluded | - | - |
| R4-2011888 | Draft TR 38.717-01-01 v0.1.0 Rel-17 NR Intra-band | Ericsson | not concluded | - | - |
| R4-2011889 | Draft TR of TR 37.717-21-11 v0.1.0 | Huawei, HiSilicon | not concluded | - | - |
| R4-2011890 | Draft TR 37.717-31-11 v0.1.0 Rel-17 DC combinations LTE 3DL and one NR band | Ericsson | not concluded | - | - |
| R4-2011891 | Draft TR38.717-04-02 for NR CA/DC with 4DL/2UL v0.1.0 | Samsung | not concluded | - | - |
| R4-2011892 | Draft TR for Rel-17 LTE inter-band CA for 3 bands DL with 1 band UL v0.1.0 | Huawei, HiSilicon | not concluded | - | - |
| R4-2011893 | TR 36.717-04-01 v0.1.0 | Nokia, Nokia Shanghai Bell | not concluded | - | - |
| R4-2011894 | TR 36.717-03-02 v0.1.0 TR Skeleton for LTE-A inter-band CA for x bands (x=3,4,5) DL with 2 bands UL in Rel-17 | LG Electronics Polska | not concluded | - | - |
| R4-2011895 | Simulation results for NR-U bands n46 and n96 | Qualcomm Incorporated | noted | R4-2011344 | - |
| R4-2011896 | CR for adding SAR solutions for FDD+TDD EN-DC PC2 UE | vivo | not pursued | R4-2010849 | - |
| R4-2011897 | CR for 38.101-1: Introduction of BCS4 for CA, DC and SUL | T-Mobile USA, Deutsche Telekom, AT&T, Telus, Bell Mobility, Telstra, Telecom Italia, Ericsson, Vodaphone, Rogers, KDDI, Ericsson | not pursued | - | - |
| R4-2011898 | 7.5 kHz UL shift for LTE/NR spectrum sharing in Band 38/n38 | VODAFONE Group Plc | not concluded | - | - |
| R4-2011899 | 7.5 kHz UL shift for LTE/NR spectrum sharing in Band 38/n38 - 38104, Rel-16 | VODAFONE Group Plc | not concluded | - | - |
| R4-2011900 | 7.5 kHz UL shift for LTE/NR spectrum sharing in Band 38/n38 | VODAFONE Group Plc | endorsed | - | - |
| R4-2011901 | 7.5 kHz UL shift for LTE/NR spectrum sharing in Band 38/n38 | VODAFONE Group Plc | endorsed | - | - |
| R4-2011902 | CR to add PC3 Pi/2 BPSK DMRS for IE powerBoostPi2BPSK = 0 | Qualcomm, T-Mobile, ATT, Verizon, KDDI, Nokia | revised | - | R4-2011919 |
| R4-2011903 | LS on NR power class clarification | RAN4 | approved | R4-2010767 | - |
| R4-2011904 | Reply LS to RAN1 and NR evaluations for above 52.6 GHz | Nokia, Nokia Shanghai Bell | noted | R4-2010727 | - |
| R4-2011905 | CR to 38.101-2: FR2 UE EIRP increase with IBE relaxation | Qualcomm Incorporated | agreed | R4-2011453 | - |
| R4-2011906 | LS on additional DC location reporting for intra-band UL CA | RAN4 | approved | R4-2011722 | - |
| R4-2011907 | LS on New 35 and 45 MHz channel bandwidths | T-Mobile USA | withdrawn | - | - |
| R4-2011908 | CR to TS 38.101-1: corrections on narrow band blocking for intra-band contiguous CA | Xiaomi | agreed | R4-2010022 | - |
| R4-2011909 | LS on Parameters of terrestrial component of IMT for sharing and compatibility studies in preparation for WRC-23 | Ericsson | noted | - | - |
| R4-2011910 | EESS protection related requirements for FR2 bands | Nokia Japan | not pursued | R4-2009594 | - |
| R4-2011911 | LS on NB-IoT certification testing | : T-Mobile USA | revised | - | R4-2011913 |
| R4-2011912 | CR to 38.101-3: Introduce CA configurations for CA FR1+FR2 combos | Verizon UK Ltd | endorsed | R4-2011647 | - |
| R4-2011913 | LS on NB-IoT certification testing | RAN4 | approved | R4-2011911 | - |
| R4-2011914 | Introduction of FR2 inter-band DL CA | Nokia, Nokia Shanghai Bell | agreed | R4-2011743 | - |
| R4-2011915 | WF on BS impact of NR V2X | CATT | noted | R4-2011712 | - |
| R4-2011916 | CR for TS 38.104, Introduce BS impact of NR V2X | CATT | not pursued | R4-2009825 | - |
| R4-2011917 | Correction on NR V2X UE RF requirements for single carrier in TS38.101-1 | LG Electronics France | withdrawn | - | - |
| R4-2011918 | CR for correction on intra-band UL CA contiguous CA requirement | Huawei, HiSilicon | agreed | R4-2011476 | - |
| R4-2011919 | CR to add PC3 Pi/2 BPSK DMRS for IE powerBoostPi2BPSK = 0 | Qualcomm, T-Mobile, ATT, Verizon, KDDI, Nokia | revised | R4-2011902 | R4-2011942 |
| R4-2011920 | CR to TS38.101-2 on ULFPTx and UE SRS port configuration clarification | Qualcomm Incorporated | agreed | R4-2011764 | - |
| R4-2011921 | A-MPR definition for CA\_48B | Nokia | agreed | R4-2011699 | - |
| R4-2011922 | CR for TS 38.101-3 introduce new power class for EN-DC | Huawei, HiSilicon | agreed | - | - |
| R4-2011923 | CR to TS 38.101-3: PC2 band 3+band n78 ENDC | China Unicom | revised | R4-2011785 | R4-2011941 |
| R4-2011924 | CR to TS 38.101-3: PC2 band 3+band n41 ENDC | ZTE Corporation, CMCC, Xiaomi | endorsed | R4-2011788 | - |
| R4-2011925 | Introduction of LTE/NR spectrum sharing in band 48/n48 frequency range | Apple Inc., Comcast | agreed | R4-2009936 | - |
| R4-2011926 | Introduction of LTE/NR spectrum sharing in band 48/n48 frequency range | Apple Inc., Comcast | agreed | R4-2009937 | - |
| R4-2011927 | CR to TS 38.101-2 on corrections to operating bands for intra-band CA (Rel-15) | ZTE Corporation | agreed | R4-2010322 | - |
| R4-2011928 | Beam correspondence enhancement | Nokia, Nokia Shanghai Bell | agreed | R4-2011738 | - |
| R4-2011929 | LS on updated Rel-16 RAN4 UE features lists for NR and LTE | RAN4 | approved | - | - |
| R4-2011930 | Updated RAN4 UE features list for Rel-16 | CMCC | approved | - | - |
| R4-2011931 | LS reply to RAN1on UE capability on wideband carrier operation for NR-U | RAN4 | approved | R4-2011700 | - |
| R4-2011932 | (reserved) | Main session | withdrawn | - | - |
| R4-2011933 | CR for 38.101-3 Switching time mask for inter-band EN-DC UEs only supporting single switched UL | Huawei, HiSilicon | agreed | R4-2011720 | - |
| R4-2011934 | WF on only single switched UL | Huawei, HiSilicon | approved | - | - |
| R4-2011935 | A-MPR definition for CA\_n48B, CA\_n41B and CA\_n41C | Nokia, Skyworks | agreed | R4-2011727 | - |
| R4-2011936 | CR for TS 38.101-3: FR1 inter-band EN-DC out-of-band blocking UL configuration | Apple Inc. | agreed | R4-2010046 | - |
| R4-2011937 | Email discussion summary for [96e][104] NR\_NewRAT\_UE\_RF\_Part\_3 | Moderator (Huawei) | noted | R4-2011844 | - |
| R4-2011938 | CR to 38.101-3 MSD due to UL harmonics and intermodulation interference | Apple Inc., Anritsu | agreed | R4-2011760 | - |
| R4-2011939 | CR for TR38.886: Correction on TR38.886 for V2X UE Tx and Rx requirements | LG Electronics France | agreed | R4-2010139 | - |
| R4-2011940 | Email discussion summary for [96e][105] LTE\_Maintenance | Moderator ( Skyworks) | noted | R4-2011845 | - |
| R4-2011941 | CR to TS 38.101-3: PC2 band 3+band n78 ENDC | China Unicom | agreed | R4-2011923 | - |
| R4-2011942 | CR to add PC3 Pi/2 BPSK DMRS for IE powerBoostPi2BPSK = 0 | Qualcomm, T-Mobile, AT&T, Verizon, KDDI, Nokia | agreed | R4-2011919 | - |
| R4-2011943 | Introduction of NR-based access to unlicensed spectrum | Qualcomm Incorporated, Nokia | not concluded | R4-2011701 | - |
| R4-2011944 | CR to TS38.307 : LTE/NR spectrum sharing band 38 / n38 | VODAFONE Group Plc | not concluded | - | - |
| R4-2012032 | Email discussion summary for [95e][201] NR\_NewRAT\_RRM\_Core | Moderator (Huawei) | revised | - | R4-2012202 |
| R4-2012033 | Email discussion summary for [96e][202] NR\_NewRAT\_RRM\_Perf | Moderator (Ericsson) | revised | - | R4-2012203 |
| R4-2012034 | Email discussion summary for [96e][203] LTE\_RRM\_maintenance | Moderator (Ericsson) | revised | - | R4-2012204 |
| R4-2012035 | Email discussion summary for [96e][204] R16\_NR\_RRM\_maintenance | Moderator (Apple) | revised | - | R4-2012205 |
| R4-2012036 | Email discussion summary for [96e][205] NR\_NewRAT\_Positioning | Moderator (Spirent) | noted | - | - |
| R4-2012037 | Email discussion summary for [96e][206] NR\_unlic\_RRM\_1 | Moderator (Ericsson) | revised | - | R4-2012206 |
| R4-2012038 | Email discussion summary for [96e][207] NR\_unlic\_RRM\_2 | Moderator (MediaTek) | revised | - | R4-2012207 |
| R4-2012039 | Email discussion summary for [96e][208] NR\_unlic\_RRM\_3 | Moderator (Nokia) | revised | - | R4-2012208 |
| R4-2012040 | Email discussion summary for [96e][209] NR\_Mob\_enh\_RRM | Moderator (Intel Corporation) | revised | - | R4-2012209 |
| R4-2012041 | Email discussion summary for [96e][210] 5G\_V2X\_NRSL\_RRM | Moderator (LGE) | revised | - | R4-2012210 |
| R4-2012042 | Email discussion summary for [96e][211] NR\_IAB\_RRM | Moderator (ZTE) | revised | - | R4-2012211 |
| R4-2012043 | Email discussion summary for [96e][212] LTE\_NR\_DC\_CA\_RRM\_1 | Moderator (Nokia) | revised | - | R4-2012212 |
| R4-2012044 | Email discussion summary for [96e][213] LTE\_NR\_DC\_CA\_RRM\_2 | Moderator (Ericsson) | revised | - | R4-2012213 |
| R4-2012045 | Email discussion summary for [96e][214] NR\_UE\_pow\_sav\_RRM | Moderator (CATT) | revised | - | R4-2012214 |
| R4-2012046 | Email discussion summary for [96e][215] NR\_pos\_RRM\_1 | Moderator (Huawei) | revised | - | R4-2012215 |
| R4-2012047 | Email discussion summary for [96e][216] NR\_pos\_RRM\_2 | Moderator (Intel Corporation) | revised | - | R4-2012216 |
| R4-2012048 | Email discussion summary for [96e][217] NR\_pos\_RRM\_3 | Moderator (Ericsson) | revised | - | R4-2012217 |
| R4-2012049 | Email discussion summary for [96e][218] NR\_eMIMO\_RRM | Moderator (Samsung) | revised | - | R4-2012218 |
| R4-2012050 | Email discussion summary for [96e][219] NR\_RF\_FR1\_RRM | Moderator (Huawei) | revised | - | R4-2012219 |
| R4-2012051 | Email discussion summary for [96e][220] NR\_RF\_FR2\_req\_enh\_RRM | Moderator (Apple) | revised | - | R4-2012220 |
| R4-2012052 | Email discussion summary for [96e][221] NR\_RRM\_Enh\_RRM\_1 | Moderator (Intel) | revised | - | R4-2012063 |
| R4-2012053 | Email discussion summary for [96e][222] NR\_RRM\_Enh\_RRM\_2 | Moderator (ZTE) | revised | - | R4-2012222 |
| R4-2012054 | Email discussion summary for [96e][223] NR\_RRM\_Enh\_RRM\_3 | Moderator (Apple) | revised | - | R4-2012160 |
| R4-2012055 | Email discussion summary for [96e][224] NR\_CSIRS\_L3meas\_RRM\_1 | Moderator (CATT) | revised | - | R4-2012081 |
| R4-2012056 | Email discussion summary for [96e][225] NR\_CSIRS\_L3meas\_RRM\_2 | Moderator (OPPO) | revised | - | R4-2012225 |
| R4-2012057 | Email discussion summary for [96e][226] NR\_HST\_RRM | Moderator (CMCC) | revised | - | R4-2012226 |
| R4-2012058 | Email discussion summary for [96e][227] NR\_2step\_RACH\_RRM | Moderator (ZTE) | revised | - | R4-2012227 |
| R4-2012059 | Email discussion summary for [96e][228] LTE\_eMTC5\_RRM | Moderator (Ericsson ) | revised | - | R4-2012228 |
| R4-2012060 | Email discussion summary for [96e][229] NB\_IOTenh3\_RRM | Moderator (Huawei) | revised | - | R4-2012229 |
| R4-2012061 | Email discussion summary for [96e][230] LTE\_feMob\_RRM | Moderator (Nokia) | revised | - | R4-2012230 |
| R4-2012062 | Email discussion summary for [96e][231] NR\_FR2\_FWA\_Bn257\_Bn258\_RRM | Moderator (Huawei) | revised | - | R4-2012231 |
| R4-2012063 | Email discussion summary for [96e][221] NR\_RRM\_Enh\_RRM\_1 | Moderator (Intel) | revised | R4-2012052 | R4-2012221 |
| R4-2012064 | CR to T parameters in 8.3.2 of 38.133 | Qualcomm Incorporated | withdrawn | - | - |
| R4-2012065 | CR to 38.133: Correction to interruption requirements for per-FR gap in FR2 | ZTE | agreed | R4-2011308 | - |
| R4-2012066 | CR on FR2 measurement capability for R15 | Apple | agreed | R4-2009904 | - |
| R4-2012067 | Addition of new default configurations for RMC scheduling | Huawei, Hisilicon | agreed | R4-2011099 | - |
| R4-2012068 | CR on UL BWP configuration for RRM test cases R15 | Huawei, Hisilicon | agreed | R4-2011140 | - |
| R4-2012069 | CR to SA event triggered reporting tests with per-UE gaps | ANRITSU LTD | withdrawn | - | - |
| R4-2012070 | Update of RRC-based Active BWP Switch test cases | ANRITSU LTD | agreed | R4-2009571 | - |
| R4-2012071 | CR for TS38.133 Rel-15, Correction for test cases of BWP switching | CATT | agreed | R4-2009806 | - |
| R4-2012072 | CR on TS38.133 for handover test cases | MediaTek inc., Intel | agreed | R4-2009887 | - |
| R4-2012073 | Fine/rough beam assumption for idle mode and measurement procedure test case | Ericsson | agreed | R4-2010382 | - |
| R4-2012074 | Fine/rough beam assumption for idle mode and measurement procedure test case | Ericsson | agreed | - | - |
| R4-2012075 | CR on maintaining handover tests in Rel-15 | Huawei, HiSilicon | agreed | R4-2011047 | - |
| R4-2012076 | CR on test cases for Active TCI state switch delay R15 | Huawei, Hisilicon | agreed | R4-2011095 | - |
| R4-2012077 | Correction to beam failure detection and link recovery test cases | Huawei, Hisilicon | agreed | R4-2011101 | - |
| R4-2012078 | Correction to BWP switching delay test cases | Huawei, Hisilicon | agreed | R4-2011103 | - |
| R4-2012079 | Correction to FR1 intra-frequency measurement with gap test cases | Huawei, Hisilicon | withdrawn | - | - |
| R4-2012080 | Correction to inter-RAT HO test cases | Huawei, Hisilicon | agreed | R4-2011107 | - |
| R4-2012081 | Email discussion summary for [96e][224] NR\_CSIRS\_L3meas\_RRM\_1 | Moderator (CATT) | revised | R4-2012055 | R4-2012224 |
| R4-2012082 | CR on TS36.133 for measurement capability of IDLE mode CA measurement | MediaTek inc. | withdrawn | - | - |
| R4-2012083 | CR clarifying S-measure thresholds for EMR carriers | Nokia, Nokia Shanghai Bell | withdrawn | - | - |
| R4-2012084 | CR on performance requirements tests for euCA | Nokia, Nokia Shanghai Bell | withdrawn | - | - |
| R4-2012085 | CR on NB-IoT Intra frequency with serving cell measurement relaxation test case 4.2.38 R15 | Huawei, Hisilicon | agreed | R4-2011097 | - |
| R4-2012086 | CR to TS 38.133 - Handover requirements in NR-U | Nokia, Nokia Shanghai Bell | agreed | R4-2010593 | - |
| R4-2012087 | Discussion on RRC re-establishment for NR-U | Huawei, Hisilicon | agreed | R4-2011077 | - |
| R4-2012088 | Introduction of SCell activation/deactivation delay requirements for SCells operating with CCA | Qualcomm Incorporated | agreed | R4-2009880 | - |
| R4-2012089 | CR on active TCI state switching for NR-U | Huawei, Hisilicon | revised | R4-2011073 | R4-2012253 |
| R4-2012090 | WF on NR-U RRM requirements | Ericsson | revised | - | R4-2012249 |
| R4-2012091 | WF on NR-U RRM requirements | MediaTek | revised | - | R4-2012274 |
| R4-2012092 | WF on NR-U RRM requirements | Nokia | revised | - | R4-2012293 |
| R4-2012093 | CR on introduction of RRC\_IDLE state moblity requirements for NR-U | Huawei, Hisilicon | agreed | R4-2011076 | - |
| R4-2012094 | RRC\_IDLE state inter-RAT moblity requirements for NR-U | Ericsson | agreed | R4-2011213 | - |
| R4-2012095 | Introduction of RLM requirements for NR-U | Ericsson | revised | R4-2011352 | R4-2012254 |
| R4-2012096 | CR: Beam management requirements with CCA | Ericsson | revised | R4-2010470 | R4-2012256 |
| R4-2012097 | CR for timing requirement for NR-U | MediaTek inc. | agreed | R4-2010216 | - |
| R4-2012098 | CR on serving cell evaluation in RRC connected mode for NR-U | Apple | withdrawn | - | - |
| R4-2012099 | CR to TS 38.133 to address NR-U inter-frequency measurements | Nokia, Nokia Shanghai Bell | revised | R4-2010594 | R4-2012252 |
| R4-2012100 | CR to TS 36.133 to address NR-U inter-RAT measurements | Nokia, Nokia Shanghai Bell | agreed | R4-2010595 | - |
| R4-2012101 | CR on introduction of intra-frequency measurements requirements for NR-U | Huawei, Hisilicon | revised | R4-2011074 | R4-2012257 |
| R4-2012102 | CR 36.133 (8.17.2.2.a) Clarification of UE behaviour | Ericsson | withdrawn | - | - |
| R4-2012103 | WF on NR Mobility Enhancement RRM | Intel Corporation | revised | - | R4-2012270 |
| R4-2012104 | WF on NR V2X RRM requirements | LG Electronics | approved | - | - |
| R4-2012105 | CR of missed requirements based on the agreed CRs in RAN4#95-e | LG Electronics Inc. | agreed | R4-2010084 | - |
| R4-2012106 | CR of interruption requirements | LG Electronics Inc. | agreed | R4-2010085 | - |
| R4-2012107 | WF on transmit timing requirements for wide area IAB-MTs in CA scenarios | ZTE | withdrawn | - | - |
| R4-2012108 | TP for remaining items of RRM requirements for IAB-MTs | Qualcomm | approved | R4-2009991 | - |
| R4-2012109 | TP on CA scenarios in Transmit Timing requirement for IAB-MT | Nokia, Nokia Shanghai Bell | not pursued | - | - |
| R4-2012110 | TP for TR38.809: IAB-MT RRM general | Samsung | postponed | R4-2010150 | - |
| R4-2012111 | WF on MR-DC EMR RRM requirements | Nokia, Nokia Shanghai Bell | revised | - | R4-2012246 |
| R4-2012112 | LS response on measurement capability for EMR | RAN4 | approved | R4-2011348 | - |
| R4-2012113 | CR on UE requirement for MR-DC early measurement reporting in 38.133 | Nokia, Nokia Shanghai Bell | revised | R4-2010568 | R4-2012247 |
| R4-2012114 | CR to introduce EMR in 36.133 | Huawei, Hisilicon | revised | R4-2011148 | R4-2012248 |
| R4-2012115 | CR 38.133 (8.3.9-8.3.11) Direct SCell activation delay for multiple downlink SCells | Ericsson | agreed | R4-2010665 | - |
| R4-2012116 | CR on direct SCell activation | Huawei, Hisilicon | agreed | R4-2011150 | - |
| R4-2012117 | WF on MR-DC Direct SCell activation and SCell dormancy RRM requirements | Ericcson | revised | - | R4-2012278 |
| R4-2012118 | Reply LS on SCell Dormancy | Huawei | revised | - | R4-2012281 |
| R4-2012119 | CR 38.133 SCell dormancy switching of multiple SCells | Ericsson | revised | R4-2010670 | R4-2012275 |
| R4-2012120 | CR on requirements for SCell dormancy | Huawei, Hisilicon | revised | R4-2011153 | R4-2012276 |
| R4-2012121 | CR on interruption requirements for SCell dormancy 36133 | Huawei, Hisilicon | revised | R4-2011154 | R4-2012277 |
| R4-2012122 | Reply LS on RRM relaxation in power saving | RAN4 | approved | - | - |
| R4-2012123 | Correction CR to Rel-16 UE power saving requirements | Ericsson | revised | R4-2011211 | R4-2012268 |
| R4-2012124 | WF on RRM test cases for NR Power Saving | CATT | approved | - | - |
| R4-2012125 | CR for general applicability of PRS measurement requirements | Huawei, Hisilicon | agreed | R4-2011155 | - |
| R4-2012126 | Reply LS on the UE DL PRS processing | Huawei, HiSilicon | noted | - | - |
| R4-2012127 | WF on requirements for RSTD and UE Rx-Tx time difference measurement | Huawei, HiSilicon | revised | - | R4-2012251 |
| R4-2012128 | General introduction of NR positioning measurements | Ericsson | withdrawn | - | - |
| R4-2012129 | CR to TS 38.133: PRS RSTD requirements | Intel Corporation | revised | R4-2009744 | R4-2012264 |
| R4-2012130 | Introduction of UE Rx-Tx time difference measurement requirements for NR positioning | Qualcomm Incorporated | revised | R4-2009883 | R4-2012284 |
| R4-2012131 | Measurement report mapping and additional path reporting for UE Rx-Tx | Ericsson | revised | R4-2011356 | R4-2012259 |
| R4-2012132 | Measurement report mapping and additional path reporting for RSTD | Ericsson | revised | R4-2011358 | R4-2012260 |
| R4-2012133 | WF on requirements for PRS-RSRP measurements | Intel Corporation | revised | - | R4-2012263 |
| R4-2012134 | CR for measurement requirements for PRS-RSRP | Huawei, Hisilicon | revised | R4-2011158 | R4-2012282 |
| R4-2012135 | WF on impact of NR positioning measurements on RRM | Ericsson | revised | - | R4-2012298 |
| R4-2012136 | LS on new measurement gap patterns for NR positioning | Ericsson | revised | - | R4-2012285 |
| R4-2012137 | Revision of CSSF within gap to include NR positioning measurements with gap sharing | Qualcomm Incorporated | revised | R4-2009881 | R4-2012286 |
| R4-2012138 | Introduction of new MG patterns for NR positioning | Qualcomm Incorporated | revised | R4-2009882 | R4-2012287 |
| R4-2012139 | CR on measurement gap related requirements for positioning 36.133 | Huawei, Hisilicon | postponed | R4-2011164 | - |
| R4-2012140 | WF on gNB requirements for NR positioning | Ericsson | revised | - | R4-2012302 |
| R4-2012141 | System simulation assumptions for deriving side conditions | Ericsson | revised | - | R4-2012289 |
| R4-2012142 | Link simulation assumptions for deriving positioning SRS configurations | Nokia | approved | - | - |
| R4-2012143 | Reply LS on positioning SRS during DRX inactive time | RAN4 | approved | - | - |
| R4-2012144 | CR to add CSI-RS related reporting criteria for ECID | Huawei, Hisilicon | revised | R4-2011168 | R4-2012299 |
| R4-2012145 | Reporting criteria for NR positioning measurements | Ericsson | agreed | R4-2011363 | - |
| R4-2012146 | WF on Completing Rel-16 eMIMO RRM Core Requirement | Samsung | approved | - | - |
| R4-2012147 | CR for L1-SINR requirement | MediaTek inc. | agreed | R4-2010220 | - |
| R4-2012148 | CR for introduction of pathloss reference signal switching delay | MediaTek inc. | agreed | R4-2010218 | - |
| R4-2012149 | CR to TS38.133 on introduction of multi-TRP transmission (Section 7.5 and 7.6) | Samsung | withdrawn | R4-2010099 | - |
| R4-2012150 | WF on test case for DL interruption due to Tx switching between two uplink carriers | Huawei, HiSilicon | approved | - | - |
| R4-2012151 | CR on MRTD and MTTD for FR2 inter-band CA | Apple | agreed | R4-2010056 | - |
| R4-2012152 | WF on NR RRM requirements enhancements - BWP switching on multiple CCs | Intel Corporation | revised | - | R4-2012271 |
| R4-2012153 | CR on BWP switching delay on mulitple CCs | Huawei, Hisilicon | revised | R4-2011069 | R4-2012266 |
| R4-2012154 | WF on NR RRM requirements enhancements - UL spatial relation info switch | MediaTek | revised | - | R4-2012258 |
| R4-2012155 | WF on NR RRM requirements enhancements - SRS carrier based switching | ZTE | approved | - | - |
| R4-2012156 | Reply LS on CGI reading with autonomous gaps | RAN4 | approved | - | - |
| R4-2012157 | NR CGI measurements with autonomous gaps for 36.133 | Ericsson Limited, Nokia, Nokia Shanghai Bell | agreed | R4-2009596 | - |
| R4-2012158 | Impact of CGI reading on L1 and L3 measurement | ZTE | agreed | R4-2010378 | - |
| R4-2012159 | CR to 36.133 for CGI reading | Huawei, Hisilicon | agreed | R4-2011170 | - |
| R4-2012160 | Email discussion summary for [96e][223] NR\_RRM\_Enh\_RRM\_3 | Moderator (Apple) | revised | R4-2012054 | R4-2012223 |
| R4-2012161 | WF on NR RRM requirements enhancements - inter-band FR2 CA RRM | Huawei | approved | - | - |
| R4-2012162 | CR for FR2 inter-band CA requirements | Nokia, Nokia Shanghai Bell | revised | R4-2010572 | R4-2012273 |
| R4-2012163 | CR on maintaining measurement restriction requirements for NR CA | Huawei, HiSilicon | agreed | R4-2011064 | - |
| R4-2012164 | WF on NR RRM requirements enhancements | Apple | approved | - | - |
| R4-2012165 | CR on multiple SCells activation (section 8.3.7) | MediaTek inc. | agreed | R4-2010044 | - |
| R4-2012166 | CR on definition of inter-frequency measurements without measurement gap (9.3.1) | CMCC | agreed | R4-2010107 | - |
| R4-2012167 | CSSF for inter-frequency measurement without gap in FR2 inter-band CA sceneario | Huawei, Hisilicon | agreed | R4-2011124 | - |
| R4-2012168 | WF on CSI-RS configuration and synchronization assumption for CSI-RS based L3 measurement | CATT | approved | - | - |
| R4-2012169 | 38.133 CR on UE measurement capability on the number of frequency layers to be monitored for CSI-RS measurement | CMCC | agreed | R4-2010073 | - |
| R4-2012170 | CR on CSI-RS based intra-frequency measurement requirement (Introduction, requirement applicability and number of cell and beams) | CATT | agreed | R4-2009844 | - |
| R4-2012171 | CR on introduction, applicability and capability for CSI-RS inter-frequency measurement requirements | vivo | revised | R4-2010335 | R4-2012250 |
| R4-2012172 | CR on CSI-RS based intra-frequency measurement requirements | Huawei, Hisilicon | revised | R4-2011116 | R4-2012261 |
| R4-2012173 | CR on inter-frequency CSI-RS L3 measurement requirements | OPPO | agreed | R4-2010715 | - |
| R4-2012174 | CR on scheduling restriction for CSI-RS based intra-frequency measurement | Qualcomm CDMA Technologies | agreed | R4-2011416 | - |
| R4-2012175 | CR on capabilities for support of event triggering and reporting criteria | Xiaomi | agreed | R4-2009763 | - |
| R4-2012176 | 38.133 CR on introduction of CSI-RS based measurement | Nokia, Nokia Shanghai Bell | agreed | R4-2010390 | - |
| R4-2012177 | WF on CSI-RS L3 measurement capability | Apple | revised | - | R4-2012290 |
| R4-2012178 | WF on CSI-RS L3 measurement requirements | OPPO | approved | - | - |
| R4-2012179 | LS on number of configurable CSI-RS resources per MO | Huawei | revised | - | R4-2012291 |
| R4-2012180 | Introduction of CSSF requirement for CSI-RS based L3 measurement | MediaTek inc. | withdrawn | - | - |
| R4-2012181 | CR on MRTD for FR2 inter-band CA | Apple | agreed | R4-2010057 | - |
| R4-2012182 | WF on RRM requirements for NR HST | CMCC | approved | - | - |
| R4-2012183 | WF on test cases for 2-step RACH RRM | ZTE | approved | - | - |
| R4-2012184 | Maintenance CR for 2-step RA | ZTE Corporation | agreed | R4-2009686 | - |
| R4-2012185 | [draftCR] Test cases for 2-step RACH (Random access) | ZTE Corporation | withdrawn | R4-2009684 | - |
| R4-2012186 | Draft CR on 2-step RA type Contention based random access test in FR1 for NR standalone | Nokia, Nokia Shanghai Bell | endorsed | R4-2010909 | - |
| R4-2012187 | CR on RSS based measurement requriements | Huawei, Hisilicon | agreed | R4-2011178 | - |
| R4-2012188 | CR on PUR related requirements | Huawei, Hisilicon | agreed | R4-2011180 | - |
| R4-2012189 | CR on RLM requriements based on enhanced MPDCCH | Huawei, Hisilicon | agreed | R4-2011179 | - |
| R4-2012190 | Correction of eMTC DL channel quality report mapping table and RSS measurement requirements | Ericsson | agreed | R4-2011208 | - |
| R4-2012191 | Introduction of measurement accuracy requirements for RSS based RSRP measurements for cat-M1/M2 | Ericsson | agreed | R4-2011207 | - |
| R4-2012192 | WF on RRM performance requirements for MTC | Ericsson | approved | - | - |
| R4-2012193 | CR on PUR requirements for NB-IoT | Huawei, Hisilicon | agreed | R4-2011089 | - |
| R4-2012194 | WF on Rel-16 NB-IoT RRM performance requirements | Huawei, HiSilicon | approved | - | - |
| R4-2012195 | Test cases list for Rel-16 NB-IoT | Huawei, Hisilicon | approved | R4-2011091 | - |
| R4-2012196 | CR\_ Introduction of intrafrequency sync and async LTE DAPS HO test cases | Qualcomm Incorporated | withdrawn | - | - |
| R4-2012197 | Test cases for inter-frequency DAPS | Huawei, Hisilicon | withdrawn | - | - |
| R4-2012198 | CR on 36133 LTE CHO TCs | Nokia, Nokia Shanghai Bell | withdrawn | - | - |
| R4-2012199 | WF on FR2 new FWA UE RRM requirements | Huawei | approved | - | - |
| R4-2012200 | CR on RRM requirements for new FR2 FWA UE | Huawei, HiSilicon | endorsed | R4-2011067 | - |
| R4-2012201 | RRM core requirements for FR2 FWA UE power class in 36.133 | Ericsson, SoftBank | endorsed | R4-2011254 | - |
| R4-2012202 | Email discussion summary for [95e][201] NR\_NewRAT\_RRM\_Core | Moderator (Huawei) | noted | R4-2012032 | - |
| R4-2012203 | Email discussion summary for [96e][202] NR\_NewRAT\_RRM\_Perf | Moderator (Ericsson) | noted | R4-2012033 | - |
| R4-2012204 | Email discussion summary for [96e][203] LTE\_RRM\_maintenance | Moderator (Ericsson) | noted | R4-2012034 | - |
| R4-2012205 | Email discussion summary for [96e][204] R16\_NR\_RRM\_maintenance | Moderator (Apple) | noted | R4-2012035 | - |
| R4-2012206 | Email discussion summary for [96e][206] NR\_unlic\_RRM\_1 | Moderator (Ericsson) | noted | R4-2012037 | - |
| R4-2012207 | Email discussion summary for [96e][207] NR\_unlic\_RRM\_2 | Moderator (MediaTek) | noted | R4-2012038 | - |
| R4-2012208 | Email discussion summary for [96e][208] NR\_unlic\_RRM\_3 | Moderator (Nokia) | noted | R4-2012039 | - |
| R4-2012209 | Email discussion summary for [96e][209] NR\_Mob\_enh\_RRM | Moderator (Intel Corporation) | noted | R4-2012040 | - |
| R4-2012210 | Email discussion summary for [96e][210] 5G\_V2X\_NRSL\_RRM | Moderator (LGE) | noted | R4-2012041 | - |
| R4-2012211 | Email discussion summary for [96e][211] NR\_IAB\_RRM | Moderator (ZTE) | noted | R4-2012042 | - |
| R4-2012212 | Email discussion summary for [96e][212] LTE\_NR\_DC\_CA\_RRM\_1 | Moderator (Nokia) | noted | R4-2012043 | - |
| R4-2012213 | Email discussion summary for [96e][213] LTE\_NR\_DC\_CA\_RRM\_2 | Moderator (Ericsson) | noted | R4-2012044 | - |
| R4-2012214 | Email discussion summary for [96e][214] NR\_UE\_pow\_sav\_RRM | Moderator (CATT) | noted | R4-2012045 | - |
| R4-2012215 | Email discussion summary for [96e][215] NR\_pos\_RRM\_1 | Moderator (Huawei) | noted | R4-2012046 | - |
| R4-2012216 | Email discussion summary for [96e][216] NR\_pos\_RRM\_2 | Moderator (Intel Corporation) | noted | R4-2012047 | - |
| R4-2012217 | Email discussion summary for [96e][217] NR\_pos\_RRM\_3 | Moderator (Ericsson) | noted | R4-2012048 | - |
| R4-2012218 | Email discussion summary for [96e][218] NR\_eMIMO\_RRM | Moderator (Samsung) | noted | R4-2012049 | - |
| R4-2012219 | Email discussion summary for [96e][219] NR\_RF\_FR1\_RRM | Moderator (Huawei) | noted | R4-2012050 | - |
| R4-2012220 | Email discussion summary for [96e][220] NR\_RF\_FR2\_req\_enh\_RRM | Moderator (Apple) | noted | R4-2012051 | - |
| R4-2012221 | Email discussion summary for [96e][221] NR\_RRM\_Enh\_RRM\_1 | Moderator (Intel) | noted | R4-2012063 | - |
| R4-2012222 | Email discussion summary for [96e][222] NR\_RRM\_Enh\_RRM\_2 | Moderator (ZTE) | noted | R4-2012053 | - |
| R4-2012223 | Email discussion summary for [96e][223] NR\_RRM\_Enh\_RRM\_3 | Moderator (Apple) | noted | R4-2012160 | - |
| R4-2012224 | Email discussion summary for [96e][224] NR\_CSIRS\_L3meas\_RRM\_1 | Moderator (CATT) | noted | R4-2012081 | - |
| R4-2012225 | Email discussion summary for [96e][225] NR\_CSIRS\_L3meas\_RRM\_2 | Moderator (OPPO) | noted | R4-2012056 | - |
| R4-2012226 | Email discussion summary for [96e][226] NR\_HST\_RRM | Moderator (CMCC) | noted | R4-2012057 | - |
| R4-2012227 | Email discussion summary for [96e][227] NR\_2step\_RACH\_RRM | Moderator (ZTE) | noted | R4-2012058 | - |
| R4-2012228 | Email discussion summary for [96e][228] LTE\_eMTC5\_RRM | Moderator (Ericsson ) | noted | R4-2012059 | - |
| R4-2012229 | Email discussion summary for [96e][229] NB\_IOTenh3\_RRM | Moderator (Huawei) | noted | R4-2012060 | - |
| R4-2012230 | Email discussion summary for [96e][230] LTE\_feMob\_RRM | Moderator (Nokia) | noted | R4-2012061 | - |
| R4-2012231 | Email discussion summary for [96e][231] NR\_FR2\_FWA\_Bn257\_Bn258\_RRM | Moderator (Huawei) | noted | R4-2012062 | - |
| R4-2012232 | CR on BWP switching delay requirements R16 | ZTE | agreed | - | - |
| R4-2012233 | LS on multiple BWP switch impact on HARQ design in dormancy SCell | MediaTek | revised | - | R4-2012269 |
| R4-2012234 | on RLM requirements for IAB-MT | ZTE Corporation | approved | R4-2009679 | - |
| R4-2012235 | CR 38.133 (8.3.2-3) Corrections to SCell activation delay requirements | Ericsson, MediaTek | agreed | R4-2010663 | - |
| R4-2012236 | CR on TS38.133 for dual active protocol stack handover (Section 6.1.3) | MediaTek inc. | revised | - | R4-2012265 |
| R4-2012237 | LS on EMR measurement requirements in NR | Ericsson | revised | - | R4-2012297 |
| R4-2012238 | Correction on the interruption requirements due to SRS carrier switching | Huawei, Hisilicon | agreed | R4-2011122 | - |
| R4-2012239 | CR on TCI state switch delay in R15 | MediaTek inc., ZTE | agreed | R4-2010208 | - |
| R4-2012240 | WF on Restriction of Rel-15 FR1 SCell activation delay requirement | Qualcomm Incorporated | approved | - | - |
| R4-2012241 | CR on SCell activation requirements R15 | Huawei, Hisilicon | agreed | R4-2011137 | - |
| R4-2012242 | CR on BWP switching delay requirements R15 | Huawei, Hisilicon | agreed | R4-2011139 | - |
| R4-2012243 | CR to 38.133: Correction to RRC basd BWP switch delay requirements | ZTE | agreed | R4-2011306 | - |
| R4-2012244 | CR on Active BWP switch and Active TCI State Switching requirements - Rel15 | Apple | postponed | R4-2010183 | - |
| R4-2012245 | CR on reporting criteria for EN-DC in 38.133 R15 | Huawei, Hisilicon | agreed | R4-2011093 | - |
| R4-2012246 | WF on MR-DC EMR RRM requirements | Nokia, Nokia Shanghai Bell | revised | R4-2012111 | R4-2012301 |
| R4-2012247 | CR on UE requirement for MR-DC early measurement reporting in 38.133 | Nokia, Nokia Shanghai Bell | postponed | R4-2012113 | - |
| R4-2012248 | CR to introduce EMR in 36.133 | Huawei, Hisilicon | agreed | R4-2012114 | - |
| R4-2012249 | WF on NR-U RRM requirements | Ericsson | approved | R4-2012090 | - |
| R4-2012250 | CR on introduction, applicability and capability for CSI-RS inter-frequency measurement requirements | vivo | agreed | R4-2012171 | - |
| R4-2012251 | WF on requirements for RSTD and UE Rx-Tx time difference measurement | Huawei, HiSilicon | revised | R4-2012127 | R4-2012283 |
| R4-2012252 | CR to TS 38.133 to address NR-U inter-frequency measurements | Nokia, Nokia Shanghai Bell | agreed | R4-2012099 | - |
| R4-2012253 | CR on active TCI state switching for NR-U | Huawei, Hisilicon | agreed | R4-2012089 | - |
| R4-2012254 | Introduction of RLM requirements for NR-U | Ericsson | agreed | R4-2012095 | - |
| R4-2012255 | CR on introduction of Active BWP switching delay requirements for NR-U | Huawei, Hisilicon | agreed | R4-2011075 | - |
| R4-2012256 | CR: Beam management requirements with CCA | Ericsson | agreed | R4-2012096 | - |
| R4-2012257 | CR on introduction of intra-frequency measurements requirements for NR-U | Huawei, Hisilicon | agreed | R4-2012101 | - |
| R4-2012258 | WF on NR RRM requirements enhancements - UL spatial relation info switch | MediaTek | approved | R4-2012154 | - |
| R4-2012259 | Measurement report mapping and additional path reporting for UE Rx-Tx | Ericsson | agreed | R4-2012131 | - |
| R4-2012260 | Measurement report mapping and additional path reporting for RSTD | Ericsson | agreed | R4-2012132 | - |
| R4-2012261 | CR on CSI-RS based intra-frequency measurement requirements | Huawei, Hisilicon | agreed | R4-2012172 | - |
| R4-2012262 | CR to add UE beam assumption for TC in A.5.6 R15 | Huawei, Hisilicon | agreed | R4-2011142 | - |
| R4-2012263 | WF on requirements for PRS-RSRP measurements | Intel Corporation | approved | R4-2012133 | - |
| R4-2012264 | CR to TS 38.133: PRS RSTD requirements | Intel Corporation | agreed | R4-2012129 | - |
| R4-2012265 | CR on TS38.133 for dual active protocol stack handover (Section 6.1.3) | MediaTek inc. | agreed | R4-2012236 | - |
| R4-2012266 | CR on BWP switching delay on mulitple CCs | Huawei, Hisilicon | revised | R4-2012153 | R4-2012300 |
| R4-2012267 | CR on RRM requirement based on dual DRX for FR1+FR2 CA | Apple | agreed | R4-2009917 | - |
| R4-2012268 | Correction CR to Rel-16 UE power saving requirements | Ericsson | agreed | R4-2012123 | - |
| R4-2012269 | LS on multiple BWP switch impact on HARQ design in dormancy SCell | RAN4 | approved | R4-2012233 | - |
| R4-2012270 | WF on NR Mobility Enhancement RRM | Intel Corporation | approved | R4-2012103 | - |
| R4-2012271 | WF on NR RRM requirements enhancements - BWP switching on multiple CCs | Intel Corporation | approved | R4-2012152 | - |
| R4-2012272 | CR on uplink spatial relation switch delay (section 8.12) | Intel Corporation | agreed | R4-2009865 | - |
| R4-2012273 | CR for FR2 inter-band CA requirements | Nokia, Nokia Shanghai Bell | agreed | R4-2012162 | - |
| R4-2012274 | WF on NR-U RRM requirements | MediaTek | approved | R4-2012091 | - |
| R4-2012275 | CR 38.133 SCell dormancy switching of multiple SCells | Ericsson | agreed | R4-2012119 | - |
| R4-2012276 | CR on requirements for SCell dormancy | Huawei, Hisilicon | agreed | R4-2012120 | - |
| R4-2012277 | CR on interruption requirements for SCell dormancy 36133 | Huawei, Hisilicon | agreed | R4-2012121 | - |
| R4-2012278 | WF on MR-DC Direct SCell activation and SCell dormancy RRM requirements | Ericcson | approved | R4-2012117 | - |
| R4-2012279 | CR on reporting criteria for EN-DC in 38.133 R15 | Huawei, Hisilicon | withdrawn | - | - |
| R4-2012280 | CR on active BWP switch in R15 | MediaTek inc. | agreed | R4-2010032 | - |
| R4-2012281 | Reply LS on SCell Dormancy | RAN4 | approved | R4-2012118 | - |
| R4-2012282 | CR for measurement requirements for PRS-RSRP | Huawei, Hisilicon | agreed | R4-2012134 | - |
| R4-2012283 | WF on requirements for RSTD and UE Rx-Tx time difference measurement | Huawei, HiSilicon | approved | R4-2012251 | - |
| R4-2012284 | Introduction of UE Rx-Tx time difference measurement requirements for NR positioning | Qualcomm Incorporated | agreed | R4-2012130 | - |
| R4-2012285 | LS on new measurement gap patterns for NR positioning | RAN4 | approved | R4-2012136 | - |
| R4-2012286 | Revision of CSSF within gap to include NR positioning measurements with gap sharing | Qualcomm Incorporated | agreed | R4-2012137 | - |
| R4-2012287 | Introduction of new MG patterns for NR positioning | Qualcomm Incorporated | revised | R4-2012138 | R4-2012304 |
| R4-2012288 | CR on measurement gap related requirements for positioning 36133 | Huawei, Hisilicon | withdrawn | - | - |
| R4-2012289 | System simulation assumptions for deriving side conditions | Ericsson | approved | R4-2012141 | - |
| R4-2012290 | WF on CSI-RS L3 measurement capability | Apple | approved | R4-2012177 | - |
| R4-2012291 | LS on number of configurable CSI-RS resources per MO | Huawei | approved | R4-2012179 | - |
| R4-2012292 | Draft Big CR for NR HST RRM performance requirements | CMCC | not concluded | - | - |
| R4-2012293 | WF on NR-U RRM requirements | Nokia | approved | R4-2012092 | - |
| R4-2012294 | Draft Big CR on 2-step RACH RRM performance requirements | Nokia | not concluded | - | - |
| R4-2012295 | Draft Big CR on FR2 new FWA UE RRM requirements in 38.133 | Huawei | not concluded | - | - |
| R4-2012296 | Draft Big CR on FR2 new FWA UE RRM requirements in 36.133 | Ericsson | not concluded | - | - |
| R4-2012297 | LS on EMR measurement requirements in NR | RAN4 | approved | R4-2012237 | - |
| R4-2012298 | WF on impact of NR positioning measurements on RRM | Ericsson | approved | R4-2012135 | - |
| R4-2012299 | CR to add CSI-RS related reporting criteria for ECID | Huawei, Hisilicon | agreed | R4-2012144 | - |
| R4-2012300 | CR on BWP switching delay on mulitple CCs | Huawei, Hisilicon | agreed | R4-2012266 | - |
| R4-2012301 | WF on MR-DC EMR RRM requirements | Nokia, Nokia Shanghai Bell | approved | R4-2012246 | - |
| R4-2012302 | WF on gNB requirements for NR positioning | Ericsson | approved | R4-2012140 | - |
| R4-2012303 | CR on UE requirement for MR-DC early measurement reporting in 38.133 | Nokia, Nokia Shanghai Bell | withdrawn | - | - |
| R4-2012304 | Introduction of new MG patterns for NR positioning | Qualcomm Incorporated | agreed | R4-2012287 | - |
| R4-2012532 | Email discussion summary for [96e][304] NR\_EMC | Moderator (ZTE) | revised | - | R4-2012717 |
| R4-2012533 | Email discussion summary for [96e][302] NR\_maintenance\_RF\_BS | Moderator (Ericsson) | revised | - | R4-2012718 |
| R4-2012534 | Email discussion summary for [96e][303] NR\_NewRAT\_Conformance\_BS | Moderator (FUTUREWEI) | revised | - | R4-2012719 |
| R4-2012535 | Email discussion summary for [96e][313] Demod\_Maintenance | Moderator (Intel) | revised | - | R4-2012720 |
| R4-2012536 | Email discussion summary for [96e][301] LTE\_maintenance\_RF\_BS | Moderator (Ericsson) | revised | - | R4-2012721 |
| R4-2012537 | Email discussion summary for [96e][314] LTE\_eMTC5\_Demod | Moderator (Ericsson) | revised | - | R4-2012722 |
| R4-2012538 | Email discussion summary for [96e][315] NB\_IOTenh3\_Demod | Moderator (Huawei) | revised | - | R4-2012723 |
| R4-2012539 | Email discussion summary for [96e][316] LTE\_terr\_bcast\_Demod | Moderator (Qualcomm) | revised | - | R4-2012724 |
| R4-2012540 | Email discussion summary for [96e][312] LTE\_terr\_bcast\_Other | Moderator (ZTE) | revised | - | R4-2012725 |
| R4-2012541 | Email discussion summary for [96e][305] NR\_unlic\_RF\_BS | Moderator (Nokia) | revised | - | R4-2012726 |
| R4-2012542 | Email discussion summary for [96e][328] NR\_unlic\_Demod | Moderator (Qualcomm) | revised | - | R4-2012746 |
| R4-2012543 | Email discussion summary for [96e][326] V2X\_Demod | Moderator (LGE) | revised | - | R4-2012727 |
| R4-2012544 | Email discussion summary for [96e][306] NR\_IAB\_General | Moderator (Huawei) | revised | - | R4-2012728 |
| R4-2012545 | Email discussion summary for [96e][307] NR\_IAB\_Featurelist | Moderator (Qualcomm) | noted | - | - |
| R4-2012546 | Email discussion summary for [96e][308] NR\_IAB\_RF\_Part\_1 | Moderator (CATT) | revised | - | R4-2012729 |
| R4-2012547 | Email discussion summary for [96e][309] NR\_IAB\_RF\_Part\_2 | Moderator (Nokia) | revised | - | R4-2012730 |
| R4-2012548 | Email discussion summary for [96e][310] NR\_IAB\_RF\_Part\_3 | Moderator (Samsung) | revised | - | R4-2012731 |
| R4-2012549 | Email discussion summary for [96e][327] NR\_IAB\_Demod | Moderator (Nokia) | revised | - | R4-2012732 |
| R4-2012550 | Email discussion summary for [96e][317] NR\_UE\_pow\_sav\_Demod | Moderator (CMCC) | revised | - | R4-2012733 |
| R4-2012551 | Email discussion summary for [96e][318] NR\_L1enh\_URLLC\_Demod\_Part1 | Moderator (Ericsson) | revised | - | R4-2012734 |
| R4-2012552 | Email discussion summary for [96e][319] NR\_L1enh\_URLLC\_Demod\_Part2 | Moderator (Huawei) | revised | - | R4-2012735 |
| R4-2012553 | Email discussion summary for [96e][320] NR\_eMIMO\_Demod | Moderator (Samsung) | revised | - | R4-2012736 |
| R4-2012554 | Email discussion summary for [96e][321] NR\_DL256QAM\_FR2\_Demod | Moderator (China Telecomm) | revised | - | R4-2012737 |
| R4-2012555 | Email discussion summary for [96e][322] NR\_HST\_Demod\_UE | Moderator (CMCC) | revised | - | R4-2012738 |
| R4-2012556 | Email discussion summary for [96e][323] NR\_HST\_Demod\_BS | Moderator (Nokia) | revised | - | R4-2012739 |
| R4-2012557 | Email discussion summary for [96e][324] NR\_perf\_enh\_Demod | Moderator (China Telecomm) | revised | - | R4-2012740 |
| R4-2012558 | Email discussion summary for [96e][311] OTA\_BS\_testing | Moderator (Huawei) | revised | - | R4-2012741 |
| R4-2012559 | Email discussion summary for [96e][325] NR\_2step\_RACH\_Demod | Moderator (ZTE) | revised | - | R4-2012742 |
| R4-2012560 | Email discussion summary for [96e][329] NR\_MIMO\_OTA | Moderator (CAICT) | revised | - | R4-2012743 |
| R4-2012561 | Email discussion summary for [96e][330] FR2\_enhTestMethods | Moderator (Apple) | revised | - | R4-2012744 |
| R4-2012562 | Summary of simulation results of NR UE CSI PMI with 16, and 32Tx antennas | Ericsson | noted | - | - |
| R4-2012563 | LS to RAN2 on IAB-MT feature list | RAN4 | approved | - | - |
| R4-2012564 | Discussion on UE demodulation requirements for URLLC | Intel Corporation | noted | R4-2009725 | - |
| R4-2012565 | Views and simulation results for PMI test cases | Samsung | noted | R4-2010142 | - |
| R4-2012566 | IAB TS spec update after RAN4 96e | QUALCOMM | not concluded | - | - |
| R4-2012567 | WF on the introducing the new testing methodology on EDT testing | Nokia | approved | - | - |
| R4-2012568 | CR to 37.107 with correction of EDT level Rel-15 | Nokia, Nokia Shanghai Bell | revised | R4-2010732 | R4-2012759 |
| R4-2012569 | (reserved) | BS RF Demod session | reserved | - | - |
| R4-2012570 | CR to 36.141 with correction of EDT level Rel-13 | Nokia, Nokia Shanghai Bell | not pursued | R4-2010734 | - |
| R4-2012571 | CR to 36.104 with correction of EDT level Rel-13 | Nokia, Nokia Shanghai Bell | not pursued | R4-2010736 | - |
| R4-2012572 | (reserved) | BS RF Demod session | reserved | - | - |
| R4-2012573 | CR to TS 37.141: Clarification on manufacturer's declaration of the number of supported NB-IoT carriers | Nokia, Nokia Shanghai Bell | agreed | R4-2011191 | - |
| R4-2012574 | CR to TS 37.105: Rel-13 non-AAS CRs mirroring, Rel-13 | Huawei | agreed | R4-2011269 | - |
| R4-2012575 | WF on UE EMC requirements extensions | Xiaomi | approved | - | - |
| R4-2012576 | [UE EMC] CR to TS 38.124 combined correction R15 | Xiaomi | withdrawn | - | - |
| R4-2012577 | CR to TS 38.113: direct field strength measurements for the EMC RE, Rel-15 | Huawei | agreed | R4-2011264 | - |
| R4-2012578 | TP for TR 38.809 on IAB-MT transmission in DL | Ericsson | withdrawn | - | - |
| R4-2012579 | TP for TS 38.174 on IAB-MT transmission in DL | Ericsson | withdrawn | - | - |
| R4-2012580 | CR to TS 38.104: OTA receiver spurious requirements for EESS protection (rel-15) | NEC, Nokia, Ericsson | agreed | R4-2010762 | - |
| R4-2012581 | CR to TS 38.141-2: Additional requirements for EESS protection (rel-15) | NEC, Nokia, Ericsson | agreed | R4-2010764 | - |
| R4-2012582 | CR to TS 37.105: Introduction of requirements for NR + UTRA combinations, Rel-16 | Huawei | postponed | R4-2011261 | - |
| R4-2012583 | CR to TS 37.145-1: Introduction of new BS capability set for NR+EUTRA+UTRA, Rel-16 | Huawei | postponed | R4-2011262 | - |
| R4-2012584 | CR to TS 37.145-2: Introduction of new BS capability set for NR+EUTRA+UTRA, Rel-16 | Huawei | postponed | R4-2011263 | - |
| R4-2012585 | CR to TS 38.817-02: Clarification on calculation of step frequencies for defining the Category B radiated Tx spurious emission limits in FR2 | Nokia, Nokia Shanghai Bell | agreed | R4-2011186 | - |
| R4-2012586 | CR to 38.104: Annex B and C clarification on equlisation calculation (B.6, C.6) | Keysight Technologies UK Ltd, Rohde & Schwarz, Nokia | agreed | R4-2011285 | - |
| R4-2012587 | CR to 38.141-1: Annex H clarification on equlisation calculation (H.6) | Keysight Technologies UK Ltd, Rohde & Schwarz,Nokia | agreed | R4-2011286 | - |
| R4-2012588 | CR to 38.141-2: Annex L clarification on equlisation calculation (L.6) | Keysight Technologies UK Ltd, Rohde & Schwarz,Nokia | agreed | R4-2011287 | - |
| R4-2012589 | WF on selecting CLTA height | Huawei | approved | - | - |
| R4-2012590 | Clarification CR on NR-FR2-TM3.1 | Samsung | agreed | R4-2010284 | - |
| R4-2012591 | CR for TS 38.141-2: NR FR2 test model 2 | Huawei, HiSilicon | agreed | R4-2010492 | - |
| R4-2012592 | Increase of step size for FR2 in-band blocking conformance test | Ericsson | agreed | R4-2010846 | - |
| R4-2012593 | CR on Corrections in 38.101-4 | Qualcomm Incorporated | agreed | R4-2011401 | - |
| R4-2012594 | CR to ZP-CSI-RS configuration | ANRITSU LTD | agreed | R4-2009538 | - |
| R4-2012595 | CR on Corrections in 38.101-4 | Qualcomm Incorporated | agreed | - | - |
| R4-2012596 | Addition of applicability for MTC UE capable of 64QAM DL | Ericsson | withdrawn | - | - |
| R4-2012597 | Introduction of enhanced MPDCCH demodulation requirements | Ericsson | agreed | R4-2010473 | - |
| R4-2012598 | Introduction of CSI-RS based PMI reporting test for non-BL UEs | Ericsson | agreed | R4-2010474 | - |
| R4-2012599 | CR: Introduce NPDSCH performance requirements for multi-TB interleaved transmission. | Huawei, HiSilicon | agreed | R4-2010971 | - |
| R4-2012600 | CR: Introduce NPUSCH format 1 performance requirements for multi-TB interleaved transmission. | Huawei, HiSilicon | agreed | R4-2010972 | - |
| R4-2012601 | CR: Introduce NPUSCH format 1 test requirements for multi-TB interleaved transmission for TS 36.141 | Huawei, HiSilicon | agreed | R4-2010973 | - |
| R4-2012602 | CR addition on LTE-based 5G terrestrial broadcast | Huawei, HiSilicon | agreed | R4-2010967 | - |
| R4-2012603 | Summary of alignment and impairment results for 5G broadcast | Qualcomm | noted | - | - |
| R4-2012604 | WF on the measurement interval and observation time for frequency/time correction for 2.5kHz and 0.37kHz | ZTE | approved | - | - |
| R4-2012605 | CR to 36.104: Introduction of LTE based 5G terrestrial broadcast numerologies | ZTE Corporation | agreed | R4-2010944 | - |
| R4-2012606 | CR to 36.101: Introduction of LTE based 5G terrestrial broadcast numerologies | ZTE Corporation | agreed | R4-2010945 | - |
| R4-2012607 | WF on BS Tx and Rx remaining requirements for NR-U | ZTE | noted | - | - |
| R4-2012608 | CR to TS 38.104: Introduction of NR-U into BS core specification | Nokia, Nokia Shanghai Bell | not concluded | R4-2010738 | - |
| R4-2012609 | Work Plan for NR-U Demodulation Performance Requirements | Qualcomm | approved | - | - |
| R4-2012610 | Way Forward on NR-U UE demodulation requirements | Qualcomm | approved | - | - |
| R4-2012611 | Way Forward on NR-U BS demodulation requirements | Ericsson | approved | - | - |
| R4-2012612 | WF on work scope and general assumptions for NR V2X demodulation performance | LGE | revised | - | R4-2012758 |
| R4-2012613 | Simulation assumptions for NR V2X demodulation | MediaTek | revised | - | R4-2012757 |
| R4-2012614 | General requirements in IAB networks | Qualcomm | approved | R4-2009988 | - |
| R4-2012615 | TP to TR 38.809 -IAB-MT Class definitions | Huawei | noted | R4-2011300 | - |
| R4-2012616 | WF on IAB-MT Pcmax, power control and dynamic range | CATT | approved | - | - |
| R4-2012617 | TP for TR 38.809: IAB-MT Pcmax and power control | Nokia, Nokia Shanghai Bell | approved | - | - |
| R4-2012618 | TP for TS 38.174: IAB-MT Pcmax and power control | Nokia, Nokia Shanghai Bell | approved | - | - |
| R4-2012619 | TP to TR 38.809 Completing IAB-MT power related requirements | Nokia, Nokia Shanghai Bell | approved | R4-2010293 | - |
| R4-2012620 | TP to TS 38.174: Output power requirements | Nokia, Nokia Shanghai Bell | approved | R4-2010724 | - |
| R4-2012621 | TP to TS 38.174 -IAB TX dynamic range | Huawei | approved | R4-2011293 | - |
| R4-2012622 | TP for TS 38.174: IAB-MT Transmit signal quality | CATT | approved | R4-2009790 | - |
| R4-2012623 | TP for TR 38.809: IAB-MT Transmit signal quality | CATT | approved | R4-2009789 | - |
| R4-2012624 | TP to TS 38.174: Unwanted emissions requirements | Nokia, Nokia Shanghai Bell | approved | R4-2010725 | - |
| R4-2012625 | TP to TR 38.809 IAB-MT unwanted emission requirements | Nokia, Nokia Shanghai Bell | approved | R4-2010298 | - |
| R4-2012626 | TP to TS 38.174 on IAB TX IMD | ZTE Corporation | approved | R4-2010953 | - |
| R4-2012627 | WF on remaining issue on Reference sensitivity and FRC for IAB-MT | Huawei | approved | - | - |
| R4-2012628 | TP to TS 38.174 -IAB RX sensitivity and dynamic range | Huawei | approved | R4-2011295 | - |
| R4-2012629 | TP to TR 38.809 -IAB RX sensitivity | Huawei | approved | R4-2011296 | - |
| R4-2012630 | WF on FR1 narrowband blocking and OBB for IAB-MT | Ericsson | approved | - | - |
| R4-2012631 | TP for TS ACS, inband blocking and out of band blocking | Ericsson | approved | R4-2011035 | - |
| R4-2012632 | TP to TR 38.809: ACS and IBB | Ericsson | approved | R4-2011036 | - |
| R4-2012633 | TP to TS 38.174: IAB RX IM requirement (section 7.7 and 10.8) | ZTE Corporation | approved | R4-2010957 | - |
| R4-2012634 | TP to TR 38.809: RX spurious | Ericsson | approved | R4-2011037 | - |
| R4-2012635 | TP to TS 38.174: RX spurious | Ericsson | revised | R4-2011038 | R4-2012760 |
| R4-2012636 | TPs to TS on IAB EMC section 1 (Scope) | Ericsson | approved | R4-2011282 | - |
| R4-2012637 | TP to TR 38.809 on IAB EMC emission requirements | Ericsson | approved | R4-2011283 | - |
| R4-2012638 | TPs to TS on IAB EMC section 9 (Immunity) | Ericsson | approved | R4-2011284 | - |
| R4-2012639 | Definitions and immunity of IAB EMC | Nokia, Nokia Shanghai Bell | approved | R4-2011375 | - |
| R4-2012640 | IAB EMC specification: Exclusion bands (4.4) | Huawei | approved | R4-2011267 | - |
| R4-2012641 | IAB EMC specification: Emission (7.1) | Huawei | approved | R4-2011266 | - |
| R4-2012642 | Emission for IAB EMC | ZTE Corporation | approved | R4-2010648 | - |
| R4-2012643 | References for IAB EMC | ZTE Corporation | approved | R4-2010649 | - |
| R4-2012644 | WF on Rel-16 NR IAB demodulation requirements | Nokia, Nokia Shanghai Bell | approved | - | - |
| R4-2012645 | WF on power saving demodulation | CATT | approved | - | - |
| R4-2012646 | WF on ultra-low BLER requirement | Ericsson | approved | - | - |
| R4-2012647 | LS on Test Methodology for UE URLLC Ultra Low BLER Tests | Qualcomm Incorporated | revised | R4-2011435 | R4-2012769 |
| R4-2012648 | Way forward on NR URLLC UE performance requirements | Intel | approved | - | - |
| R4-2012649 | Way forward on NR URLLC BS performance requirements | Huawei | approved | - | - |
| R4-2012650 | CR to TS 38.101-4: Performance requirements for URLLC PDSCH repetitions over multiple slots | Huawei, HiSilicon | endorsed | R4-2010987 | - |
| R4-2012651 | CR to TS 38.101-4: Applicability rules for URLLC UE demodulation requirements | Huawei, HiSilicon | not pursued | R4-2010986 | - |
| R4-2012652 | Draft CR on FR1 PDSCH Mapping Type B and Processing Capability 2 Requirements | Qualcomm Incorporated | endorsed | R4-2011403 | - |
| R4-2012653 | CR to TS 38.101-4: Applicability rules for URLLC CSI requirements | Huawei, HiSilicon | not pursued | R4-2010985 | - |
| R4-2012654 | Draft CR to 38.141-1 FRCs for URLLC | Ericsson | endorsed | R4-2010837 | - |
| R4-2012655 | CR to TS 38.104: Performance requirements for URLLC PUSCH repetition Type A | Huawei, HiSilicon | endorsed | R4-2010988 | - |
| R4-2012656 | CR to TS 38.141-1: Performance requirements for URLLC BS demodulation requirements with higher BLER | Huawei, HiSilicon | endorsed | R4-2010989 | - |
| R4-2012657 | CR to TS 38.141-2: FRC for URLLC BS performance requirements | Huawei, HiSilicon | endorsed | R4-2010991 | - |
| R4-2012658 | Draft CR for TS 38.141-2: Introduction of performance requirements of PUSCH repetition type A and PUSCH mapping type B for URLLC | NTT DOCOMO, INC. | not pursued | R4-2011396 | - |
| R4-2012659 | draftCR for 38.104: High reliability and low latency BS demod requirements | Nokia, Nokia Shanghai Bell | endorsed | R4-2011340 | - |
| R4-2012660 | Draft CR to 38.141-2: Introduction of URLLC 0.001% BLER requirement | Ericsson | not pursued | R4-2010836 | - |
| R4-2012661 | CR to TS 38.141-1: Applicability of URLLC BS demodulation requirements | Huawei, HiSilicon | endorsed | R4-2010990 | - |
| R4-2012662 | WF for general and PDSCH requirements with Single-DCI SDM scheme and Multi-DCI transmission schemes (eMBB) | Huawei | noted | - | - |
| R4-2012663 | WF for PDSCH requirements with Single-DCI based multi-TRP/Panel transmission schemes (URLLC) | Intel | noted | - | - |
| R4-2012664 | Simulation assumption for PDSCH requirements with Single-DCI SDM scheme and Multi-DCI transmission schemes | Ericsson | approved | - | - |
| R4-2012665 | Way forward on PMI reporting requirement for NR eMIMO | Qualcomm, Ericsson | revised | - | R4-2012761 |
| R4-2012666 | WF on UE demodulation and CSI reporting requirements for FR2 DL 256QAM | China Telecomm | approved | - | - |
| R4-2012667 | Updated work plan for FR2 DL 256QAM demodulation and CSI reporting requirements | China Telecomm | approved | - | - |
| R4-2012668 | WF on NR HST UE demodulation requirements | CMCC | approved | - | - |
| R4-2012669 | CR on HST-SFN requirements for TDD | CMCC | endorsed | R4-2010076 | - |
| R4-2012670 | CR to TS 38.101-4: HST-SFN FDD performance requirements | Intel Corporation | endorsed | R4-2010910 | - |
| R4-2012671 | CR on HST single-tap and HST multi-path fading requirements | Huawei, HiSilicon | endorsed | R4-2011001 | - |
| R4-2012672 | Addition of Rel-16 HST FRCs | Ericsson | endorsed | R4-2011369 | - |
| R4-2012673 | Draft CR on FDD HST Single-Tap and Multipath Fading Requirements | Qualcomm Incorporated | endorsed | R4-2011419 | - |
| R4-2012674 | CR to TS 38.101-4: Propagation conditions for HST scenarios | Intel Corporation | endorsed | R4-2010911 | - |
| R4-2012675 | CR on applicability rules for HST scenarios | Huawei, HiSilicon | endorsed | R4-2011006 | - |
| R4-2012676 | WF on NR HST BS demodulation requirements | Nokia | approved | - | - |
| R4-2012677 | CR for TS 38.141-1: Updates of NR PUSCH performance requirements for HST | NTT DOCOMO, INC. | agreed | R4-2009696 | - |
| R4-2012678 | CR for TS 38.141-1: Updates of NR PUSCH performance Annex including FRC and channel model for HST | NTT DOCOMO, INC. | agreed | R4-2009697 | - |
| R4-2012679 | CR for 38.104: HST PUSCH demodulation requirements | Nokia, Nokia Shanghai Bell | agreed | R4-2009852 | - |
| R4-2012680 | CR for 38.104: HST PUSCH demodulation FRC and channel model annexes | Nokia, Nokia Shanghai Bell | agreed | R4-2009853 | - |
| R4-2012681 | Additional bandwidth test cases and FRC tables for HST PUSCH | Ericsson | endorsed | R4-2010612 | - |
| R4-2012682 | CR for TS 38.141-1, Introduction of high speed support declaration for NR HST PRACH | CATT | agreed | R4-2009837 | - |
| R4-2012683 | CR for TS 38.141-2, Introduction of high speed support declaration for NR HST | CATT | agreed | R4-2009838 | - |
| R4-2012684 | CR for TS 38.141-1: Introduction of test tolerance for HST PRACH and update measurement setup of performance requirements for NR HST | Huawei, HiSilicon | agreed | R4-2011017 | - |
| R4-2012685 | CR for TS 38.141-2: Introduction of test tolerance for NR HST PRACH | Huawei, HiSilicon | agreed | R4-2011018 | - |
| R4-2012686 | CR on UL timing adjustment conducted performance requirement for TS 38.141-1 | Samsung | agreed | R4-2010281 | - |
| R4-2012687 | Way forward on release independent aspect for UE demodulation and CSI reporting requirements | Huawei | approved | - | - |
| R4-2012688 | Way forward on PDSCH CA normal demodulation requirements | Intel | approved | - | - |
| R4-2012689 | Way forward on PMI reporting requirements for Tx ports larger than 8 and up to 32 | Ericsson, Samsung | revised | - | R4-2012762 |
| R4-2012690 | Simulation assumptions for NR PMI reporting requirements for more than 8 Tx ports | Ericsson | revised | - | R4-2012765 |
| R4-2012691 | Way forward on UE power imbalance requirements for FR1 CA and EN-DC | NTT DoCoMo | approved | - | - |
| R4-2012692 | Way forward on CA CQI reporting requirements | China Telecomm | approved | - | - |
| R4-2012693 | draftCR: Introduction of NR PDSCH FR1 CA 2Rx performance requirements | CMCC | endorsed | R4-2010182 | - |
| R4-2012694 | draftCR: Introduction of performance requirements for NR FR1 PDSCH CA with 4Rx | Huawei, HiSilicon | endorsed | R4-2011011 | - |
| R4-2012695 | Draft CR on FR2 PDSCH CA Requirements | Qualcomm Incorporated | endorsed | R4-2011413 | - |
| R4-2012696 | Draft CR on FRC for Normal NR CA demodulation requirements | Intel Corporation | endorsed | R4-2009731 | - |
| R4-2012697 | draft CR: FR1 EN-DC power imbalance requirements | NTT DOCOMO, INC. | endorsed | R4-2011040 | - |
| R4-2012698 | CR to TR 37.941: editorial cleanup, Rel-15 | Huawei | agreed | R4-2011257 | - |
| R4-2012699 | CR to TR 37.941: Clause 6 Measurement Types | Ericsson | agreed | R4-2009970 | - |
| R4-2012700 | CR to TR 37.941: Completion of MU terms for PWS. | ROHDE & SCHWARZ | agreed | R4-2011215 | - |
| R4-2012701 | Mirror CR to TR 37.941: Completion of MU terms for PWS. | ROHDE & SCHWARZ | agreed | R4-2011231 | - |
| R4-2012702 | CR to TR 37.941: new Annex for Excel spreadsheets with MU derivation, Rel-15 | Huawei | revised | R4-2011259 | R4-2012763 |
| R4-2012703 | CR to TR 37.941: Clause 6.3.3 Angular alignment in TRP measurements | Ericsson | agreed | R4-2009971 | - |
| R4-2012704 | CR to TS 37.145-2: internal TR references corrections (wrt. TR 37.941 for OTA BS testing), Rel-15 | Huawei | agreed | R4-2011255 | - |
| R4-2012705 | WF on BS demodulation requirements for 2-step RACH | ZTE | approved | - | - |
| R4-2012706 | Draft CR to TS 38.104 BS demodulation requirements for 2-step RACH | ZTE Wistron Telecom AB | not pursued | R4-2010784 | - |
| R4-2012707 | WF on MIMO OTA | vivo,CAICT | approved | - | - |
| R4-2012708 | Reply LS to NGMN on 5G NR Over The Air test methodologies and performance requirements | vivo | approved | R4-2011232 | - |
| R4-2012709 | 3GPP TS 38.151 v0.0.1 skeleton | vivo, CAICT | approved | R4-2011234 | - |
| R4-2012710 | Work plan for Rel-17 NR MIMO OTA WI | CAICT,vivo,OPPO | approved | R4-2011204 | - |
| R4-2012711 | Time domain techniques for FR1 Spatial Correlation validation | Spirent Communications | noted | R4-2011202 | - |
| R4-2012712 | On FR2 NR MIMO OTA Testing Methodology | Keysight Technologies UK Ltd | withdrawn | R4-2011216 | - |
| R4-2012713 | WF on the high DL power and low UL power test cases objective | Apple | approved | - | - |
| R4-2012714 | WF on the polarization mismatch objective | Samsung | approved | - | - |
| R4-2012715 | WF on the inter-band CA within FR2 objective | Anritsu | approved | - | - |
| R4-2012716 | (reserved) | BS RF Demod session | reserved | - | - |
| R4-2012717 | Email discussion summary for [96e][304] NR\_EMC | Moderator (ZTE) | noted | R4-2012532 | - |
| R4-2012718 | Email discussion summary for [96e][302] NR\_maintenance\_RF\_BS | Moderator (Ericsson) | noted | R4-2012533 | - |
| R4-2012719 | Email discussion summary for [96e][303] NR\_NewRAT\_Conformance\_BS | Moderator (FUTUREWEI) | noted | R4-2012534 | - |
| R4-2012720 | Email discussion summary for [96e][313] Demod\_Maintenance | Moderator (Intel) | noted | R4-2012535 | - |
| R4-2012721 | Email discussion summary for [96e][301] LTE\_maintenance\_RF\_BS | Moderator (Ericsson) | noted | R4-2012536 | - |
| R4-2012722 | Email discussion summary for [96e][314] LTE\_eMTC5\_Demod | Moderator (Ericsson) | noted | R4-2012537 | - |
| R4-2012723 | Email discussion summary for [96e][315] NB\_IOTenh3\_Demod | Moderator (Huawei) | noted | R4-2012538 | - |
| R4-2012724 | Email discussion summary for [96e][316] LTE\_terr\_bcast\_Demod | Moderator (Qualcomm) | noted | R4-2012539 | - |
| R4-2012725 | Email discussion summary for [96e][312] LTE\_terr\_bcast\_Other | Moderator (ZTE) | noted | R4-2012540 | - |
| R4-2012726 | Email discussion summary for [96e][305] NR\_unlic\_RF\_BS | Moderator (Nokia) | noted | R4-2012541 | - |
| R4-2012727 | Email discussion summary for [96e][326] V2X\_Demod | Moderator (LGE) | noted | R4-2012543 | - |
| R4-2012728 | Email discussion summary for [96e][306] NR\_IAB\_General | Moderator (Huawei) | noted | R4-2012544 | - |
| R4-2012729 | Email discussion summary for [96e][308] NR\_IAB\_RF\_Part\_1 | Moderator (CATT) | noted | R4-2012546 | - |
| R4-2012730 | Email discussion summary for [96e][309] NR\_IAB\_RF\_Part\_2 | Moderator (Nokia) | noted | R4-2012547 | - |
| R4-2012731 | Email discussion summary for [96e][310] NR\_IAB\_RF\_Part\_3 | Moderator (Samsung) | noted | R4-2012548 | - |
| R4-2012732 | Email discussion summary for [96e][327] NR\_IAB\_Demod | Moderator (Nokia) | noted | R4-2012549 | - |
| R4-2012733 | Email discussion summary for [96e][317] NR\_UE\_pow\_sav\_Demod | Moderator (CMCC) | noted | R4-2012550 | - |
| R4-2012734 | Email discussion summary for [96e][318] NR\_L1enh\_URLLC\_Demod\_Part1 | Moderator (Ericsson) | noted | R4-2012551 | - |
| R4-2012735 | Email discussion summary for [96e][319] NR\_L1enh\_URLLC\_Demod\_Part2 | Moderator (Huawei) | noted | R4-2012552 | - |
| R4-2012736 | Email discussion summary for [96e][320] NR\_eMIMO\_Demod | Moderator (Samsung) | noted | R4-2012553 | - |
| R4-2012737 | Email discussion summary for [96e][321] NR\_DL256QAM\_FR2\_Demod | Moderator (China Telecomm) | noted | R4-2012554 | - |
| R4-2012738 | Email discussion summary for [96e][322] NR\_HST\_Demod\_UE | Moderator (CMCC) | noted | R4-2012555 | - |
| R4-2012739 | Email discussion summary for [96e][323] NR\_HST\_Demod\_BS | Moderator (Nokia) | noted | R4-2012556 | - |
| R4-2012740 | Email discussion summary for [96e][324] NR\_perf\_enh\_Demod | Moderator (China Telecomm) | noted | R4-2012557 | - |
| R4-2012741 | Email discussion summary for [96e][311] OTA\_BS\_testing | Moderator (Huawei) | revised | R4-2012558 | R4-2012764 |
| R4-2012742 | Email discussion summary for [96e][325] NR\_2step\_RACH\_Demod | Moderator (ZTE) | noted | R4-2012559 | - |
| R4-2012743 | Email discussion summary for [96e][329] NR\_MIMO\_OTA | Moderator (CAICT) | noted | R4-2012560 | - |
| R4-2012744 | Email discussion summary for [96e][330] FR2\_enhTestMethods | Moderator (Apple) | noted | R4-2012561 | - |
| R4-2012745 | WF on IAB-MT Tx requirements | Nokia | approved | - | - |
| R4-2012746 | Email discussion summary for [96e][328] NR\_unlic\_Demod | Moderator (Qualcomm) | noted | R4-2012542 | - |
| R4-2012747 | CR to TS 38.104: OTA receiver spurious requirements for EESS protection (rel-16) | NEC, Nokia, Ericsson | agreed | R4-2010763 | - |
| R4-2012748 | CR to TS 38.141-2: Additional requirements for EESS protection (rel-16) | NEC, Nokia, Ericsson | agreed | R4-2010765 | - |
| R4-2012749 | Summary of ideal and impairment results for NR HST demodulation requirements | CATT | noted | R4-2009782 | - |
| R4-2012750 | NPUSCH format 1 performance for Multi-TB scheduling | Nokia, Nokia Shanghai Bell | noted | R4-2011504 | - |
| R4-2012751 | Summary of simulation results for LTE NPUSCH format 1 with multi-TB interleaved transmission. | Huawei, HiSilicon | noted | R4-2010974 | - |
| R4-2012752 | CR to 38.104: Annex B and C clarification on equlisation calculation (B.6, C.6) | Keysight Technologies UK Ltd, Rohde & Schwarz,Nokia | agreed | R4-2011288 | - |
| R4-2012753 | CR to 38.141-1: Annex H clarification on equlisation calculation (H.6) | Keysight Technologies UK Ltd, Rohde & Schwarz,Nokia | agreed | R4-2011289 | - |
| R4-2012754 | CR to 38.141-2: Annex L clarification on equlisation calculation (L.6) | Keysight Technologies UK Ltd, Rohde & Schwarz,Nokia | agreed | R4-2011290 | - |
| R4-2012755 | CR to TS 37.105: Rel-14 non-AAS CRs mirroring, Rel-14 | Huawei | agreed | R4-2011273 | - |
| R4-2012756 | TP to TR 38.809 IAB-MT RX IMD | ZTE Corporation | approved | R4-2010956 | - |
| R4-2012757 | Simulation assumptions for NR V2X demodulation | MediaTek | approved | R4-2012613 | - |
| R4-2012758 | WF on work scope and general assumptions for NR V2X demodulation performance | LGE | approved | R4-2012612 | - |
| R4-2012759 | CR to 37.107 with correction of references to TS 37.213 Rel-15 | Nokia, Nokia Shanghai Bell | agreed | R4-2012568 | - |
| R4-2012760 | TP to TS 38.174: RX spurious | Ericsson | approved | R4-2012635 | - |
| R4-2012761 | Way forward on PMI reporting requirement for NR eMIMO | Qualcomm, Ericsson | approved | R4-2012665 | - |
| R4-2012762 | Way forward on PMI reporting requirements for Tx ports larger than 8 and up to 32 | Ericsson, Samsung | approved | R4-2012689 | - |
| R4-2012763 | CR to TR 37.941: new Annex for Excel spreadsheets with MU derivation, Rel-15 | Huawei | agreed | R4-2012702 | - |
| R4-2012764 | Email discussion summary for [96e][311] OTA\_BS\_testing | Moderator (Huawei) | noted | R4-2012741 | - |
| R4-2012765 | Simulation assumptions for NR PMI reporting requirements for more than 8 Tx ports | Ericsson | approved | R4-2012690 | - |
| R4-2012766 | CR to 37.104: Introduction of NR-U co-existence requirements | Nokia, Nokia Shanghai Bell | not concluded | R4-2011410 | - |
| R4-2012767 | CR to 37.105: Introduction of NR-U co-existence requirements | Nokia, Nokia Shanghai Bell | not concluded | R4-2011411 | - |
| R4-2012768 | CR to 36.104: Introduction of NR-U co-existence requirements | Nokia, Nokia Shanghai Bell | not concluded | R4-2011409 | - |
| R4-2012769 | LS on Test Methodology for UE URLLC Ultra Low BLER Tests | Qualcomm Incorporated | revised | R4-2012647 | R4-2012770 |
| R4-2012770 | LS on Test Methodology for UE URLLC Ultra Low BLER Tests | RAN4 | approved | R4-2012769 | - |
| R4-2013032 | Offline discussion for [96e][122] RAN4 UE features list for Rel-16 | Moderator (CMCC) | not treated | - | - |
| R4-2013033 | [CR] Replacing x in references with correct numbers (Core R15 Cat F) | ZTE | agreed | - | - |
| R4-2013034 | [CR] Replacing x in references with correct numbers (Core R16 Cat F) | ZTE | agreed | - | - |
| R4-2013035 | [CR] Replacing x in references with correct numbers (Perf R15 Cat F) | ZTE | agreed | - | - |
| R4-2013036 | [CR] Replacing x in references with correct numbers (Core R16 Cat A) | ZTE | agreed | - | - |
| R4-2013037 | [CR] Replacing x in references with correct numbers (Perf R16 Cat A) | ZTE | agreed | - | - |
| R4-2013038 | Reply LS on Rel-16 UE feature lists | RAN2 | noted | - | - |
| R4-2013039 | LS on UE behavior for P/SP-CSI-RS reception in NR-U | RAN1 | noted | - | - |
| R4-2013040 | Reply LS on feasibility of UL FPT modes and transparent TxD for certain UE implementations | RAN1 | noted | - | - |
| R4-2013041 | LS on UE capability | RAN2 | noted | - | - |
| R4-2013042 | LS to RAN4 on Phase noise and other RF Impairment modelling | RAN1 | noted | - | - |
| R4-2013043 | (reserved) | ETSI MCC | not treated | - | - |
| R4-2013044 | Correction of corrupted table | ETSI MCC | agreed | - | - |

Annex B: List of change requests

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Document** | **Title** | **Source** | **Spec** | **CR** | **Rev** | **Rel** | **Cat** | **WI** | **Decision** |
| R4-2011944 | CR to TS38.307 : LTE/NR spectrum sharing band 38 / n38 | VODAFONE Group Plc | - | - | - | - | - | - | not concluded |
| R4-2009546 | Correction to band 85 spurious emission limits UE co-existence | Sequans Communications | 36.101 | 5652 | - | Rel-15 | F | TEI15 | agreed |
| R4-2009547 | Correction to band 85 spurious emission limits UE co-existence | Sequans Communications | 36.101 | 5653 | - | Rel-16 | A | TEI15 | agreed |
| R4-2009938 | Coexistence cleanup for 36101 Rel16 | Apple Inc. | 36.101 | 5654 | - | Rel-16 | F | TEI16 | revised |
| R4-2011697 | Coexistence cleanup for 36101 Rel16 | Apple Inc. | 36.101 | 5654 | 1 | Rel-16 | F | TEI16 | agreed |
| R4-2010128 | Introduction of LTE-A inter-band CA for x bands (x=3,4,5) DL with 2 bands UL to TS36.101 | LG Electronics Polska | 36.101 | 5655 | - | Rel-17 | B | LTE\_CA\_R17\_xBDL\_2BUL-Core | not concluded |
| R4-2010227 | A-MPR definition for CA\_48B | Nokia | 36.101 | 5656 | - | Rel-16 | B | LTE\_CA\_R16\_intra-Core | revised |
| R4-2011699 | A-MPR definition for CA\_48B | Nokia | 36.101 | 5656 | 1 | Rel-16 | F | LTE\_CA\_R16\_intra-Core | revised |
| R4-2011921 | A-MPR definition for CA\_48B | Nokia | 36.101 | 5656 | 2 | Rel-16 | F | LTE\_CA\_R16\_intra-Core | agreed |
| R4-2010460 | Correction of OCNG configuration for LAA SDR requirements | Ericsson | 36.101 | 5657 | - | Rel-14 | F | LTE\_eLAA-Perf | agreed |
| R4-2010461 | Correction of OCNG configuration for LAA SDR requirements | Ericsson | 36.101 | 5658 | - | Rel-15 | A | LTE\_eLAA-Perf | agreed |
| R4-2010462 | Correction of OCNG configuration for LAA SDR requirements | Ericsson | 36.101 | 5659 | - | Rel-16 | A | LTE\_eLAA-Perf | agreed |
| R4-2010463 | Addition of applicability for MTC UE capable of 64QAM DL | Ericsson | 36.101 | 5660 | - | Rel-15 | F | LTE\_eMTC4-Perf | agreed |
| R4-2012596 | Addition of applicability for MTC UE capable of 64QAM DL | Ericsson | 36.101 | 5660 | 1 | Rel-15 | F | LTE\_eMTC4-Perf | withdrawn |
| R4-2010464 | Addition of applicability for MTC UE capable of 64QAM DL | Ericsson | 36.101 | 5661 | - | Rel-16 | A | LTE\_eMTC4-Perf | agreed |
| R4-2010473 | Introduction of enhanced MPDCCH demodulation requirements | Ericsson | 36.101 | 5662 | - | Rel-16 | B | LTE\_eMTC5-Perf | revised |
| R4-2012597 | Introduction of enhanced MPDCCH demodulation requirements | Ericsson | 36.101 | 5662 | 1 | Rel-16 | B | LTE\_eMTC5-Perf | agreed |
| R4-2010474 | Introduction of CSI-RS based PMI reporting test for non-BL UEs | Ericsson | 36.101 | 5663 | - | Rel-16 | B | LTE\_eMTC5-Perf | revised |
| R4-2012598 | Introduction of CSI-RS based PMI reporting test for non-BL UEs | Ericsson | 36.101 | 5663 | 1 | Rel-16 | B | LTE\_eMTC5-Perf | agreed |
| R4-2010582 | CR for TS 36.101: CR for category NB1 against FCC regulation in standalone mode | MediaTek Inc. | 36.101 | 5664 | - | Rel-14 | F | TEI14 | not pursued |
| R4-2011696 | CR for TS 36.101: CR for category NB1 against FCC regulation in standalone mode | MediaTek Inc. | 36.101 | 5664 | 1 | Rel-14 | F | TEI14 | withdrawn |
| R4-2010583 | CR for TS 36.101: CR for category NB1 against FCC regulation in standalone mode | MediaTek Inc. | 36.101 | 5665 | - | Rel-15 | A | TEI14 | withdrawn |
| R4-2010584 | CR for TS 36.101: CR for category NB1 against FCC regulation in standalone mode | MediaTek Inc. | 36.101 | 5666 | - | Rel-16 | A | TEI14 | withdrawn |
| R4-2010702 | Correction of band combinations table in Rel-16 | Ericsson | 36.101 | 5667 | - | Rel-16 | F | LTE\_CA\_R16\_2BDL\_1BUL-Core | agreed |
| R4-2010937 | Update to NB-IOT aggregate power control tolerance for TDD | Huawei, HiSilicon | 36.101 | 5668 | - | Rel-15 | F | TEI15 | agreed |
| R4-2010945 | CR to 36.101: Introduction of LTE based 5G terrestrial broadcast numerologies | ZTE Corporation | 36.101 | 5669 | - | Rel-16 | B | LTE\_terr\_bcast-Core | revised |
| R4-2012606 | CR to 36.101: Introduction of LTE based 5G terrestrial broadcast numerologies | ZTE Corporation | 36.101 | 5669 | 1 | Rel-16 | B | LTE\_terr\_bcast-Core | agreed |
| R4-2010963 | Update to NB-IOT aggregate power control tolerance for TDD | Huawei, HiSilicon | 36.101 | 5670 | - | Rel-16 | A | TEI16 | agreed |
| R4-2010967 | CR addition on LTE-based 5G terrestrial broadcast | Huawei, HiSilicon | 36.101 | 5671 | - | Rel-16 | B | LTE\_terr\_bcast-Perf | revised |
| R4-2012602 | CR addition on LTE-based 5G terrestrial broadcast | Huawei, HiSilicon | 36.101 | 5671 | 1 | Rel-16 | B | LTE\_terr\_bcast-Perf | agreed |
| R4-2010971 | CR: Introduce NPDSCH performance requirements for multi-TB interleaved transmission. | Huawei, HiSilicon | 36.101 | 5672 | - | Rel-16 | B | NB\_IOTenh3-Perf | revised |
| R4-2012599 | CR: Introduce NPDSCH performance requirements for multi-TB interleaved transmission. | Huawei, HiSilicon | 36.101 | 5672 | 1 | Rel-16 | B | NB\_IOTenh3-Perf | agreed |
| R4-2011521 | CR to 36.101 Removal band 10 protection | Skyworks Solutions Inc. | 36.101 | 5673 | - | Rel-16 | F | TEI16 | agreed |
| R4-2011525 | CR to 36.101 Removal of CA\_NS\_08 | Skyworks Solutions Inc. | 36.101 | 5674 | - | Rel-16 | F | TEI16 | not pursued |
| R4-2011698 | CR to 36.101 Removal of CA\_NS\_08 | Skyworks Solutions Inc. | 36.101 | 5674 | 1 | Rel-16 | F | TEI16 | withdrawn |
| R4-2011526 | CR to 36.101 Correction to CA\_NS\_10 | Skyworks Solutions Inc. | 36.101 | 5675 | - | Rel-16 | F | TEI16 | agreed |
| R4-2009635 | Introduction of 1880-1920MHz SUL band into Rel-16 TS 36.104 | CMCC | 36.104 | 4903 | - | Rel-17 | B | NR\_SUL\_band\_1880\_1920MHz | revised |
| R4-2011805 | Introduction of 1880-1920MHz SUL band into Rel-16 TS 36.104 | CMCC | 36.104 | 4903 | 1 | Rel-17 | B | NR\_SUL\_band\_1880\_1920MHz | not pursued |
| R4-2009646 | Introduction of 2300-2400MHz SUL band into Rel-16 TS 36.104 | CMCC | 36.104 | 4904 | - | Rel-17 | B | NR\_SUL\_band\_2300\_2400MHz | not pursued |
| R4-2010736 | CR to 36.104 with correction of EDT level Rel-13 | Nokia, Nokia Shanghai Bell | 36.104 | 4905 | - | Rel-13 | F | LTE\_LAA | revised |
| R4-2012571 | CR to 36.104 with correction of EDT level Rel-13 | Nokia, Nokia Shanghai Bell | 36.104 | 4905 | 1 | Rel-13 | F | LTE\_LAA | not pursued |
| R4-2010737 | CR to 36.104 with correction of EDT level Rel-14 | Nokia, Nokia Shanghai Bell | 36.104 | 4906 | - | Rel-14 | A | LTE\_LAA | withdrawn |
| R4-2010944 | CR to 36.104: Introduction of LTE based 5G terrestrial broadcast numerologies | ZTE Corporation | 36.104 | 4907 | - | Rel-16 | B | LTE\_terr\_bcast-Core | revised |
| R4-2012605 | CR to 36.104: Introduction of LTE based 5G terrestrial broadcast numerologies | ZTE Corporation | 36.104 | 4907 | 1 | Rel-16 | B | LTE\_terr\_bcast-Core | agreed |
| R4-2010962 | Introduction of Band n46 in 36.104 | ZTE Corporation | 36.104 | 4908 | - | Rel-16 | B | NR\_unlic-Core | not concluded |
| R4-2010972 | CR: Introduce NPUSCH format 1 performance requirements for multi-TB interleaved transmission. | Huawei, HiSilicon | 36.104 | 4909 | - | Rel-16 | B | NB\_IOTenh3-Perf | revised |
| R4-2012600 | CR: Introduce NPUSCH format 1 performance requirements for multi-TB interleaved transmission. | Huawei, HiSilicon | 36.104 | 4909 | 1 | Rel-16 | B | NB\_IOTenh3-Perf | agreed |
| R4-2011409 | CR to 36.104: Introduction of NR-U co-existence requirements | Nokia, Nokia Shanghai Bell | 36.104 | 4910 | - | Rel-16 | B | NR\_unlic-Core | revised |
| R4-2012768 | CR to 36.104: Introduction of NR-U co-existence requirements | Nokia, Nokia Shanghai Bell | 36.104 | 4910 | 1 | Rel-16 | B | NR\_unlic-Core | not concluded |
| R4-2009534 | Correction to intra-frequency event triggered reporting test case in CEModeA | ANRITSU LTD | 36.133 | 6913 | - | Rel-13 | F | LTE\_MTCe2\_L1-Perf | agreed |
| R4-2009535 | Correction to intra-frequency event triggered reporting test case in CEModeA | ANRITSU LTD | 36.133 | 6914 | - | Rel-14 | A | LTE\_MTCe2\_L1-Perf | agreed |
| R4-2009536 | Correction to intra-frequency event triggered reporting test case in CEModeA | ANRITSU LTD | 36.133 | 6915 | - | Rel-15 | A | LTE\_MTCe2\_L1-Perf | agreed |
| R4-2009537 | Correction to intra-frequency event triggered reporting test case in CEModeA | ANRITSU LTD | 36.133 | 6916 | - | Rel-16 | A | LTE\_MTCe2\_L1-Perf | agreed |
| R4-2009596 | NR CGI measurements with autonomous gaps for 36.133 | Ericsson Limited, Nokia, Nokia Shanghai Bell | 36.133 | 6917 | - | Rel-16 | B | NR\_RRM\_enh-Core | revised |
| R4-2012157 | NR CGI measurements with autonomous gaps for 36.133 | Ericsson Limited, Nokia, Nokia Shanghai Bell | 36.133 | 6917 | 1 | Rel-16 | B | NR\_RRM\_enh-Core | agreed |
| R4-2009885 | Introduction of intra-frequency sync and async LTE DAPS HO test cases | Qualcomm Incorporated | 36.133 | 6918 | - | Rel-16 | B | LTE\_feMob-Perf | postponed |
| R4-2012196 | CR\_ Introduction of intrafrequency sync and async LTE DAPS HO test cases | Qualcomm Incorporated | 36.133 | 6918 | 1 | Rel-16 | B | LTE\_feMob-Perf | withdrawn |
| R4-2009886 | Corrections to RSS based RSRP measruement requriements in R16 eMTC | Qualcomm Incorporated | 36.133 | 6919 | - | Rel-16 | F | LTE\_eMTC5-Core | not pursued |
| R4-2009891 | CR on TS36.133 for measurement capability of IDLE mode CA measurement (Section 4.9.2.2) | MediaTek inc. | 36.133 | 6920 | - | Rel-15 | F | TEI15 | postponed |
| R4-2012082 | CR on TS36.133 for measurement capability of IDLE mode CA measurement | MediaTek inc. | 36.133 | 6920 | 1 | Rel-15 | F | TEI15 | withdrawn |
| R4-2009892 | CR on TS36.133 for measurement capability of IDLE mode CA measurement | MediaTek inc. | 36.133 | 6921 | - | Rel-16 | A | TEI15 | withdrawn |
| R4-2010077 | 36.133 CR on cell identification in connected mode for EUTRAN-NR measurement for Rel-16 NR HST | CMCC | 36.133 | 6922 | - | Rel-16 | F | NR\_HST-Core | agreed |
| R4-2010331 | CR on HST cell reselection requirment of interRAT higher priority carrier in TS 36.133 | vivo | 36.133 | 6923 | - | Rel-16 | F | NR\_HST-Core | postponed |
| R4-2010374 | Correction to cell re-selection for EUTRAN-NR high speed in TS36.133 | Ericsson | 36.133 | 6924 | - | Rel-16 | F | NR\_HST-Core | agreed |
| R4-2010377 | Impact of CGI reading on RLM | Ericsson | 36.133 | 6925 | - | Rel-16 | B | NR\_RRM\_enh-Core | agreed |
| R4-2010562 | CR clarifying S-measure thresholds for EMR carriers. | Nokia, Nokia Shanghai Bell | 36.133 | 6926 | - | Rel-15 | F | LTE\_euCA-Core | postponed |
| R4-2012083 | CR clarifying S-measure thresholds for EMR carriers | Nokia, Nokia Shanghai Bell | 36.133 | 6926 | 1 | Rel-15 | F | LTE\_euCA-Core | withdrawn |
| R4-2010563 | CR clarifying S-measure thresholds for EMR carriers | Nokia, Nokia Shanghai Bell | 36.133 | 6927 | - | Rel-16 | A | LTE\_euCA-Core | withdrawn |
| R4-2010565 | CR on performance requirements tests for euCA. | Nokia, Nokia Shanghai Bell | 36.133 | 6928 | - | Rel-15 | F | LTE\_euCA-Core | postponed |
| R4-2012084 | CR on performance requirements tests for euCA | Nokia, Nokia Shanghai Bell | 36.133 | 6928 | 1 | Rel-15 | F | LTE\_euCA-Core | withdrawn |
| R4-2010566 | CR on performance requirements tests for euCA | Nokia, Nokia Shanghai Bell | 36.133 | 6929 | - | Rel-16 | A | LTE\_euCA-Core | withdrawn |
| R4-2010570 | CR on UE requirement for MR-DC early measurement reporting in 36.133 | Nokia, Nokia Shanghai Bell | 36.133 | 6930 | - | Rel-16 | F | LTE\_NR\_DC\_CA\_enh-Core | postponed |
| R4-2010595 | CR to TS 36.133 to address NR-U inter-RAT measurements | Nokia, Nokia Shanghai Bell | 36.133 | 6931 | - | Rel-16 | B | NR\_unlic-Core | revised |
| R4-2012100 | CR to TS 36.133 to address NR-U inter-RAT measurements | Nokia, Nokia Shanghai Bell | 36.133 | 6931 | 1 | Rel-16 | B | NR\_unlic-Core | agreed |
| R4-2010667 | CR 36.133 (8.17.2.2.a) Clarification of UE behaviour | Ericsson | 36.133 | 6932 | - | Rel-16 | F | NR\_unlic-Core | agreed |
| R4-2012102 | CR 36.133 (8.17.2.2.a) Clarification of UE behaviour | Ericsson | 36.133 | 6932 | 1 | Rel-16 | F | NR\_unlic-Core | withdrawn |
| R4-2011088 | CR on serving cell measurement on non-anchor carrier for NB-IoT | Huawei, Hisilicon | 36.133 | 6933 | - | Rel-16 | F | NB\_IOTenh3-Core | agreed |
| R4-2011089 | CR on PUR requirements for NB-IoT | Huawei, Hisilicon | 36.133 | 6934 | - | Rel-16 | F | NB\_IOTenh3-Core | revised |
| R4-2012193 | CR on PUR requirements for NB-IoT | Huawei, Hisilicon | 36.133 | 6934 | 1 | Rel-16 | F | NB\_IOTenh3-Core | agreed |
| R4-2011097 | CR on NB-IoT Intra frequency with serving cell measurement relaxation test case 4.2.38 R15 | Huawei, Hisilicon | 36.133 | 6935 | - | Rel-15 | F | NB\_IOTenh2-Perf | revised |
| R4-2012085 | CR on NB-IoT Intra frequency with serving cell measurement relaxation test case 4.2.38 R15 | Huawei, Hisilicon | 36.133 | 6935 | 1 | Rel-15 | F | NB\_IOTenh2-Perf | agreed |
| R4-2011098 | CR on NB-IoT Intra frequency with serving cell measurement relaxation test case 4.2.38 R16 (Cat A) | Huawei, Hisilicon | 36.133 | 6936 | - | Rel-16 | A | NB\_IOTenh2-Perf | agreed |
| R4-2011119 | Correction on inter-RAT measurement in HST | Huawei, Hisilicon | 36.133 | 6937 | - | Rel-16 | F | NR\_HST-Core | not pursued |
| R4-2011127 | Draft CR on DAPS handover | Huawei, Hisilicon | 36.133 | 6938 | - | Rel-16 | F | LTE\_feMob-Core | agreed |
| R4-2011129 | Test cases for inter-frequency DAPS | Huawei, Hisilicon | 36.133 | 6939 | - | Rel-16 | B | LTE\_feMob-Perf | postponed |
| R4-2012197 | Test cases for inter-frequency DAPS | Huawei, Hisilicon | 36.133 | 6939 | 1 | Rel-16 | B | LTE\_feMob-Perf | withdrawn |
| R4-2011130 | Correction on UE measurement capability in NR idle mode R15 | Huawei, Hisilicon | 36.133 | 6940 | - | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2011131 | Correction on UE measurement capability in NR idle mode R16 | Huawei, Hisilicon | 36.133 | 6941 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2011134 | CR to measurement capability for NE-DC in 36133 R15 | Huawei, Hisilicon | 36.133 | 6942 | - | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2011135 | CR to measurement capability for NE-DC in 36133 R16 | Huawei, Hisilicon | 36.133 | 6943 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2011148 | CR to introduce EMR in 36.133 | Huawei, Hisilicon | 36.133 | 6944 | - | Rel-16 | B | LTE\_NR\_DC\_CA\_enh-Core | revised |
| R4-2012114 | CR to introduce EMR in 36.133 | Huawei, Hisilicon | 36.133 | 6944 | 1 | Rel-16 | B | LTE\_NR\_DC\_CA\_enh-Core | revised |
| R4-2012248 | CR to introduce EMR in 36.133 | Huawei, Hisilicon | 36.133 | 6944 | 2 | Rel-16 | B | LTE\_NR\_DC\_CA\_enh-Core | agreed |
| R4-2011151 | CR on interruption for direct activation of multiple SCells 36133 | Huawei, Hisilicon | 36.133 | 6945 | - | Rel-16 | B | LTE\_NR\_DC\_CA\_enh-Core | agreed |
| R4-2011154 | CR on interruption requirements for SCell dormancy 36133 | Huawei, Hisilicon | 36.133 | 6946 | - | Rel-16 | B | LTE\_NR\_DC\_CA\_enh-Core | revised |
| R4-2012121 | CR on interruption requirements for SCell dormancy 36133 | Huawei, Hisilicon | 36.133 | 6946 | 1 | Rel-16 | B | LTE\_NR\_DC\_CA\_enh-Core | revised |
| R4-2012277 | CR on interruption requirements for SCell dormancy 36133 | Huawei, Hisilicon | 36.133 | 6946 | 2 | Rel-16 | B | LTE\_NR\_DC\_CA\_enh-Core | agreed |
| R4-2011164 | CR on measurement gap related requirements for positioning 36.133 | Huawei, Hisilicon | 36.133 | 6947 | - | Rel-16 | B | NR\_pos-Core | revised |
| R4-2012139 | CR on measurement gap related requirements for positioning 36.133 | Huawei, Hisilicon | 36.133 | 6947 | 1 | Rel-16 | B | NR\_pos-Core | postponed |
| R4-2012288 | CR on measurement gap related requirements for positioning 36133 | Huawei, Hisilicon | 36.133 | 6947 | 2 | Rel-16 | B | NR\_pos-Core | withdrawn |
| R4-2011170 | CR to 36.133 for CGI reading | Huawei, Hisilicon | 36.133 | 6948 | - | Rel-16 | F | NR\_RRM\_enh-Core | revised |
| R4-2012159 | CR to 36.133 for CGI reading | Huawei, Hisilicon | 36.133 | 6948 | 1 | Rel-16 | F | NR\_RRM\_enh-Core | agreed |
| R4-2011178 | CR on RSS based measurement requriements | Huawei, Hisilicon | 36.133 | 6949 | - | Rel-16 | F | LTE\_eMTC5-Core | revised |
| R4-2012187 | CR on RSS based measurement requriements | Huawei, Hisilicon | 36.133 | 6949 | 1 | Rel-16 | F | LTE\_eMTC5-Core | agreed |
| R4-2011179 | CR on RLM requriements based on enhanced MPDCCH | Huawei, Hisilicon | 36.133 | 6950 | - | Rel-16 | F | LTE\_eMTC5-Core | revised |
| R4-2012189 | CR on RLM requriements based on enhanced MPDCCH | Huawei, Hisilicon | 36.133 | 6950 | 1 | Rel-16 | F | LTE\_eMTC5-Core | agreed |
| R4-2011180 | CR on PUR related requirements | Huawei, Hisilicon | 36.133 | 6951 | - | Rel-16 | F | LTE\_eMTC5-Core | revised |
| R4-2012188 | CR on PUR related requirements | Huawei, Hisilicon | 36.133 | 6951 | 1 | Rel-16 | F | LTE\_eMTC5-Core | agreed |
| R4-2011182 | CR for accuracy requirements for RSS based measurement | Huawei, Hisilicon | 36.133 | 6952 | - | Rel-16 | B | LTE\_eMTC5-Perf | not pursued |
| R4-2011207 | Introduction of measurement accuracy requirements for RSS based RSRP measurements for cat-M1/M2 | Ericsson | 36.133 | 6953 | - | Rel-16 | B | LTE\_eMTC5-Perf | revised |
| R4-2012191 | Introduction of measurement accuracy requirements for RSS based RSRP measurements for cat-M1/M2 | Ericsson | 36.133 | 6953 | 1 | Rel-16 | B | LTE\_eMTC5-Perf | agreed |
| R4-2011208 | Correction of eMTC DL channel quality report mapping table and RSS measurement requirements | Ericsson | 36.133 | 6954 | - | Rel-16 | F | LTE\_eMTC5-Core | revised |
| R4-2012190 | Correction of eMTC DL channel quality report mapping table and RSS measurement requirements | Ericsson | 36.133 | 6954 | 1 | Rel-16 | F | LTE\_eMTC5-Core | agreed |
| R4-2011213 | RRC\_IDLE state inter-RAT moblity requirements for NR-U | Ericsson | 36.133 | 6955 | - | Rel-16 | B | NR\_unlic-Core | revised |
| R4-2012094 | RRC\_IDLE state inter-RAT moblity requirements for NR-U | Ericsson | 36.133 | 6955 | 1 | Rel-16 | B | NR\_unlic-Core | agreed |
| R4-2011243 | Correction to RACH delay in HO delay requirements in NR-U | Ericsson, Qualcomm | 36.133 | 6956 | - | Rel-16 | F | NR\_unlic-Core | agreed |
| R4-2011245 | Correction to RACH delay in RRC release requirements in NR-U in 36.133 | Ericsson, Qualcomm | 36.133 | 6957 | - | Rel-16 | F | NR\_unlic-Core | agreed |
| R4-2011254 | RRM core requirements for FR2 FWA UE power class in 38.133 | Ericsson, SoftBank | 36.133 | 6958 | - | Rel-16 | B | NR\_FR2\_FWA\_Bn257\_Bn258-Core | revised |
| R4-2012201 | RRM core requirements for FR2 FWA UE power class in 36.133 | Ericsson, SoftBank | 36.133 | 6958 | 1 | Rel-16 | B | NR\_FR2\_FWA\_Bn257\_Bn258-Core | endorsed |
| R4-2011312 | CR to 36.133 on CGI reading of E-UTRA cell in NE-DC | ZTE | 36.133 | 6959 | - | Rel-16 | B | NR\_RRM\_enh-Core | agreed |
| R4-2011325 | CR to TS 36.133: Corrections to subclause 4.2.2.5.6 | Nokia, Nokia Shanghai Bell | 36.133 | 6960 | - | Rel-16 | F | NR\_HST-Core | not pursued |
| R4-2011432 | Test cases for LTE conditional HO | Nokia, Nokia Shanghai Bell | 36.133 | 6961 | - | Rel-16 | B | LTE\_feMob-Perf | postponed |
| R4-2012198 | CR on 36133 LTE CHO TCs | Nokia, Nokia Shanghai Bell | 36.133 | 6961 | 1 | Rel-16 | B | LTE\_feMob-Perf | withdrawn |
| R4-2009636 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 36.141 | CMCC | 36.141 | 1267 | - | Rel-17 | B | NR\_SUL\_band\_1880\_1920MHz | revised |
| R4-2011806 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 36.141 | CMCC | 36.141 | 1267 | 1 | Rel-17 | B | NR\_SUL\_band\_1880\_1920MHz | not pursued |
| R4-2009647 | Introduction of 2300-2400MHz SUL band into Rel-17 TS 36.141 | CMCC | 36.141 | 1268 | - | Rel-17 | B | NR\_SUL\_band\_2300\_2400MHz | not pursued |
| R4-2010734 | CR to 36.141 with correction of EDT level Rel-13 | Nokia, Nokia Shanghai Bell | 36.141 | 1269 | - | Rel-13 | F | LTE\_LAA | revised |
| R4-2012570 | CR to 36.141 with correction of EDT level Rel-13 | Nokia, Nokia Shanghai Bell | 36.141 | 1269 | 1 | Rel-13 | F | LTE\_LAA | not pursued |
| R4-2010735 | CR to 36.141 with correction of EDT level Rel-14 | Nokia, Nokia Shanghai Bell | 36.141 | 1270 | - | Rel-14 | A | LTE\_LAA | withdrawn |
| R4-2010973 | CR: Introduce NPUSCH format 1 test requirements for multi-TB interleaved transmission for TS 36.141 | Huawei, HiSilicon | 36.141 | 1271 | - | Rel-16 | B | NB\_IOTenh3-Perf | revised |
| R4-2012601 | CR: Introduce NPUSCH format 1 test requirements for multi-TB interleaved transmission for TS 36.141 | Huawei, HiSilicon | 36.141 | 1271 | 1 | Rel-16 | B | NB\_IOTenh3-Perf | agreed |
| R4-2011189 | CR to TS 36.141: Corrections of table note for shortened TTI test models | Nokia, Nokia Shanghai Bell | 36.141 | 1272 | - | Rel-15 | F | LTE\_sTTIandPT-Perf | agreed |
| R4-2011190 | CR to TS 36.141: Corrections of table note for shortened TTI test models | Nokia, Nokia Shanghai Bell | 36.141 | 1273 | - | Rel-16 | A | LTE\_sTTIandPT-Perf | agreed |
| R4-2009637 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 37.104 | CMCC | 37.104 | 0904 | - | Rel-17 | B | NR\_SUL\_band\_1880\_1920MHz | revised |
| R4-2011807 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 37.104 | CMCC | 37.104 | 0904 | 1 | Rel-17 | B | NR\_SUL\_band\_1880\_1920MHz | not pursued |
| R4-2009648 | Introduction of 2300-2400MHz SUL band into Rel-17 TS 37.104 | CMCC | 37.104 | 0905 | - | Rel-17 | B | NR\_SUL\_band\_2300\_2400MHz | not pursued |
| R4-2011410 | CR to 37.104: Introduction of NR-U co-existence requirements | Nokia, Nokia Shanghai Bell | 37.104 | 0906 | - | Rel-16 | B | NR\_unlic-Core | revised |
| R4-2012766 | CR to 37.104: Introduction of NR-U co-existence requirements | Nokia, Nokia Shanghai Bell | 37.104 | 0906 | 1 | Rel-16 | B | NR\_unlic-Core | not concluded |
| R4-2009638 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 37.105 | CMCC | 37.105 | 0185 | - | Rel-17 | B | NR\_SUL\_band\_1880\_1920MHz | revised |
| R4-2011808 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 37.105 | CMCC | 37.105 | 0185 | 1 | Rel-17 | B | NR\_SUL\_band\_1880\_1920MHz | not pursued |
| R4-2009649 | Introduction of 2300-2400MHz SUL band into Rel-17 TS 37.105 | CMCC | 37.105 | 0186 | - | Rel-17 | B | NR\_SUL\_band\_2300\_2400MHz | not pursued |
| R4-2011261 | CR to TS 37.105: Introduction of requirements for NR + UTRA combinations, Rel-16 | Huawei | 37.105 | 0187 | - | Rel-16 | B | TEI16, AASenh\_BS\_LTE\_UTRA-Core, MSR\_GSM\_UTRA\_LTE\_NR-Core | revised |
| R4-2012582 | CR to TS 37.105: Introduction of requirements for NR + UTRA combinations, Rel-16 | Huawei | 37.105 | 0187 | 1 | Rel-16 | B | TEI16, AASenh\_BS\_LTE\_UTRA-Core, MSR\_GSM\_UTRA\_LTE\_NR-Core | postponed |
| R4-2011269 | CR to TS 37.105 + motivation: Rel-13 non-AAS CRs mirroring to Rel-13 AAS | Huawei | 37.105 | 0188 | - | Rel-13 | F | TEI13, MB\_MSR\_RF-Core, AAS\_BS\_LTE\_UTRA-Core | revised |
| R4-2012574 | CR to TS 37.105: Rel-13 non-AAS CRs mirroring, Rel-13 | Huawei | 37.105 | 0188 | 1 | Rel-13 | F | TEI13, MB\_MSR\_RF-Core, AAS\_BS\_LTE\_UTRA-Core | agreed |
| R4-2011270 | CR to TS 37.105: Rel-13 non-AAS CRs mirroring, Rel-14 | Huawei | 37.105 | 0189 | - | Rel-14 | A | TEI13, MB\_MSR\_RF-Core, AAS\_BS\_LTE\_UTRA-Core | agreed |
| R4-2011271 | CR to TS 37.105: Rel-13 non-AAS CRs mirroring, Rel-15 | Huawei | 37.105 | 0190 | - | Rel-15 | A | TEI13, MB\_MSR\_RF-Core, AAS\_BS\_LTE\_UTRA-Core | agreed |
| R4-2011272 | CR to TS 37.105: Rel-13 non-AAS CRs mirroring, Rel-16 | Huawei | 37.105 | 0191 | - | Rel-16 | A | TEI13, MB\_MSR\_RF-Core, AAS\_BS\_LTE\_UTRA-Core | agreed |
| R4-2011273 | CR to TS 37.105: Rel-14 non-AAS CRs mirroring, Rel-14 | Huawei | 37.105 | 0192 | - | Rel-14 | F | TEI14, AAS\_BS\_LTE\_UTRA-Core | revised |
| R4-2012755 | CR to TS 37.105: Rel-14 non-AAS CRs mirroring, Rel-14 | Huawei | 37.105 | 0192 | 1 | Rel-14 | F | TEI14, AAS\_BS\_LTE\_UTRA-Core | agreed |
| R4-2011274 | CR to TS 37.105: Rel-14 non-AAS CRs mirroring, Rel-15 | Huawei | 37.105 | 0193 | - | Rel-15 | A | TEI14, AAS\_BS\_LTE\_UTRA-Core | agreed |
| R4-2011275 | CR to TS 37.105: Rel-14 non-AAS CRs mirroring, Rel-16 | Huawei | 37.105 | 0194 | - | Rel-16 | A | TEI14, AAS\_BS\_LTE\_UTRA-Core | agreed |
| R4-2011276 | CR to TS 37.105: Rel-15 non-AAS CRs mirroring, Rel-15 | Huawei | 37.105 | 0195 | - | Rel-15 | F | TEI15, AAS\_BS\_LTE\_UTRA-Core | agreed |
| R4-2011277 | CR to TS 37.105: Rel-15 non-AAS CRs mirroring, Rel-16 | Huawei | 37.105 | 0196 | - | Rel-16 | A | TEI15, AAS\_BS\_LTE\_UTRA-Core | agreed |
| R4-2011278 | CR to TS 37.105: Rel-15 non-AAS CRs mirroring, Rel-15 | Huawei | 37.105 | 0197 | - | Rel-16 | F | TEI16, AAS\_BS\_LTE\_UTRA-Core | agreed |
| R4-2011411 | CR to 37.105: Introduction of NR-U co-existence requirements | Nokia, Nokia Shanghai Bell | 37.105 | 0198 | - | Rel-16 | B | NR\_unlic-Core | revised |
| R4-2012767 | CR to 37.105: Introduction of NR-U co-existence requirements | Nokia, Nokia Shanghai Bell | 37.105 | 0198 | 1 | Rel-16 | B | NR\_unlic-Core | not concluded |
| R4-2010740 | CR to TS 37.106 with introduction of NR-U feature | Nokia, Nokia Shanghai Bell | 37.106 | 0001 | - | Rel-16 | B | NR\_unlic-Core | not concluded |
| R4-2010741 | CR to TS 37.106 with correction to referencies to TS 37.213 Rel-15 | Nokia, Nokia Shanghai Bell | 37.106 | 0002 | - | Rel-15 | F | LTE\_eLAA | agreed |
| R4-2010742 | CR to TS 37.106 with correction to referencies to TS 37.213 Rel-16 | Nokia, Nokia Shanghai Bell | 37.106 | 0003 | - | Rel-16 | A | LTE\_eLAA | agreed |
| R4-2010732 | CR to 37.107 with correction of EDT level Rel-15 | Nokia, Nokia Shanghai Bell | 37.107 | 0004 | - | Rel-15 | F | LTE\_eLAA | revised |
| R4-2012568 | CR to 37.107 with correction of EDT level Rel-15 | Nokia, Nokia Shanghai Bell | 37.107 | 0004 | 1 | Rel-15 | F | LTE\_eLAA | revised |
| R4-2012759 | CR to 37.107 with correction of references to TS 37.213 Rel-15 | Nokia, Nokia Shanghai Bell | 37.107 | 0004 | 2 | Rel-15 | F | LTE\_eLAA | agreed |
| R4-2010733 | CR to 37.107 with correction of references to TS 37.213 Rel-16 | Nokia, Nokia Shanghai Bell | 37.107 | 0005 | - | Rel-16 | A | LTE\_eLAA | agreed |
| R4-2010739 | CR to TS 37.107 with introduction of NR-U feature – core part | Nokia, Nokia Shanghai Bell | 37.107 | 0006 | - | Rel-16 | B | NR\_unlic-Core | not concluded |
| R4-2009639 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 37.141 | CMCC | 37.141 | 0941 | - | Rel-17 | B | NR\_SUL\_band\_1880\_1920MHz | revised |
| R4-2011809 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 37.141 | CMCC | 37.141 | 0941 | 1 | Rel-17 | B | NR\_SUL\_band\_1880\_1920MHz | not pursued |
| R4-2009650 | Introduction of 2300-2400MHz SUL band into Rel-17 TS 37.141 | CMCC | 37.141 | 0942 | - | Rel-17 | B | NR\_SUL\_band\_2300\_2400MHz | not pursued |
| R4-2011191 | CR to TS 37.141: Clarification on manufacturer's declaration of the number of supported NB-IoT carriers | Nokia, Nokia Shanghai Bell | 37.141 | 0943 | - | Rel-13 | F | NB\_IOT-Perf | revised |
| R4-2012573 | CR to TS 37.141: Clarification on manufacturer's declaration of the number of supported NB-IoT carriers | Nokia, Nokia Shanghai Bell | 37.141 | 0943 | 1 | Rel-13 | F | NB\_IOT-Perf | agreed |
| R4-2011192 | CR to TS 37.141: Clarification on manufacturer's declaration of the number of supported NB-IoT carriers | Nokia, Nokia Shanghai Bell | 37.141 | 0944 | - | Rel-14 | A | NB\_IOT-Perf | agreed |
| R4-2011193 | CR to TS 37.141: Clarification on manufacturer's declaration of the number of supported NB-IoT carriers | Nokia, Nokia Shanghai Bell | 37.141 | 0945 | - | Rel-15 | A | NB\_IOT-Perf | agreed |
| R4-2011194 | CR to TS 37.141: Clarification on manufacturer's declaration of the number of supported NB-IoT carriers | Nokia, Nokia Shanghai Bell | 37.141 | 0946 | - | Rel-16 | A | NB\_IOT-Perf | agreed |
| R4-2011407 | CR to 37.141: Correction to applicability of additional BC3 requirement (Rel-15) | Nokia, Nokia Shanghai Bell | 37.141 | 0947 | - | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2011408 | CR to 37.141: Correction to applicability of additional BC3 requirement (Rel-16) | Nokia, Nokia Shanghai Bell | 37.141 | 0948 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2009640 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 37.145-1 | CMCC | 37.145-1 | 0214 | - | Rel-17 | B | NR\_SUL\_band\_1880\_1920MHz | revised |
| R4-2011810 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 37.145-1 | CMCC | 37.145-1 | 0214 | 1 | Rel-17 | B | NR\_SUL\_band\_1880\_1920MHz | not pursued |
| R4-2009651 | Introduction of 2300-2400MHz SUL band into Rel-17 TS 37.145-1 | CMCC | 37.145-1 | 0215 | - | Rel-17 | B | NR\_SUL\_band\_2300\_2400MHz | not pursued |
| R4-2011262 | CR to TS 37.145-1: Introduction of new BS capability set for NR+EUTRA+UTRA, Rel-16 | Huawei | 37.145-1 | 0216 | - | Rel-16 | B | TEI16, AASenh\_BS\_LTE\_UTRA-Perf, MSR\_GSM\_UTRA\_LTE\_NR-Perf | revised |
| R4-2012583 | CR to TS 37.145-1: Introduction of new BS capability set for NR+EUTRA+UTRA, Rel-16 | Huawei | 37.145-1 | 0216 | 1 | Rel-16 | B | TEI16, AASenh\_BS\_LTE\_UTRA-Perf, MSR\_GSM\_UTRA\_LTE\_NR-Perf | postponed |
| R4-2009641 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 37.145-2 | CMCC | 37.145-2 | 0233 | - | Rel-17 | B | NR\_SUL\_band\_1880\_1920MHz | revised |
| R4-2011811 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 37.145-2 | CMCC | 37.145-2 | 0233 | 1 | Rel-17 | B | NR\_SUL\_band\_1880\_1920MHz | not pursued |
| R4-2009652 | Introduction of 2300-2400MHz SUL band into Rel-17 TS 37.145-2 | CMCC | 37.145-2 | 0234 | - | Rel-17 | B | NR\_SUL\_band\_2300\_2400MHz | not pursued |
| R4-2011187 | CR to TS 37.145-2: Correction on procedure for spurious unwanted emissions measurement using orthogonal cut grid | Nokia, Nokia Shanghai Bell | 37.145-2 | 0235 | - | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2011188 | CR to TS 37.145-2: Correction on procedure for spurious unwanted emissions measurement using orthogonal cut grid | Nokia, Nokia Shanghai Bell | 37.145-2 | 0236 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2011255 | CR to TS 37.145-2: internal TR references corrections (wrt. TR 37.941 for OTA BS testing), Rel-15 | Huawei | 37.145-2 | 0237 | - | Rel-15 | F | OTA\_BS\_testing | revised |
| R4-2012704 | CR to TS 37.145-2: internal TR references corrections (wrt. TR 37.941 for OTA BS testing), Rel-15 | Huawei | 37.145-2 | 0237 | 1 | Rel-15 | F | OTA\_BS\_testing | agreed |
| R4-2011256 | CR to TS 37.145-2: internal TR references corrections (wrt. TR 37.941 for OTA BS testing), Rel-16 | Huawei | 37.145-2 | 0238 | - | Rel-16 | A | OTA\_BS\_testing | agreed |
| R4-2011263 | CR to TS 37.145-2: Introduction of new BS capability set for NR+EUTRA+UTRA, Rel-16 | Huawei | 37.145-2 | 0239 | - | Rel-16 | B | TEI16, AASenh\_BS\_LTE\_UTRA-Perf, MSR\_GSM\_UTRA\_LTE\_NR-Perf | revised |
| R4-2012584 | CR to TS 37.145-2: Introduction of new BS capability set for NR+EUTRA+UTRA, Rel-16 | Huawei | 37.145-2 | 0239 | 1 | Rel-16 | B | TEI16, AASenh\_BS\_LTE\_UTRA-Perf, MSR\_GSM\_UTRA\_LTE\_NR-Perf | postponed |
| R4-2011388 | CR to TS 37.145-2: Out-of-band co-location test antenna definition | Nokia, Nokia Shanghai Bell | 37.145-2 | 0240 | - | Rel-15 | F | NR\_newRAT-Perf | not pursued |
| R4-2011389 | CR to TS 37.145-2: Out-of-band co-location test antenna definition | Nokia, Nokia Shanghai Bell | 37.145-2 | 0241 | - | Rel-16 | A | NR\_newRAT-Perf | withdrawn |
| R4-2010918 | Changes to TS 37.171 title removing references to individual RATs | NextNav | 37.171 | 0033 | - | Rel-13 | F | UTRA\_LTE\_iPos\_enh-Perf | agreed |
| R4-2010933 | Changes to TS 37.171 title removing references to individual RATs | NextNav | 37.171 | 0034 | - | Rel-14 | A | UTRA\_LTE\_iPos\_enh-Perf | agreed |
| R4-2010934 | Changes to TS 37.171 title removing references to individual RATs | NextNav | 37.171 | 0035 | - | Rel-15 | A | UTRA\_LTE\_iPos\_enh-Perf | agreed |
| R4-2010935 | Changes to TS 37.171 title removing references to individual RATs | NextNav | 37.171 | 0036 | - | Rel-16 | A | UTRA\_LTE\_iPos\_enh-Perf | agreed |
| R4-2009970 | CR to TR 37.941: Clause 6 Measurement Types | Ericsson | 37.941 | 0001 | - | Rel-15 | F | OTA\_BS\_testing-Perf | revised |
| R4-2012699 | CR to TR 37.941: Clause 6 Measurement Types | Ericsson | 37.941 | 0001 | 1 | Rel-15 | F | OTA\_BS\_testing-Perf | agreed |
| R4-2009971 | CR to TR 37.941: Clause 6.3.3 Angular alignment in TRP measurements | Ericsson | 37.941 | 0002 | - | Rel-15 | F | OTA\_BS\_testing-Perf | revised |
| R4-2012703 | CR to TR 37.941: Clause 6.3.3 Angular alignment in TRP measurements | Ericsson | 37.941 | 0002 | 1 | Rel-15 | F | OTA\_BS\_testing-Perf | agreed |
| R4-2009972 | CR to TR 37.941: Clause 6 Measurement Types | Ericsson | 37.941 | 0003 | - | Rel-16 | A | OTA\_BS\_testing-Perf | agreed |
| R4-2009973 | CR to TR 37.941: Clause 6.3.3 Angular alignment in TRP measurements | Ericsson | 37.941 | 0004 | - | Rel-16 | A | OTA\_BS\_testing-Perf | agreed |
| R4-2011215 | CR to TR 37.941: Completion of MU terms for PWS. | ROHDE & SCHWARZ | 37.941 | 0005 | - | Rel-15 | F | OTA\_BS\_testing-Perf | revised |
| R4-2012700 | CR to TR 37.941: Completion of MU terms for PWS. | ROHDE & SCHWARZ | 37.941 | 0005 | 1 | Rel-15 | F | OTA\_BS\_testing-Perf | agreed |
| R4-2011231 | Mirror CR to TR 37.941: Completion of MU terms for PWS. | ROHDE & SCHWARZ | 37.941 | 0006 | - | Rel-16 | A | OTA\_BS\_testing-Perf | revised |
| R4-2012701 | Mirror CR to TR 37.941: Completion of MU terms for PWS. | ROHDE & SCHWARZ | 37.941 | 0006 | 1 | Rel-16 | A | OTA\_BS\_testing-Perf | agreed |
| R4-2011257 | CR to TR 37.941: editorial cleanup, Rel-15 | Huawei | 37.941 | 0007 | - | Rel-15 | F | OTA\_BS\_testing | revised |
| R4-2012698 | CR to TR 37.941: editorial cleanup, Rel-15 | Huawei | 37.941 | 0007 | 1 | Rel-15 | F | OTA\_BS\_testing | agreed |
| R4-2011258 | CR to TR 37.941: editorial cleanup, Rel-16 | Huawei | 37.941 | 0008 | - | Rel-16 | A | OTA\_BS\_testing | agreed |
| R4-2011259 | CR to TR 37.941: new Annex for Excel spreadsheets with MU derivation, Rel-15 | Huawei | 37.941 | 0009 | - | Rel-15 | B | OTA\_BS\_testing | revised |
| R4-2012702 | CR to TR 37.941: new Annex for Excel spreadsheets with MU derivation, Rel-15 | Huawei | 37.941 | 0009 | 1 | Rel-15 | B | OTA\_BS\_testing | revised |
| R4-2012763 | CR to TR 37.941: new Annex for Excel spreadsheets with MU derivation, Rel-15 | Huawei | 37.941 | 0009 | 2 | Rel-15 | B | OTA\_BS\_testing | agreed |
| R4-2011260 | CR to TR 37.941: new Annex for Excel spreadsheets with MU derivation, Rel-16 | Huawei | 37.941 | 0010 | - | Rel-16 | A | OTA\_BS\_testing | agreed |
| R4-2009588 | Correction to FR1 UL contiguous CA MPR regions | Nokia Corporation | 38.101-1 | 0407 | - | Rel-16 | F | NR\_RF\_FR1-Core | revised |
| R4-2011729 | Correction to FR1 UL contiguous CA MPR regions | Nokia Corporation | 38.101-1 | 0407 | 1 | Rel-16 | F | NR\_RF\_FR1-Core | agreed |
| R4-2009589 | LTE/NR spectrum sharing in Band 40/n40 | Reliance Jio | 38.101-1 | 0408 | - | Rel-17 | B | DSS\_LTE\_B40\_NR\_Bn40-Core | revised |
| R4-2011822 | LTE/NR spectrum sharing in Band 40/n40 | Reliance Jio | 38.101-1 | 0408 | 1 | Rel-17 | B | DSS\_LTE\_B40\_NR\_Bn40-Core | endorsed |
| R4-2009615 | CR for n26 AMPR for 256QAM | Qualcomm Incorporated | 38.101-1 | 0409 | - | Rel-16 | F | NR\_n26-Core | agreed |
| R4-2009616 | OOB blocking for Inter-band CA | Qualcomm Incorporated | 38.101-1 | 0410 | - | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2009617 | OOB blocking for Inter-band CA | Qualcomm Incorporated | 38.101-1 | 0411 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2009622 | CR for Pcmax correction for FR1 intraband ULCA | Qualcomm Incorporated | 38.101-1 | 0412 | - | Rel-16 | F | NR\_RF\_FR1-Core | not pursued |
| R4-2009632 | CR to 38101-1 on introducing new SUL band n96 | Huawei, HiSilicon | 38.101-1 | 0413 | - | Rel-17 | B | NR\_SUL\_band\_1880\_1920MHz | withdrawn |
| R4-2009633 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 38.101-1 | CMCC | 38.101-1 | 0414 | - | Rel-17 | B | NR\_SUL\_band\_1880\_1920MHz | revised |
| R4-2011803 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 38.101-1 | CMCC | 38.101-1 | 0414 | 1 | Rel-17 | B | NR\_SUL\_band\_1880\_1920MHz | not pursued |
| R4-2009644 | introduction of 2300-2400MHz SUL band into Rel-17 TS 38.101-1 | CMCC | 38.101-1 | 0415 | - | Rel-17 | B | NR\_SUL\_band\_2300\_2400MHz | revised |
| R4-2011814 | introduction of 2300-2400MHz SUL band into Rel-17 TS 38.101-1 | CMCC | 38.101-1 | 0415 | 1 | Rel-17 | B | NR\_SUL\_band\_2300\_2400MHz | not pursued |
| R4-2009666 | Correction to ASEM for NS\_27 | Anritsu Corporation | 38.101-1 | 0416 | - | Rel-16 | F | NR\_newRAT-Core | revised |
| R4-2011771 | Correction to ASEM for NS\_27 | Anritsu Corporation | 38.101-1 | 0416 | 1 | Rel-16 | F | NR\_newRAT-Core | agreed |
| R4-2009702 | Adding NR FDD non-contiguous Intra-band CA and FR1 3CC Inter-band CA into Release Independence | Dish Network | 38.101-1 | 0417 | - | Rel-15 | B | TEI15 | withdrawn |
| R4-2009707 | CR to introduce 7.5 kHz UL shift for LTE/NR spectrum sharing in Band 38/n38 | VODAFONE Group Plc | 38.101-1 | 0418 | - | Rel-16 | A | DSS\_LTE\_B38\_NR\_Bn38 | revised |
| R4-2011826 | CR to introduce 7.5 kHz UL shift for LTE/NR spectrum sharing in Band 38/n38 | VODAFONE Group Plc | 38.101-1 | 0418 | 1 | Rel-16 | A | DSS\_LTE\_B38\_NR\_Bn38 | not concluded |
| R4-2009718 | Introduction of UE PC2 for NR band n40 | Reliance Jio | 38.101-1 | 0419 | - | Rel-16 | F | TEI16 | agreed |
| R4-2009823 | CR for TS 38.101-1, REFSENS requirements for NR V2X band n38 | CATT | 38.101-1 | 0420 | - | Rel-16 | F | 5G\_V2X\_NRSL-Core | not pursued |
| R4-2009859 | CR to introduce 7.5 kHz UL shift for LTE/NR spectrum sharing in Band 38/n38 (Rel-15) | VODAFONE Group Plc | 38.101-1 | 0421 | - | Rel-15 | B | DSS\_LTE\_B38\_NR\_Bn38 | revised |
| R4-2011825 | 7.5 kHz UL shift for LTE/NR spectrum sharing in Band 38/n38 | VODAFONE Group Plc | 38.101-1 | 0421 | 1 | Rel-15 | C | NR\_newRAT-Core | not concluded |
| R4-2009936 | Introduction of LTE/NR spectrum sharing in band 48/n48 frequency range | Apple Inc., Comcast | 38.101-1 | 0422 | - | Rel-16 | B | NR\_n48\_LTE\_48\_coex-Core | revised |
| R4-2011925 | Introduction of LTE/NR spectrum sharing in band 48/n48 frequency range | Apple Inc., Comcast | 38.101-1 | 0422 | 1 | Rel-16 | B | NR\_n48\_LTE\_48\_coex-Core | agreed |
| R4-2009939 | Coexistence cleanup for 38101-1 Rel16 | Apple Inc. | 38.101-1 | 0423 | - | Rel-16 | F | TEI16 | agreed |
| R4-2009947 | CR Editorial cleanup of band combination tables for 38101-1 Rel16 | Apple Inc. | 38.101-1 | 0424 | - | Rel-16 | D | NR\_CA\_R16\_intra-Core | agreed |
| R4-2010022 | CR to TS 38.101-1: corrections on narrow band blocking for intra-band contiguous CA | Xiaomi | 38.101-1 | 0425 | - | Rel-15 | F | NR\_newRAT-Core | revised |
| R4-2011908 | CR to TS 38.101-1: corrections on narrow band blocking for intra-band contiguous CA | Xiaomi | 38.101-1 | 0425 | 1 | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2010023 | CR to TS 38.101-1: corrections on narrow band blocking for intra-band contiguous CA | Xiaomi | 38.101-1 | 0426 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2010025 | CR for TS 38.101-1: Clarification of UE external components | Qualcomm Incorporated | 38.101-1 | 0427 | - | Rel-16 | B | 5G\_V2X\_NRSL-Core | not pursued |
| R4-2010026 | CR for TS 38.101-1: Removal of table 6.5E.3.4.3-1 | Qualcomm Incorporated | 38.101-1 | 0428 | - | Rel-16 | F | 5G\_V2X\_NRSL-Core | revised |
| R4-2011707 | CR for TS 38.101-1: Removal of table 6.5E.3.4.3-1 and table 6.5E.3.4.3-2 | Qualcomm Incorporated | 38.101-1 | 0428 | 1 | Rel-16 | F | 5G\_V2X\_NRSL-Core | agreed |
| R4-2010027 | CR for TS 38.101-1: V2X REFSENS | Qualcomm Incorporated | 38.101-1 | 0429 | - | Rel-16 | F | 5G\_V2X\_NRSL-Core | not pursued |
| R4-2010028 | CR for TS 38.101-1: A-MPR tables for SSSB, PSFCH | Qualcomm Incorporated | 38.101-1 | 0430 | - | Rel-16 | B | 5G\_V2X\_NRSL-Core | not pursued |
| R4-2010029 | CR for TS 38.101-1: Pi/2 BPSK DMRS | Qualcomm Incorporated | 38.101-1 | 0431 | - | Rel-16 | B | NR\_eMIMO-Core | not pursued |
| R4-2010060 | CR for 38.101-1: Introduction of Power Class 1.5 | T-Mobile USA | 38.101-1 | 0432 | - | Rel-16 | B | LTE\_NR\_B41\_Bn41\_PC29dBm-Core | revised |
| R4-2011783 | CR for 38.101-1: Introduction of Power Class 1.5 | T-Mobile USA | 38.101-1 | 0432 | 1 | Rel-16 | B | LTE\_NR\_B41\_Bn41\_PC29dBm-Core | agreed |
| R4-2010097 | CR to TS38.101-1 on introduction of Uplink Full Power Transmission | Samsung, Qualcomm | 38.101-1 | 0433 | - | Rel-16 | B | NR\_eMIMO-Core | revised |
| R4-2011762 | CR to TS38.101-1 on introduction of Uplink Full Power Transmission | Samsung, Qualcomm | 38.101-1 | 0433 | 1 | Rel-16 | B | NR\_eMIMO-Core | agreed |
| R4-2010114 | Corrections of Japan-related CA co-ex tables for REL-15 combo | SoftBank Corp., NTT docomo INC., KDDI Corporation | 38.101-1 | 0434 | - | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2010115 | Corrections of Japan-related CA co-ex tables for REL-15 combo | SoftBank Corp., NTT docomo INC., KDDI Corporation | 38.101-1 | 0435 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2010121 | Corrections of Japan-related CA co-ex tables for REL-16 combo | SoftBank Corp., NTT docomo INC., KDDI Corporation | 38.101-1 | 0436 | - | Rel-16 | F | NR\_CADC\_R16\_2BDL\_xBUL-Core | not pursued |
| R4-2010137 | Correction on 5G V2X UE RF requirements in rel-16 | LG Electronics France | 38.101-1 | 0437 | - | Rel-16 | F | 5G\_V2X\_NRSL-Core | revised |
| R4-2011705 | Correction on 5G V2X UE RF requirements in rel-16 | LG Electronics France | 38.101-1 | 0437 | 1 | Rel-16 | F | 5G\_V2X\_NRSL-Core | agreed |
| R4-2010228 | A-MPR definition for CA\_n48B | Nokia | 38.101-1 | 0438 | - | Rel-16 | B | NR\_RF\_FR1-Core | revised |
| R4-2011727 | A-MPR definition for CA\_n48B, CA\_n41B and CA\_n41C | Nokia, Skyworks | 38.101-1 | 0438 | 1 | Rel-16 | B | NR\_RF\_FR1-Core | revised |
| R4-2011935 | A-MPR definition for CA\_n48B, CA\_n41B and CA\_n41C | Nokia, Skyworks | 38.101-1 | 0438 | 2 | Rel-16 | B | NR\_RF\_FR1-Core | agreed |
| R4-2010231 | CR Restoring the clause structure of NR FR1 uplink contiguous intraband CA | Nokia, Nokia Shanghai Bell, Qualcomm Inc, Skyworks, Ericsson | 38.101-1 | 0439 | - | Rel-16 | F | NR\_RF\_FR1-Core | agreed |
| R4-2011772 | CR Restoring the clause structure of NR FR1 uplink contiguous intraband CA | Nokia, Nokia Shanghai Bell, Qualcomm Inc, Skyworks, Ericsson | 38.101-1 | 0439 | 1 | Rel-16 | F | NR\_RF\_FR1-Core | withdrawn |
| R4-2010288 | CR on TS38.101-1 for NR V2X | vivo | 38.101-1 | 0440 | - | Rel-16 | F | 5G\_V2X\_NRSL-Core | revised |
| R4-2011706 | CR on TS38.101-1 for NR V2X | vivo | 38.101-1 | 0440 | 1 | Rel-16 | F | 5G\_V2X\_NRSL-Core | agreed |
| R4-2010340 | 30k SSB for n34 and n39 | Ericsson | 38.101-1 | 0441 | - | Rel-15 | F | NR\_newRAT-Core | revised |
| R4-2011683 | 30k SSB for n34 and n39 | Ericsson | 38.101-1 | 0441 | 1 | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2010341 | 30k SSB SCS for Band n34 and n39 | Ericsson | 38.101-1 | 0442 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2010342 | Correction for 5 MHz channel bandwidth for n40 and n50 (15k SCS) | Ericsson | 38.101-1 | 0443 | - | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2010343 | Correction for 5 MHz channel bandwidth for n50 and introduction of Annex H | Ericsson | 38.101-1 | 0444 | - | Rel-16 | F | NR\_newRAT-Core | agreed |
| R4-2010348 | Modifcation of Pcmax for UL CA with uplink Tx switching capability | Ericsson | 38.101-1 | 0445 | - | Rel-16 | F | NR\_RF\_FR1-Core | revised |
| R4-2011732 | Modification of Pcmax for UL CA with uplink Tx switching capability | Ericsson | 38.101-1 | 0445 | 1 | Rel-16 | F | NR\_RF\_FR1-Core | not pursued |
| R4-2010623 | CR to TS38.101-1: Add 30k SSB SCS for Band n34 and n39 | ZTE Corporation | 38.101-1 | 0446 | - | Rel-15 | F | NR\_newRAT-Core | not pursued |
| R4-2010624 | CR to TS38.101-1: Add 30k SSB SCS for Band n34 and n39 | ZTE Corporation | 38.101-1 | 0447 | - | Rel-16 | A | NR\_newRAT-Core | withdrawn |
| R4-2010625 | CR to TS38.101-1: Correction on the general requirement and configured transmitted power requirement for inter-band DC | ZTE Corporation | 38.101-1 | 0448 | - | Rel-16 | F | NR\_newRAT-Core | not pursued |
| R4-2010626 | CR to TS 38.101-1: Correction on the Aggregated Channel Bandwidth | ZTE Corporation | 38.101-1 | 0449 | - | Rel-15 | F | NR\_newRAT-Core | not pursued |
| R4-2010627 | CR to TS 38.101-1: Correction on the Aggregated Channel Bandwidth | ZTE Corporation | 38.101-1 | 0450 | - | Rel-16 | A | NR\_newRAT-Core | withdrawn |
| R4-2010675 | CR introduction completed band combinations 38.717-01-01 - | Ericsson | 38.101-1 | 0451 | - | Rel-17 | B | NR\_CA\_R17\_Intra-Core | not concluded |
| R4-2010678 | CR introduction completed band combinations 38.717-04-01 - | Ericsson | 38.101-1 | 0452 | - | Rel-17 | B | NR\_CA\_R17\_4BDL\_1BUL-Core | not concluded |
| R4-2010796 | Correction to RMC for 256QAM | Rohde & Schwarz | 38.101-1 | 0453 | - | Rel-15 | F | NR\_newRAT-Core | not pursued |
| R4-2010797 | Correction to RMC for 256QAM | Rohde & Schwarz | 38.101-1 | 0454 | - | Rel-16 | A | NR\_newRAT-Core | withdrawn |
| R4-2010800 | Correction to uplink antenna connectors | Rohde & Schwarz | 38.101-1 | 0455 | - | Rel-15 | F | NR\_newRAT-Core | not pursued |
| R4-2010801 | Correction to uplink antenna connectors | Rohde & Schwarz | 38.101-1 | 0456 | - | Rel-16 | A | NR\_newRAT-Core | withdrawn |
| R4-2010814 | CR for 38.101-1 RFC corrections (R15) | Huawei, HiSilicon | 38.101-1 | 0457 | - | Rel-15 | F | NR\_newRAT-Core | revised |
| R4-2011749 | CR for 38.101-1 RFC corrections (R15) | Huawei, HiSilicon | 38.101-1 | 0457 | 1 | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2010815 | CR for 38.101-1 FRC corrections (R16) | Huawei, HiSilicon | 38.101-1 | 0458 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2010923 | CR for 38.101-3 to remove PHS system, 860~890 and 1400~1427 protection for EN-DC band combination with band n1, n8 and n50 | Huawei, HiSilicon | 38.101-1 | 0459 | - | Rel-16 | F | NR\_CADC\_R16\_2BDL\_xBUL | revised |
| R4-2011773 | CR for 38.101-1 to remove PHS system and 860~890 protection for NR CA band combination with band n1 and band n8 | Huawei, HiSilicon | 38.101-1 | 0459 | 1 | Rel-16 | F | NR\_CADC\_R16\_2BDL\_xBUL | agreed |
| R4-2010925 | CR for 38.101-1 to add the missing region for NS\_18 and maintenance the ∆mprc | Huawei, HiSilicon | 38.101-1 | 0460 | - | Rel-16 | F | NR\_n28\_BW-Core | revised |
| R4-2011774 | CR for 38.101-1 to add the missing region for NS\_18 and maintenance the ∆mprc | Huawei, HiSilicon | 38.101-1 | 0460 | 1 | Rel-16 | F | NR\_n28\_BW-Core | agreed |
| R4-2010926 | CR for 38.101-1 to add the missing MSD for CA\_n41A-n78A | Huawei, HiSilicon | 38.101-1 | 0461 | - | Rel-15 | F | NR\_newRAT-Core | revised |
| R4-2011750 | CR for 38.101-1 to add the missing MSD for CA\_n41A-n78A | Huawei, HiSilicon | 38.101-1 | 0461 | 1 | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2010927 | CR for 38.101-1 to add the missing MSD for CA\_n41A-n78A | Huawei, HiSilicon | 38.101-1 | 0462 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2010930 | CR for 38.101-1 to specify AMPR requirements for PC3 NR V2X in band n47 | Huawei, HiSilicon | 38.101-1 | 0463 | - | Rel-16 | F | 5G\_V2X\_NRSL-Core | not pursued |
| R4-2011342 | Correction to configured power with allowance for SRS switching | Qualcomm Incorporated | 38.101-1 | 0464 | - | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2011343 | Correction to configured power with allowance for SRS switching | Qualcomm Incorporated | 38.101-1 | 0465 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2011347 | Introduction of NR-based access to unlicensed spectrum | Qualcomm Incorporated, Nokia | 38.101-1 | 0466 | - | Rel-16 | B | NR\_unlic-Core | revised |
| R4-2011701 | Introduction of NR-based access to unlicensed spectrum | Qualcomm Incorporated, Nokia | 38.101-1 | 0466 | 1 | Rel-16 | B | NR\_unlic-Core | revised |
| R4-2011943 | Introduction of NR-based access to unlicensed spectrum | Qualcomm Incorporated, Nokia | 38.101-1 | 0466 | 2 | Rel-16 | B | NR\_unlic-Core | not concluded |
| R4-2011469 | CR to 38.101-3 on time masks for ULSUP in R16 | Huawei, HiSilicon | 38.101-1 | 0467 | - | Rel-16 | B | NR\_RF\_FR1 | withdrawn |
| R4-2011471 | CR for intra-band UL CA non-contiguous CA requirement | Huawei, HiSilicon | 38.101-1 | 0468 | - | Rel-16 | F | NR\_RF\_FR1 | revised |
| R4-2011728 | CR for intra-band UL CA non-contiguous CA requirement | Huawei, HiSilicon | 38.101-1 | 0468 | 1 | Rel-16 | F | NR\_RF\_FR1 | agreed |
| R4-2011476 | CR for correction on intra-band UL CA contiguous CA requirement | Huawei, HiSilicon | 38.101-1 | 0469 | - | Rel-16 | F | NR\_RF\_FR1 | revised |
| R4-2011918 | CR for correction on intra-band UL CA contiguous CA requirement | Huawei, HiSilicon | 38.101-1 | 0469 | 1 | Rel-16 | F | NR\_RF\_FR1 | agreed |
| R4-2011477 | CR for intra-band UL contiguous CA DC location | Huawei, HiSilicon | 38.101-1 | 0470 | - | Rel-16 | F | NR\_RF\_FR1 | revised |
| R4-2011723 | CR for intra-band UL contiguous CA DC location | Huawei, HiSilicon | 38.101-1 | 0470 | 1 | Rel-16 | F | NR\_RF\_FR1 | agreed |
| R4-2011482 | CR for intra-band UL CA non-contiguous CA requirement | Huawei, HiSilicon | 38.101-1 | 0471 | - | Rel-16 | B | NR\_RF\_FR1 | revised |
| R4-2011725 | CR for intra-band UL CA non-contiguous CA requirement | Huawei, HiSilicon | 38.101-1 | 0471 | 1 | Rel-16 | B | NR\_RF\_FR1-Core | agreed |
| R4-2011484 | CR on channel space for CA | Huawei, HiSilicon | 38.101-1 | 0472 | - | Rel-15 | F | NR\_newRAT-Core | not pursued |
| R4-2011485 | CR for 38.101-1 channel space for CA\_Rel16 | Huawei, HiSilicon | 38.101-1 | 0473 | - | Rel-16 | A | NR\_newRAT-Core | withdrawn |
| R4-2011492 | CR on PTRS configuration for UL RMC-Rel-15 | Huawei, HiSilicon | 38.101-1 | 0474 | - | Rel-15 | F | NR\_newRAT-Core | withdrawn |
| R4-2011493 | CR on PTRS configuration for UL RMC-Rel-16 | Huawei, HiSilicon | 38.101-1 | 0475 | - | Rel-16 | A | NR\_newRAT-Core | withdrawn |
| R4-2011495 | CR on minumum output power | Huawei, HiSilicon | 38.101-1 | 0476 | - | Rel-15 | F | NR\_newRAT-Core | not pursued |
| R4-2011496 | CR for 38.101-1 on minimum output power-Rel-16 | Huawei, HiSilicon | 38.101-1 | 0477 | - | Rel-16 | A | NR\_newRAT-Core | withdrawn |
| R4-2011497 | CR on correction for AMPR NS\_38,NS\_40 and NS\_41 | Huawei, HiSilicon | 38.101-1 | 0478 | - | Rel-15 | F | NR\_newRAT-Core | not pursued |
| R4-2011498 | CR for 38.101-1 on corrections for AMPR-Rel-16 | Huawei, HiSilicon | 38.101-1 | 0479 | - | Rel-16 | A | NR\_newRAT-Core | withdrawn |
| R4-2011528 | CR to 38.101-1 - Correction to CA BCS and cross band isolation MSD tables | Skyworks Solutions Inc. | 38.101-1 | 0480 | - | Rel-16 | F | TEI16 | revised |
| R4-2011775 | CR to 38.101-1 - Correction to CA BCS and cross band isolation MSD tables | Skyworks Solutions Inc. | 38.101-1 | 0480 | 1 | Rel-16 | F | TEI16 | agreed |
| R4-2011529 | CR to 38.101-1 Correction to NS\_18 | Skyworks Solutions Inc. | 38.101-1 | 0481 | - | Rel-16 | F | TEI16 | not pursued |
| R4-2011752 | Correction of applicability of 2Rx requirements | vivo | 38.101-1 | 0482 | - | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2011753 | Correction of applicability of 2Rx requirements | vivo | 38.101-1 | 0483 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2011900 | 7.5 kHz UL shift for LTE/NR spectrum sharing in Band 38/n38 | VODAFONE Group Plc | 38.101-1 | 0484 | - | Rel-17 | B | DSS\_LTE\_B38\_NR\_Bn38 | endorsed |
| R4-2011897 | CR for 38.101-1: Introduction of BCS4 for CA, DC and SUL | T-Mobile USA, Deutsche Telekom, AT&T, Telus, Bell Mobility, Telstra, Telecom Italia, Ericsson, Vodaphone, Rogers, KDDI, Ericsson | 38.101-1 | 0485 | - | Rel-16 | C | TEI16 | not pursued |
| R4-2011902 | CR to add PC3 Pi/2 BPSK DMRS for IE powerBoostPi2BPSK = 0 | Qualcomm, T-Mobile, ATT, Verizon, KDDI, Nokia | 38.101-1 | 0486 | - | Rel-16 | B | NR\_eMIMO-Core | revised |
| R4-2011919 | CR to add PC3 Pi/2 BPSK DMRS for IE powerBoostPi2BPSK = 0 | Qualcomm, T-Mobile, ATT, Verizon, KDDI, Nokia | 38.101-1 | 0486 | 1 | Rel-16 | B | NR\_eMIMO-Core | revised |
| R4-2011942 | CR to add PC3 Pi/2 BPSK DMRS for IE powerBoostPi2BPSK = 0 | Qualcomm, T-Mobile, AT&T, Verizon, KDDI, Nokia | 38.101-1 | 0486 | 2 | Rel-16 | B | NR\_eMIMO-Core | agreed |
| R4-2009594 | EESS protection related requirements for FR2 bands | Nokia Japan | 38.101-2 | 0214 | - | Rel-15 | F | NR\_newRAT-Core | revised |
| R4-2011910 | EESS protection related requirements for FR2 bands | Nokia Japan | 38.101-2 | 0214 | 1 | Rel-15 | F | NR\_newRAT-Core | not pursued |
| R4-2009595 | EESS protection related requirements for FR2 bands | Nokia Japan | 38.101-2 | 0215 | - | Rel-16 | A | NR\_newRAT-Core | withdrawn |
| R4-2009599 | Clarifications for P-MPR operation in sub-clause 6.2.4 according to the P-MPR reporting agreements. | InterDigital, Inc. | 38.101-2 | 0216 | - | Rel-16 | B | NR\_RF\_FR2\_req\_enh-Core | revised |
| R4-2009657 | CR on Minimum output power and Off power MBW definition in FR2 | Anritsu Corporation | 38.101-2 | 0217 | - | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2009658 | CR on Minimum output power and Off power MBW definition in FR2 | Anritsu Corporation | 38.101-2 | 0218 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2009659 | Correction to a description of PRB for in-band emission with CA in FR2 | Anritsu Corporation | 38.101-2 | 0219 | - | Rel-15 | F | NR\_newRAT-Core | not pursued |
| R4-2009660 | Correction to a description of PRB for in-band emission with CA in FR2 | Anritsu Corporation | 38.101-2 | 0220 | - | Rel-16 | A | NR\_newRAT-Core | withdrawn |
| R4-2009754 | CR to 38.101-2 (Rel-16) intra-band non-cont. DL CA | Intel Corporation | 38.101-2 | 0221 | - | Rel-16 | B | NR\_RF\_FR2\_req\_enh-Core | revised |
| R4-2011739 | CR to 38.101-2 (Rel-16) intra-band non-cont. DL CA | Intel Corporation | 38.101-2 | 0221 | 1 | Rel-16 | B | NR\_RF\_FR2\_req\_enh-Core | agreed |
| R4-2009799 | CR for R15 38.101-2: Clarification of the order of sub-blocks for intra-band non-contiguous CA | CATT | 38.101-2 | 0222 | - | Rel-15 | F | NR\_newRAT-Core | not pursued |
| R4-2009800 | CR for R15 38.101-2: Correction of in-band emission tables | CATT | 38.101-2 | 0223 | - | Rel-15 | F | NR\_newRAT-Core | revised |
| R4-2011690 | CR for R15 38.101-2: Correction of in-band emission tables | CATT | 38.101-2 | 0223 | 1 | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2009801 | CR for R16 38.101-2: Correction of in-band emission tables | CATT | 38.101-2 | 0224 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2009802 | CR for R16 38.101-2: Correction of Table 5.4.3.3-1 | CATT | 38.101-2 | 0225 | - | Rel-16 | F | NR\_newRAT-Core | withdrawn |
| R4-2009949 | Correction for REL16 FR2 contiguous intra-band CA configuration table | Apple Inc. | 38.101-2 | 0226 | - | Rel-16 | F | NR\_newRAT-Core | revised |
| R4-2011776 | Correction for REL16 FR2 contiguous intra-band CA configuration table | Apple Inc. | 38.101-2 | 0226 | 1 | Rel-16 | F | NR\_newRAT-Core | agreed |
| R4-2010048 | CR for TS 38.101-2: Correction on n259 ACS test parameters for Case 1 | Apple Inc. | 38.101-2 | 0227 | - | Rel-16 | F | TEI16 | not pursued |
| R4-2010199 | CR to TS38.101-2 on beam correspondence enhancement | Samsung | 38.101-2 | 0228 | - | Rel-16 | B | NR\_RF\_FR2\_req\_enh-Core | not pursued |
| R4-2010224 | modifiedMPR correction for FR2 REL15 | Nokia, Nokia Shanghai Bell | 38.101-2 | 0229 | - | Rel-15 | F | NR\_newRAT-Core | revised |
| R4-2011691 | modifiedMPR correction for FR2 REL15 | Nokia, Nokia Shanghai Bell | 38.101-2 | 0229 | 1 | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2010225 | modifiedMPR correction for FR2 REL16 | Nokia, Nokia Shanghai Bell | 38.101-2 | 0230 | - | Rel-16 | F | NR\_newRAT-Core | revised |
| R4-2011692 | modifiedMPR correction for FR2 REL16 | Nokia, Nokia Shanghai Bell | 38.101-2 | 0230 | 1 | Rel-16 | F | NR\_newRAT-Core | agreed |
| R4-2010239 | Beam correspondence enhancement | Nokia, Nokia Shanghai Bell | 38.101-2 | 0231 | - | Rel-16 | B | NR\_RF\_FR2\_req\_enh-Core | revised |
| R4-2011738 | Beam correspondence enhancement | Nokia, Nokia Shanghai Bell | 38.101-2 | 0231 | 1 | Rel-16 | B | NR\_RF\_FR2\_req\_enh-Core | revised |
| R4-2011928 | Beam correspondence enhancement | Nokia, Nokia Shanghai Bell | 38.101-2 | 0231 | 2 | Rel-16 | B | NR\_RF\_FR2\_req\_enh-Core | agreed |
| R4-2010321 | CR to TS 38.101-2 on corrections to intra-band contiguous CA configurations (Rel-16) | ZTE Corporation | 38.101-2 | 0232 | - | Rel-16 | F | NR\_CA\_R16\_intra-Core | not pursued |
| R4-2010322 | CR to TS 38.101-2 on corrections to operating bands for intra-band CA (Rel-15) | ZTE Corporation | 38.101-2 | 0233 | - | Rel-15 | F | NR\_newRAT-Core | revised |
| R4-2011927 | CR to TS 38.101-2 on corrections to operating bands for intra-band CA (Rel-15) | ZTE Corporation | 38.101-2 | 0233 | 1 | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2010323 | CR to TS 38.101-2 on corrections to operating bands for intra-band CA (Rel-16) | ZTE Corporation | 38.101-2 | 0234 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2010519 | Correction of ACS requiremet for n259 | Nokia, Nokia Shanghai Bell | 38.101-2 | 0235 | - | Rel-16 | F | NR\_n259-Core | agreed |
| R4-2010535 | Introduction of p-Max to FR2 | Nokia, Nokia Shanghai Bell | 38.101-2 | 0236 | - | Rel-16 | B | LTE\_NR\_DC\_CA\_enh-Core | not pursued |
| R4-2010538 | Introduction of FR2 inter-band DL CA | Nokia, Nokia Shanghai Bell | 38.101-2 | 0237 | - | Rel-16 | F | NR\_RF\_FR2\_req\_enh | revised |
| R4-2011743 | Introduction of FR2 inter-band DL CA | Nokia, Nokia Shanghai Bell | 38.101-2 | 0237 | 1 | Rel-16 | F | NR\_RF\_FR2\_req\_enh | revised |
| R4-2011914 | Introduction of FR2 inter-band DL CA | Nokia, Nokia Shanghai Bell | 38.101-2 | 0237 | 2 | Rel-16 | F | NR\_RF\_FR2\_req\_enh | agreed |
| R4-2010589 | CR for introduction of EESS protection for n257 into general spurious emission | NTT DOCOMO INC. | 38.101-2 | 0238 | - | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2010614 | CR for introduction of EESS protection for n257 into general spurious emission | NTT DOCOMO INC. | 38.101-2 | 0239 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2010628 | CR to TS 38.101-2: Correction on the Aggregated Channel Bandwidth | ZTE Corporation | 38.101-2 | 0240 | - | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2010629 | CR to TS 38.101-2: Correction on the Aggregated Channel Bandwidth | ZTE Corporation | 38.101-2 | 0241 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2010630 | CR to TS 38.101-2: Correction on the PC3 MPR description | ZTE Corporation | 38.101-2 | 0242 | - | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2010631 | CR to TS 38.101-2: Correction on the PC3 MPR description | ZTE Corporation | 38.101-2 | 0243 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2010676 | CR introduction completed band combinations 38.717-01-01 - | Ericsson | 38.101-2 | 0244 | - | Rel-17 | B | NR\_CA\_R17\_Intra-Core | not concluded |
| R4-2011387 | FR2 Minimum output power measurement period definition | Keysight Technologies UK Ltd | 38.101-2 | 0245 | - | Rel-15 | F | NR\_newRAT-Core | revised |
| R4-2011693 | FR2 Minimum output power measurement period definition | Keysight Technologies UK Ltd | 38.101-2 | 0245 | 1 | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2011402 | FR2 Minimum output power measurement period definition | Keysight Technologies UK Ltd | 38.101-2 | 0246 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2011415 | CR for introduction of EESS protection into additional spurious emission | NTT DOCOMO INC. | 38.101-2 | 0247 | - | Rel-15 | F | NR\_newRAT-Core | not pursued |
| R4-2011418 | CR for introduction of EESS protection into additional spurious emission | NTT DOCOMO INC. | 38.101-2 | 0248 | - | Rel-16 | A | NR\_newRAT-Core | withdrawn |
| R4-2011450 | CR to TS38.101-2 on ULFPTx and UE SRS port configuration clarification | Qualcomm Incorporated | 38.101-2 | 0249 | - | Rel-16 | F | NR\_eMIMO-Core | revised |
| R4-2011764 | CR to TS38.101-2 on ULFPTx and UE SRS port configuration clarification | Qualcomm Incorporated | 38.101-2 | 0249 | 1 | Rel-16 | F | NR\_eMIMO-Core | revised |
| R4-2011920 | CR to TS38.101-2 on ULFPTx and UE SRS port configuration clarification | Qualcomm Incorporated | 38.101-2 | 0249 | 2 | Rel-16 | F | NR\_eMIMO-Core | agreed |
| R4-2011451 | CR to 38.101-2: DL CA BW Enhancement and CA REFSENS | Qualcomm Incorporated | 38.101-2 | 0250 | - | Rel-16 | F | NR\_RF\_FR2\_req\_enh | revised |
| R4-2011740 | CR to 38.101-2: DL CA BW Enhancement and CA REFSENS | Qualcomm Incorporated | 38.101-2 | 0250 | 1 | Rel-16 | F | NR\_RF\_FR2\_req\_enh | agreed |
| R4-2011453 | CR to 38.101-2: FR2 UE EIRP increase with IBE relaxation | Qualcomm Incorporated | 38.101-2 | 0251 | - | Rel-16 | B | NR\_RF\_FR2\_req\_enh-Core | revised |
| R4-2011905 | CR to 38.101-2: FR2 UE EIRP increase with IBE relaxation | Qualcomm Incorporated | 38.101-2 | 0251 | 1 | Rel-16 | B | NR\_RF\_FR2\_req\_enh-Core | agreed |
| R4-2011454 | FR2 intra-band non-contiguous UL CA feature | Qualcomm Incorporated | 38.101-2 | 0252 | - | Rel-16 | B | NR\_RF\_FR2\_req\_enh-Core | revised |
| R4-2011744 | FR2 intra-band non-contiguous UL CA feature | Qualcomm Incorporated | 38.101-2 | 0252 | 1 | Rel-16 | B | NR\_RF\_FR2\_req\_enh-Core | agreed |
| R4-2011480 | CR on modified MPR for FR2 | Huawei, HiSilicon | 38.101-2 | 0253 | - | Rel-15 | F | NR\_newRAT-Core | not pursued |
| R4-2011481 | CR for modified MPR\_Rel-16 | Huawei, HiSilicon | 38.101-2 | 0254 | - | Rel-16 | A | NR\_newRAT-Core | withdrawn |
| R4-2011486 | CR on channel space for CA | Huawei, HiSilicon | 38.101-2 | 0255 | - | Rel-15 | F | NR\_newRAT-Core | not pursued |
| R4-2011487 | CR for 38.101-2 channel space for CA\_Rel16 | Huawei, HiSilicon | 38.101-2 | 0256 | - | Rel-16 | A | NR\_newRAT-Core | withdrawn |
| R4-2011513 | CR on PTRS configuration for UL RMC | Huawei, HiSilicon | 38.101-2 | 0257 | - | Rel-15 | F | NR\_newRAT-Core | not pursued |
| R4-2011514 | CR on PTRS configuration for UL RMC-Rel-16 | Huawei, HiSilicon | 38.101-2 | 0258 | - | Rel-16 | A | NR\_newRAT-Core | withdrawn |
| R4-2013044 | Correction of corrupted table | ETSI MCC | 38.101-2 | 0259 | - | Rel-16 | F | TEI16 | agreed |
| R4-2009618 | CR for missing note for DC\_39A\_n41A for non-simultaneous RX/TX operation | Qualcomm Incorporated | 38.101-3 | 0300 | - | Rel-16 | F | TEI16 | agreed |
| R4-2009619 | CR for correcting DC\_48\_n5 UE spurious coexistence in 38.101-3 | Qualcomm Incorporated | 38.101-3 | 0301 | - | Rel-16 | F | TEI16 | agreed |
| R4-2009620 | CR for missing DC\_3A\_n1A Cross Band Noise MSD for large NR UL BW in 38.101-3 | Qualcomm Incorporated | 38.101-3 | 0302 | - | Rel-16 | F | TEI16 | not pursued |
| R4-2009621 | CR for missing IMD MSD in 38.101-3 for DC\_3A-28A\_n41A, DC\_28A-41A\_n77A | Qualcomm Incorporated | 38.101-3 | 0303 | - | Rel-16 | F | TEI16 | agreed |
| R4-2009623 | CR for missing DC\_1A\_n40A Cross Band Noise MSD for large NR UL BW in 38.101-3 | Qualcomm Incorporated | 38.101-3 | 0304 | - | Rel-15 | F | NR\_newRAT | revised |
| R4-2011756 | CR for missing DC\_1A\_n40A Cross Band Noise MSD for large NR UL BW in 38.101-3 | Qualcomm Incorporated | 38.101-3 | 0304 | 1 | Rel-15 | F | NR\_newRAT | not pursued |
| R4-2009624 | CR for missing DC\_1A\_n40A Cross Band Noise MSD for large NR UL BW in 38.101-3 | Qualcomm Incorporated | 38.101-3 | 0305 | - | Rel-16 | A | NR\_newRAT | withdrawn |
| R4-2009625 | CR for missing IMD MSD in 38.101-3 for DC\_1A-41A\_n78A, DC\_7A-28A\_n78A | Qualcomm Incorporated | 38.101-3 | 0306 | - | Rel-15 | F | NR\_newRAT | revised |
| R4-2011757 | CR for missing IMD MSD in 38.101-3 for DC\_1A-41A\_n78A, DC\_7A-28A\_n78A | Qualcomm Incorporated | 38.101-3 | 0306 | 1 | Rel-15 | F | NR\_newRAT | agreed |
| R4-2009626 | CR for missing IMD MSD in 38.101-3 for DC\_1A-41A\_n78A, DC\_7A-28A\_n78A | Qualcomm Incorporated | 38.101-3 | 0307 | - | Rel-16 | A | NR\_newRAT | agreed |
| R4-2009661 | Correction to in-band emissions for intra-band contiguous EN-DC | Anritsu Corporation | 38.101-3 | 0308 | - | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2009662 | Correction to in-band emissions for intra-band contiguous EN-DC | Anritsu Corporation | 38.101-3 | 0309 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2009664 | CR to 7.3B.2.3 BW, SCS and UL RB condition extension | Anritsu Corporation | 38.101-3 | 0310 | - | Rel-15 | F | NR\_newRAT-Core | not pursued |
| R4-2009665 | CR to 7.3B.2.3 BW, SCS and UL RB condition extension | Anritsu Corporation | 38.101-3 | 0311 | - | Rel-16 | A | NR\_newRAT-Core | withdrawn |
| R4-2009824 | CR for TS 38.101-3, Time mask for TDM operation between NR V2X and LTE V2X | CATT | 38.101-3 | 0312 | - | Rel-16 | B | 5G\_V2X\_NRSL-Core | not pursued |
| R4-2009940 | Coexistence cleanup for 38101-3 Rel16 | Apple Inc. | 38.101-3 | 0313 | - | Rel-16 | F | TEI16 | agreed |
| R4-2009948 | CR Editorial cleanup of band combination tables for 38101-3 Rel16 | Apple Inc. | 38.101-3 | 0314 | - | Rel-16 | D | NR\_CA\_R16\_intra-Core | agreed |
| R4-2009951 | CR for simplification of band combination tables for 38101-3 Rel16 with Excel | Apple Inc. | 38.101-3 | 0315 | - | Rel-16 | D | TEI16 | not pursued |
| R4-2009964 | CR to 38.101-3 MSD due to UL harmonics and intermodulation interference | Apple Inc. | 38.101-3 | 0316 | - | Rel-15 | B | NR\_newRAT-Core | revised |
| R4-2011760 | CR to 38.101-3 MSD due to UL harmonics and intermodulation interference | Apple Inc. | 38.101-3 | 0316 | 1 | Rel-15 | F | NR\_newRAT-Core | revised |
| R4-2011938 | CR to 38.101-3 MSD due to UL harmonics and intermodulation interference | Apple Inc., Anritsu | 38.101-3 | 0316 | 2 | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2009965 | CR to 38.101-3 MSD due to UL harmonics and intermodulation interference R16 | Apple Inc. | 38.101-3 | 0317 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2009975 | CR to correct protected band of intra-band EN-DC | KDDI Corporation | 38.101-3 | 0318 | - | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2009976 | CR to correct protected band of intra-band EN-DC | KDDI Corporation | 38.101-3 | 0319 | - | Rel-16 | F | TEI16 | agreed |
| R4-2010020 | CR to TS 38.101-3: corrections on MSD table due to harmonic interference for EN-DC FR1 | Xiaomi | 38.101-3 | 0320 | - | Rel-15 | F | NR\_newRAT-Core | not pursued |
| R4-2010021 | CR to TS 38.101-3 R16: corrections on MSD table for EN-DC FR1 | Xiaomi | 38.101-3 | 0321 | - | Rel-16 | A | NR\_newRAT-Core | withdrawn |
| R4-2010046 | CR for TS 38.101-3: FR1 inter-band EN-DC out-of-band blocking UL configuration | Apple Inc. | 38.101-3 | 0322 | - | Rel-15 | F | NR\_newRAT-Core | revised |
| R4-2011936 | CR for TS 38.101-3: FR1 inter-band EN-DC out-of-band blocking UL configuration | Apple Inc. | 38.101-3 | 0322 | 1 | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2010047 | CR for TS 38.101-3: FR1 inter-band EN-DC out-of-band blocking UL configuration | Apple Inc. | 38.101-3 | 0323 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2010088 | CR to TS 38.101-3: PC2 band 3+band n78 ENDC | China Unicom | 38.101-3 | 0324 | - | Rel-16 | B | ENDC\_UE\_PC2\_FDD\_TDD-Core | revised |
| R4-2011785 | CR to TS 38.101-3: PC2 band 3+band n78 ENDC | China Unicom | 38.101-3 | 0324 | 1 | Rel-16 | B | ENDC\_UE\_PC2\_FDD\_TDD-Core | revised |
| R4-2011923 | CR to TS 38.101-3: PC2 band 3+band n78 ENDC | China Unicom | 38.101-3 | 0324 | 2 | Rel-16 | B | ENDC\_UE\_PC2\_FDD\_TDD-Core | revised |
| R4-2011941 | CR to TS 38.101-3: PC2 band 3+band n78 ENDC | China Unicom | 38.101-3 | 0324 | 3 | Rel-16 | B | ENDC\_UE\_PC2\_FDD\_TDD-Core | agreed |
| R4-2010123 | Corrections of Japan-related EN-DC co-ex tables for REL-15 combo | SoftBank Corp., NTT docomo INC., KDDI Corporation | 38.101-3 | 0325 | - | Rel-15 | F | NR\_newRAT-Core | revised |
| R4-2011759 | Corrections of Japan-related EN-DC co-ex tables for REL-15 combo | SoftBank Corp., NTT docomo INC., KDDI Corporation, Huawei, HiSilicon | 38.101-3 | 0325 | 1 | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2010124 | Corrections of Japan-related EN-DC co-ex tables for REL-15 combo | SoftBank Corp., NTT docomo INC., KDDI Corporation, Huawei, HiSilicon | 38.101-3 | 0326 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2010125 | Corrections of Japan-related EN-DC co-ex tables for REL-16 combo | SoftBank Corp., NTT docomo INC., KDDI Corporation | 38.101-3 | 0327 | - | Rel-16 | F | DC\_R16\_1BLTE\_1BNR\_2DL2UL-Core | not pursued |
| R4-2010132 | Introducing CR on new EN-DC LTE(xDL/1UL)+ NR(2DL/1UL) DC in Rel-17 | LG Electronics Polska | 38.101-3 | 0328 | - | Rel-17 | B | DC\_R17\_xBLTE\_2BNR\_yDL2UL-Core | not concluded |
| R4-2010138 | Correction on 5G V2X con-current UE RF requirements in rel-16 | LG Electronics France | 38.101-3 | 0329 | - | Rel-16 | F | 5G\_V2X\_NRSL-Core | revised |
| R4-2011717 | Correction on 5G V2X con-current UE RF requirements in rel-16 | LG Electronics France | 38.101-3 | 0329 | 1 | Rel-16 | F | 5G\_V2X\_NRSL-Core | agreed |
| R4-2010289 | CR on TS38.101-3 for NR V2X | vivo | 38.101-3 | 0330 | - | Rel-16 | F | 5G\_V2X\_NRSL-Core | revised |
| R4-2011718 | CR on TS38.101-3 for NR V2X | vivo | 38.101-3 | 0330 | 1 | Rel-16 | F | 5G\_V2X\_NRSL-Core | agreed |
| R4-2010351 | Introduction of EN-DC power class 2 for FDD-TDD band combinations | Ericsson | 38.101-3 | 0331 | - | Rel-16 | B | ENDC\_UE\_PC2\_FDD\_TDD-Core | revised |
| R4-2011786 | Introduction of EN-DC power class 2 for FDD-TDD band combinations | Ericsson | 38.101-3 | 0331 | 1 | Rel-16 | B | ENDC\_UE\_PC2\_FDD\_TDD-Core | not pursued |
| R4-2010398 | CR to introduce new combinations of LTE 4band + NR 1band for TS 38.101-3 | Nokia, Nokia Shanghai Bell | 38.101-3 | 0332 | - | Rel-17 | B | DC\_R17\_4BLTE\_1BNR\_5DL2UL | not concluded |
| R4-2010598 | Remove power-class ambiguity for UL-MIMO PC2 capable UE configured for EN-DC | Ericsson | 38.101-3 | 0333 | - | Rel-15 | F | NR\_newRAT-Core | not pursued |
| R4-2010632 | CR to TS 38.101-3: PC2 band 3+band n41 ENDC | ZTE Corporation, CMCC, Xiaomi | 38.101-3 | 0334 | - | Rel-16 | B | ENDC\_UE\_PC2\_FDD\_TDD-Core | not pursued |
| R4-2011788 | CR to TS 38.101-3: PC2 band 3+band n41 ENDC | ZTE Corporation, CMCC, Xiaomi | 38.101-3 | 0334 | 1 | Rel-16 | B | ENDC\_UE\_PC2\_FDD\_TDD-Core | revised |
| R4-2011924 | CR to TS 38.101-3: PC2 band 3+band n41 ENDC | ZTE Corporation, CMCC, Xiaomi | 38.101-3 | 0334 | 2 | Rel-16 | B | ENDC\_UE\_PC2\_FDD\_TDD-Core | endorsed |
| R4-2010639 | CR to TS 38.101-3: Clean up the MSD test point for ENDC(three band) | ZTE Corporation | 38.101-3 | 0335 | - | Rel-16 | F | DC\_R16\_2BLTE\_1BNR\_3DL2UL-Core | agreed |
| R4-2010677 | CR introduction completed band combinations 37.717-31-11 - | Ericsson | 38.101-3 | 0336 | - | Rel-17 | B | DC\_R17\_3BLTE\_1BNR\_4DL2UL-Core | not concluded |
| R4-2010679 | CR introduction completed band combinations 38.717-04-01 - | Ericsson | 38.101-3 | 0337 | - | Rel-17 | B | NR\_CA\_R17\_4BDL\_1BUL-Core | not concluded |
| R4-2010766 | CR on clarification of NR requirements under EN-DC | OPPO | 38.101-3 | 0338 | - | Rel-16 | F | TEI16 | not pursued |
| R4-2010794 | Addition of missing exception for n78 | Rohde & Schwarz | 38.101-3 | 0339 | - | Rel-15 | F | NR\_newRAT-Core | not pursued |
| R4-2010795 | Addition of missing exception for n78 | Rohde & Schwarz | 38.101-3 | 0340 | - | Rel-16 | A | NR\_newRAT-Core | withdrawn |
| R4-2010825 | CR for 38.101-3 Correction on EN-DC DL Synchronous carriers | Huawei, HiSilicon | 38.101-3 | 0341 | - | Rel-15 | F | NR\_newRAT-Core | not pursued |
| R4-2010826 | CR for 38.101-3 Correction on EN-DC synchronous carriers (R16) | Huawei, HiSilicon | 38.101-3 | 0342 | - | Rel-16 | A | NR\_newRAT-Core | withdrawn |
| R4-2010849 | CR for adding SAR solutions for FDD+TDD EN-DC PC2 UE | vivo | 38.101-3 | 0343 | - | Rel-16 | B | ENDC\_UE\_PC2\_FDD\_TDD-Core | revised |
| R4-2011896 | CR for adding SAR solutions for FDD+TDD EN-DC PC2 UE | vivo | 38.101-3 | 0343 | 1 | Rel-16 | B | ENDC\_UE\_PC2\_FDD\_TDD-Core | not pursued |
| R4-2010855 | Correction of delta Powerclass for Inter-band EN-DC | vivo, CMCC, China Unicom | 38.101-3 | 0344 | - | Rel-16 | F | ENDC\_UE\_PC2\_TDD\_TDD | agreed |
| R4-2010921 | CR for 38.101-3 to correct spurious emission band UE co-existence for DC\_1\_n28 | Huawei, HiSilicon | 38.101-3 | 0345 | - | Rel-15 | F | NR\_newRAT-Core | not pursued |
| R4-2010922 | CR for 38.101-3 to correct spurious emission band UE co-existence for DC\_1\_n28 (Rel-16) | Huawei, HiSilicon | 38.101-3 | 0346 | - | Rel-16 | A | NR\_newRAT-Core | withdrawn |
| R4-2010924 | CR for 38.101-1 to remove PHS system and 860~890 protection for NR CA band combination with band n1 and band n8 | Huawei, HiSilicon | 38.101-3 | 0347 | - | Rel-16 | F | DC\_R16\_1BLTE\_1BNR\_2DL2UL-Core | revised |
| R4-2011780 | CR for 38.101-3 to remove PHS system, 860~890 and 1400~1427 protection for EN-DC band combination with band n1, n8 and n50 | Huawei, HiSilicon | 38.101-3 | 0347 | 1 | Rel-16 | F | DC\_R16\_1BLTE\_1BNR\_2DL2UL-Core | agreed |
| R4-2011460 | CR to 38.101-3 - Correction DC\_42\_n79 simultaneous Tx/Rx operation | Skyworks Solutions Inc. | 38.101-3 | 0348 | - | Rel-15 | F | NR\_newRAT-Core | not pursued |
| R4-2011490 | CR on inter-band ENDC Pcmax | Huawei, HiSilicon | 38.101-3 | 0349 | - | Rel-16 | F | TEI6 | agreed |
| R4-2011500 | CR to 38.101-3 on time masks for ULSUP in R16 | Huawei Technologies France | 38.101-3 | 0350 | - | Rel-16 | B | NR\_RF\_FR1-Core | revised |
| R4-2011730 | CR to 38.101-3 on time masks for ULSUP in R16 | Huawei Technologies France | 38.101-3 | 0350 | 1 | Rel-16 | B | NR\_RF\_FR1-Core | agreed |
| R4-2011515 | CR to 38.101-3 - Correction to cross band isolation MSD tables and DC\_42\_n79 | Skyworks Solutions Inc., Mediatek | 38.101-3 | 0351 | - | Rel-16 | F | NR\_newRAT-Core | revised |
| R4-2011778 | CR to 38.101-3 - Correction to cross band isolation MSD tables and DC\_42\_n79 | Skyworks Solutions Inc., Mediatek | 38.101-3 | 0351 | 1 | Rel-16 | F | NR\_newRAT-Core | agreed |
| R4-2011720 | CR for 38.101-3 Switching time mask for inter-band EN-DC UEs only supporting single switched UL | Huawei, HiSilicon | 38.101-3 | 0352 | - | Rel-16 | F | LTE\_NR\_DC\_CA\_enh-Core | revised |
| R4-2011933 | CR for 38.101-3 Switching time mask for inter-band EN-DC UEs only supporting single switched UL | Huawei, HiSilicon | 38.101-3 | 0352 | 1 | Rel-16 | F | LTE\_NR\_DC\_CA\_enh-Core | agreed |
| R4-2011922 | CR for TS 38.101-3 introduce new power class for EN-DC | Huawei, HiSilicon | 38.101-3 | 0353 | - | Rel-16 | F | TEI16 | agreed |
| R4-2009538 | CR to ZP-CSI-RS configuration | ANRITSU LTD | 38.101-4 | 0058 | - | Rel-15 | F | NR\_newRAT-Perf | revised |
| R4-2012594 | CR to ZP-CSI-RS configuration | ANRITSU LTD | 38.101-4 | 0058 | 1 | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2009539 | CR to ZP-CSI-RS configuration | ANRITSU LTD | 38.101-4 | 0059 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2009540 | CR to 2Rx PDSCH mapping type B | ANRITSU LTD | 38.101-4 | 0060 | - | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2009541 | CR to 2Rx PDSCH mapping type B | ANRITSU LTD | 38.101-4 | 0061 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2010076 | CR on HST-SFN requirements for TDD | CMCC | 38.101-4 | 0062 | - | Rel-16 | B | NR\_HST-Perf | revised |
| R4-2012669 | CR on HST-SFN requirements for TDD | CMCC | 38.101-4 | 0062 | 1 | Rel-16 | B | NR\_HST-Perf | endorsed |
| R4-2010103 | draftCR: Introduction of NR PDSCH FR1 CA 2Rx performance requirements | CMCC | 38.101-4 | 0063 | - | Rel-16 | B | NR\_perf\_enh-Perf | withdrawn |
| R4-2010175 | draftCR: Introduction of NR PDSCH FR1 CA 2Rx performance requirements | CMCC | 38.101-4 | 0064 | - | Rel-16 | B | NR\_perf\_enh-Perf | withdrawn |
| R4-2010798 | Reintroduction of missing FR1 RMC | Rohde & Schwarz | 38.101-4 | 0065 | - | Rel-15 | F | NR\_newRAT-Perf | not pursued |
| R4-2010799 | Reintroduction of missing FR1 RMC | Rohde & Schwarz | 38.101-4 | 0066 | - | Rel-16 | A | NR\_newRAT-Perf | withdrawn |
| R4-2010910 | CR to TS 38.101-4: HST-SFN FDD performance requirements | Intel Corporation | 38.101-4 | 0067 | - | Rel-16 | B | NR\_HST-Perf | revised |
| R4-2012670 | CR to TS 38.101-4: HST-SFN FDD performance requirements | Intel Corporation | 38.101-4 | 0067 | 1 | Rel-16 | B | NR\_HST-Perf | endorsed |
| R4-2010911 | CR to TS 38.101-4: Propagation conditions for HST scenarios | Intel Corporation | 38.101-4 | 0068 | - | Rel-16 | B | NR\_HST-Perf | revised |
| R4-2012674 | CR to TS 38.101-4: Propagation conditions for HST scenarios | Intel Corporation | 38.101-4 | 0068 | 1 | Rel-16 | B | NR\_HST-Perf | endorsed |
| R4-2010985 | CR to TS 38.101-4: Applicability rules for URLLC CSI requirements | Huawei, HiSilicon | 38.101-4 | 0069 | - | Rel-16 | B | NR\_L1enh\_URLLC-Perf | revised |
| R4-2012653 | CR to TS 38.101-4: Applicability rules for URLLC CSI requirements | Huawei, HiSilicon | 38.101-4 | 0069 | 1 | Rel-16 | B | NR\_L1enh\_URLLC-Perf | not pursued |
| R4-2010986 | CR to TS 38.101-4: Applicability rules for URLLC UE demodulation requirements | Huawei, HiSilicon | 38.101-4 | 0070 | - | Rel-16 | B | NR\_L1enh\_URLLC-Perf | revised |
| R4-2012651 | CR to TS 38.101-4: Applicability rules for URLLC UE demodulation requirements | Huawei, HiSilicon | 38.101-4 | 0070 | 1 | Rel-16 | B | NR\_L1enh\_URLLC-Perf | not pursued |
| R4-2010987 | CR to TS 38.101-4: Performance requirements for URLLC PDSCH repetitions over multiple slots | Huawei, HiSilicon | 38.101-4 | 0071 | - | Rel-16 | B | NR\_L1enh\_URLLC-Perf | revised |
| R4-2012650 | CR to TS 38.101-4: Performance requirements for URLLC PDSCH repetitions over multiple slots | Huawei, HiSilicon | 38.101-4 | 0071 | 1 | Rel-16 | B | NR\_L1enh\_URLLC-Perf | endorsed |
| R4-2011001 | CR on HST single-tap and HST multi-path fading requirements | Huawei, HiSilicon | 38.101-4 | 0072 | - | Rel-16 | B | NR\_HST-Perf | revised |
| R4-2012671 | CR on HST single-tap and HST multi-path fading requirements | Huawei, HiSilicon | 38.101-4 | 0072 | 1 | Rel-16 | B | NR\_HST-Perf | endorsed |
| R4-2011006 | CR on applicability rules for HST scenarios | Huawei, HiSilicon | 38.101-4 | 0073 | - | Rel-16 | B | NR\_HST-Perf | revised |
| R4-2012675 | CR on applicability rules for HST scenarios | Huawei, HiSilicon | 38.101-4 | 0073 | 1 | Rel-16 | B | NR\_HST-Perf | endorsed |
| R4-2011014 | CR for TS 38.101-4: Applicability for NR PMI requirements with Tx ports larger than 8 and up to 32 | Huawei, HiSilicon | 38.101-4 | 0074 | - | Rel-16 | B | NR\_perf\_enh-Perf | agreed |
| R4-2011367 | Addition of Rel-16 SP Type I PMI tests, FRCs, and spatial correlation matrices | Ericsson | 38.101-4 | 0075 | - | Rel-16 | B | NR\_perf\_enh-Perf | agreed |
| R4-2011369 | Addition of Rel-16 HST FRCs | Ericsson | 38.101-4 | 0076 | - | Rel-16 | B | NR\_HST-Perf | revised |
| R4-2012672 | Addition of Rel-16 HST FRCs | Ericsson | 38.101-4 | 0076 | 1 | Rel-16 | B | NR\_HST-Perf | endorsed |
| R4-2011401 | CR on Corrections in 38.101-4 | Qualcomm Incorporated | 38.101-4 | 0077 | - | Rel-15 | F | NR\_newRAT-Perf | revised |
| R4-2012593 | CR on Corrections in 38.101-4 | Qualcomm Incorporated | 38.101-4 | 0077 | 1 | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2012595 | CR on Corrections in 38.101-4 | Qualcomm Incorporated | 38.101-4 | 0078 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2009590 | LTE/NR spectrum sharing in Band 40/n40 | Reliance Jio | 38.104 | 0214 | - | Rel-17 | B | DSS\_LTE\_B40\_NR\_Bn40-Core | revised |
| R4-2011823 | LTE/NR spectrum sharing in Band 40/n40 | Reliance Jio | 38.104 | 0214 | 1 | Rel-17 | B | DSS\_LTE\_B40\_NR\_Bn40-Core | endorsed |
| R4-2009634 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 38.104 | CMCC | 38.104 | 0215 | - | Rel-17 | B | NR\_SUL\_band\_1880\_1920MHz | revised |
| R4-2011804 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 38.104 | CMCC | 38.104 | 0215 | 1 | Rel-17 | B | NR\_SUL\_band\_1880\_1920MHz | not pursued |
| R4-2009645 | Introduction of 2300-2400MHz SUL band into Rel-17 TS 38.104 | CMCC | 38.104 | 0216 | - | Rel-17 | B | NR\_SUL\_band\_2300\_2400MHz | revised |
| R4-2011815 | Introduction of 2300-2400MHz SUL band into Rel-17 TS 38.104 | CMCC | 38.104 | 0216 | 1 | Rel-17 | B | NR\_SUL\_band\_2300\_2400MHz | not pursued |
| R4-2009825 | CR for TS 38.104, Introduce BS impact of NR V2X | CATT | 38.104 | 0217 | - | Rel-16 | B | 5G\_V2X\_NRSL-Core | revised |
| R4-2011916 | CR for TS 38.104, Introduce BS impact of NR V2X | CATT | 38.104 | 0217 | 1 | Rel-16 | B | 5G\_V2X\_NRSL-Core | not pursued |
| R4-2009852 | CR for 38.104: HST PUSCH demodulation requirements | Nokia, Nokia Shanghai Bell | 38.104 | 0218 | - | Rel-16 | B | NR\_HST-Perf | revised |
| R4-2012679 | CR for 38.104: HST PUSCH demodulation requirements | Nokia, Nokia Shanghai Bell | 38.104 | 0218 | 1 | Rel-16 | B | NR\_HST-Perf | agreed |
| R4-2009853 | CR for 38.104: HST PUSCH demodulation FRC and channel model annexes | Nokia, Nokia Shanghai Bell | 38.104 | 0219 | - | Rel-16 | B | NR\_HST-Perf | revised |
| R4-2012680 | CR for 38.104: HST PUSCH demodulation FRC and channel model annexes | Nokia, Nokia Shanghai Bell | 38.104 | 0219 | 1 | Rel-16 | B | NR\_HST-Perf | agreed |
| R4-2009937 | Introduction of LTE/NR spectrum sharing in band 48/n48 frequency range | Apple Inc., Comcast | 38.104 | 0220 | - | Rel-16 | B | NR\_n48\_LTE\_48\_coex-Core | revised |
| R4-2011926 | Introduction of LTE/NR spectrum sharing in band 48/n48 frequency range | Apple Inc., Comcast | 38.104 | 0220 | 1 | Rel-16 | B | NR\_n48\_LTE\_48\_coex-Core | agreed |
| R4-2010178 | CR to TS 38.104: Correction of co-location requirement in subclause 7.5.3 | Ericsson | 38.104 | 0221 | - | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2010179 | CR to TS 38.104: Correction of co-location requirement in subclause 7.5.3 | Ericsson | 38.104 | 0222 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2010621 | CR to TS38.104: Add 30k SSB SCS for Band n34 and n39 | ZTE Corporation | 38.104 | 0223 | - | Rel-15 | F | NR\_newRAT-Core | revised |
| R4-2011684 | CR to TS38.104: Add 30k SSB SCS for Band n34 and n39 | ZTE Corporation | 38.104 | 0223 | 1 | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2010622 | CR to TS38.104: Add 30k SSB SCS for Band n34 and n39 | ZTE Corporation | 38.104 | 0224 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2010738 | CR to TS 38.104: Introduction of NR-U into BS core specification | Nokia, Nokia Shanghai Bell | 38.104 | 0225 | - | Rel-16 | B | NR\_unlic-Core | revised |
| R4-2012608 | CR to TS 38.104: Introduction of NR-U into BS core specification | Nokia, Nokia Shanghai Bell | 38.104 | 0225 | 1 | Rel-16 | B | NR\_unlic-Core | not concluded |
| R4-2010762 | CR to TS 38.104: OTA receiver spurious requirements for EESS protection (rel-15) | NEC | 38.104 | 0226 | - | Rel-15 | F | NR\_newRAT-Core | revised |
| R4-2012580 | CR to TS 38.104: OTA receiver spurious requirements for EESS protection (rel-15) | NEC, Nokia, Ericsson | 38.104 | 0226 | 1 | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2010763 | CR to TS 38.104: OTA receiver spurious requirements for EESS protection (rel-16) | NEC | 38.104 | 0227 | - | Rel-16 | A | NR\_newRAT-Core | revised |
| R4-2012747 | CR to TS 38.104: OTA receiver spurious requirements for EESS protection (rel-16) | NEC, Nokia, Ericsson | 38.104 | 0227 | 1 | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2010781 | CR for 38.104: Performance requirements for UL timing adjustment | ZTE Wistron Telecom AB | 38.104 | 0228 | - | Rel-16 | F | NR\_perf\_enh-Perf | agreed |
| R4-2010834 | Correction to NB-IoT Bands with n26 | Dish Network | 38.104 | 0229 | - | Rel-16 | F | TEI16 | agreed |
| R4-2010961 | Introduction of NR-U BS RX requirement into TS38.104 | ZTE Corporation | 38.104 | 0230 | - | Rel-16 | B | NR\_unlic-Core | merged |
| R4-2010988 | CR to TS 38.104: Performance requirements for URLLC PUSCH repetition Type A | Huawei, HiSilicon | 38.104 | 0231 | - | Rel-16 | B | NR\_L1enh\_URLLC-Perf | revised |
| R4-2012655 | CR to TS 38.104: Performance requirements for URLLC PUSCH repetition Type A | Huawei, HiSilicon | 38.104 | 0231 | 1 | Rel-16 | B | NR\_L1enh\_URLLC-Perf | endorsed |
| R4-2011285 | CR to 38.104: Annex B and C clarification on equlisation calculation (B.6, C.6) | Keysight Technologies UK Ltd, Rohde & Schwarz | 38.104 | 0232 | - | Rel-15 | F | NR\_newRAT-Perf | revised |
| R4-2012586 | CR to 38.104: Annex B and C clarification on equlisation calculation (B.6, C.6) | Keysight Technologies UK Ltd, Rohde & Schwarz, Nokia | 38.104 | 0232 | 1 | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2011288 | CR to 38.104: Annex B and C clarification on equlisation calculation (B.6, C.6) | Keysight Technologies UK Ltd, Rohde & Schwarz,Nokia | 38.104 | 0233 | - | Rel-16 | A | NR\_newRAT-Perf | revised |
| R4-2012752 | CR to 38.104: Annex B and C clarification on equlisation calculation (B.6, C.6) | Keysight Technologies UK Ltd, Rohde & Schwarz,Nokia | 38.104 | 0233 | 1 | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2011898 | 7.5 kHz UL shift for LTE/NR spectrum sharing in Band 38/n38 | VODAFONE Group Plc | 38.104 | 0234 | - | Rel-15 | F | NR\_newRAT-Core | not concluded |
| R4-2011899 | 7.5 kHz UL shift for LTE/NR spectrum sharing in Band 38/n38 - 38104, Rel-16 | VODAFONE Group Plc | 38.104 | 0235 | - | Rel-16 | A | NR\_newRAT-Core | not concluded |
| R4-2011901 | 7.5 kHz UL shift for LTE/NR spectrum sharing in Band 38/n38 | VODAFONE Group Plc | 38.104 | 0236 | - | Rel-17 | B | DSS\_LTE\_B38\_NR\_Bn38 | endorsed |
| R4-2011264 | CR to TS 38.113: direct field strength measurements for the EMC RE, Rel-15 | Huawei | 38.113 | 0021 | - | Rel-15 | F | NR\_newRAT-Perf | revised |
| R4-2012577 | CR to TS 38.113: direct field strength measurements for the EMC RE, Rel-15 | Huawei | 38.113 | 0021 | 1 | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2011265 | CR to TS 38.113: direct field strength measurements for the EMC RE, Rel-16 | Huawei | 38.113 | 0022 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2010600 | CR to TS 38.124 combined correction R15 | Xiaomi | 38.124 | 0025 | - | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2012576 | [UE EMC] CR to TS 38.124 combined correction R15 | Xiaomi | 38.124 | 0025 | 1 | Rel-15 | F | NR\_newRAT-Core | withdrawn |
| R4-2010601 | CR to TS 38.124 combined correction R16 | Xiaomi | 38.124 | 0026 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2010602 | CR to TS 38.124: additional EMC requirements for different features correction R15 | Xiaomi | 38.124 | 0027 | - | Rel-15 | F | NR\_newRAT-Core | not pursued |
| R4-2010603 | [UE EMC] CR to TS38.124 additional EMC requirements for different features correction R16 | Xiaomi | 38.124 | 0028 | - | Rel-16 | A | NR\_newRAT-Core | withdrawn |
| R4-2009542 | CR to Redirection from NR in FR1 to E-UTRAN | ANRITSU LTD | 38.133 | 0888 | - | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2009543 | CR to Redirection from NR in FR1 to E-UTRAN | ANRITSU LTD | 38.133 | 0889 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2009544 | CR to timing advance adjustment accuracy in FR1 | ANRITSU LTD | 38.133 | 0890 | - | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2009545 | CR to timing advance adjustment accuracy in FR1 | ANRITSU LTD | 38.133 | 0891 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2009548 | CR to SA event triggered reporting tests with per-UE gaps | ANRITSU LTD | 38.133 | 0892 | - | Rel-15 | F | NR\_newRAT-Perf | postponed |
| R4-2012069 | CR to SA event triggered reporting tests with per-UE gaps | ANRITSU LTD | 38.133 | 0892 | 1 | Rel-15 | F | NR\_newRAT-Perf | withdrawn |
| R4-2009549 | CR to SA event triggered reporting tests with per-UE gaps | ANRITSU LTD | 38.133 | 0893 | - | Rel-16 | A | NR\_newRAT-Perf | withdrawn |
| R4-2009550 | CR to SS-RSRQ Intra-Frequency and Inter-frequency FR1 measurement accuracy | ANRITSU LTD | 38.133 | 0894 | - | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2009551 | CR to SS-RSRQ Intra-Frequency and Inter-frequency FR1 measurement accuracy | ANRITSU LTD | 38.133 | 0895 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2009552 | Update to FR2 240kHz SSB Configurations | ANRITSU LTD | 38.133 | 0896 | - | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2009553 | Update to FR2 240kHz SSB Configurations | ANRITSU LTD | 38.133 | 0897 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2009558 | Update of FR2 Random Access Test cases | ANRITSU LTD | 38.133 | 0898 | - | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2009559 | Update of FR2 Random Access Test cases | ANRITSU LTD | 38.133 | 0899 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2009563 | Update to FR2 event-triggered reporting RRM Test cases in A.5.6 and A.7.6 | ANRITSU LTD | 38.133 | 0900 | - | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2009564 | Update to FR2 event-triggered reporting RRM Test cases in A.5.6 and A.7.6 | ANRITSU LTD | 38.133 | 0901 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2009565 | Update to FR2 SS-RSRP RRM Test cases in A.5.7 and A.7.7 | ANRITSU LTD | 38.133 | 0902 | - | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2009566 | Update to FR2 SS-RSRP RRM Test cases in A.5.7 and A.7.7 | ANRITSU LTD | 38.133 | 0903 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2009567 | CR to EN-DC timing advance adjustment accuracy in FR2 | ANRITSU LTD | 38.133 | 0904 | - | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2009568 | CR to EN-DC timing advance adjustment accuracy in FR2 | ANRITSU LTD | 38.133 | 0905 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2009569 | CR to configuration of CSI-RS for tracking | ANRITSU LTD | 38.133 | 0906 | - | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2009570 | CR to configuration of CSI-RS for tracking | ANRITSU LTD | 38.133 | 0907 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2009571 | Update of RRC-based Active BWP Switch test cases | ANRITSU LTD | 38.133 | 0908 | - | Rel-15 | F | NR\_newRAT-Perf | revised |
| R4-2012070 | Update of RRC-based Active BWP Switch test cases | ANRITSU LTD | 38.133 | 0908 | 1 | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2009572 | Update of RRC-based Active BWP Switch test cases | ANRITSU LTD | 38.133 | 0909 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2009573 | Update to FR2 Annex B RRM side conditions | ANRITSU LTD | 38.133 | 0910 | - | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2009574 | Update to FR2 Annex B RRM side conditions | ANRITSU LTD | 38.133 | 0911 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2009575 | Add UE Beam assumption for RRM Test cases in A.5.5 | ANRITSU LTD | 38.133 | 0912 | - | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2009576 | Add UE Beam assumption for RRM Test cases in A.5.5 | ANRITSU LTD | 38.133 | 0913 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2009598 | Introduction of the P-MPR 3 bits report mapping in 38.133 | InterDigital, Inc. | 38.133 | 0914 | - | Rel-16 | B | NR\_RF\_FR2\_req\_enh-Core | revised |
| R4-2011736 | Introduction of the P-MPR 2 bits report mapping in 38.133 | InterDigital, Inc. | 38.133 | 0914 | 1 | Rel-16 | B | NR\_RF\_FR2\_req\_enh-Core | agreed |
| R4-2011735 | Introduction of MPE related P-MPR operation in sub-clause 6.2.4 | InterDigital, Inc. | 38.133 | 0914 | 2 | Rel-16 | B | NR\_RF\_FR2\_req\_enh-Core | agreed |
| R4-2009601 | CR on Active BWP switch and Active TCI State Switching requirements - Rel15 | Apple | 38.133 | 0915 | - | Rel-15 | F | NR\_newRAT-Core | withdrawn |
| R4-2009602 | CR on Active BWP switch and Active TCI State Switching requirements - Rel16 | Apple | 38.133 | 0916 | - | Rel-16 | A | NR\_newRAT-Core | withdrawn |
| R4-2009603 | CR on Requirement for MAC-CE based TCI State Switch-EN-DC-Rel15 | Apple | 38.133 | 0917 | - | Rel-15 | F | NR\_newRAT-Perf | merged |
| R4-2009604 | CR on Requirement for MAC-CE based TCI State Switch-EN-DC-Rel16 | Apple | 38.133 | 0918 | - | Rel-16 | A | NR\_newRAT-Perf | withdrawn |
| R4-2009605 | CR on Requirement for MAC-CE based TCI State Switch-SA-Rel15 | Apple | 38.133 | 0919 | - | Rel-15 | F | NR\_newRAT-Perf | merged |
| R4-2009606 | CR on Requirement for MAC-CE based TCI State Switch-SA-Rel16 | Apple | 38.133 | 0920 | - | Rel-16 | A | NR\_newRAT-Perf | withdrawn |
| R4-2009668 | Add UE Beam assumption for RRM Test cases in A.7.5 Rel-15 | Samsung | 38.133 | 0921 | - | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2009669 | Add UE Beam assumption for RRM Test cases in A.7.5 Rel-16 | Samsung | 38.133 | 0922 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2009682 | [CR] Applicable timing for the PL RS activated by MAC-CE | ZTE Corporation | 38.133 | 0923 | - | Rel-16 | B | NR\_eMIMO-Core | merged |
| R4-2009686 | Maintenance CR for 2-step RA | ZTE Corporation | 38.133 | 0924 | - | Rel-16 | F | NR\_2step\_RACH-Core | revised |
| R4-2012184 | Maintenance CR for 2-step RA | ZTE Corporation | 38.133 | 0924 | 1 | Rel-16 | F | NR\_2step\_RACH-Core | agreed |
| R4-2009744 | CR to TS 38.133: PRS RSTD requirements | Intel Corporation | 38.133 | 0925 | - | Rel-16 | B | NR\_pos-Core | revised |
| R4-2012129 | CR to TS 38.133: PRS RSTD requirements | Intel Corporation | 38.133 | 0925 | 1 | Rel-16 | B | NR\_pos-Core | revised |
| R4-2012264 | CR to TS 38.133: PRS RSTD requirements | Intel Corporation | 38.133 | 0925 | 2 | Rel-16 | B | NR\_pos-Core | agreed |
| R4-2009748 | Intra-band Inter-frequency sync DAPS handover test in SA for FR1 | Intel Corporation | 38.133 | 0926 | - | Rel-16 | B | NR\_Mob\_enh-Perf | postponed |
| R4-2009749 | Intra-band Inter-frequency async DAPS handover test in SA for FR1 | Intel Corporation | 38.133 | 0927 | - | Rel-16 | B | NR\_Mob\_enh-Perf | postponed |
| R4-2009763 | CR on capabilities for support of event triggering and reporting criteria | Xiaomi | 38.133 | 0928 | - | Rel-16 | F | NR\_CSIRS\_L3meas-Core | revised |
| R4-2012175 | CR on capabilities for support of event triggering and reporting criteria | Xiaomi | 38.133 | 0928 | 1 | Rel-16 | F | NR\_CSIRS\_L3meas-Core | agreed |
| R4-2009764 | CR on measurement relaxation requirements for UEs under power saving mode | Xiaomi | 38.133 | 0929 | - | Rel-16 | F | NR\_UE\_pow\_sav-Core | postponed |
| R4-2009767 | CR on MRTD requirement for FR2 inter-band CA | Xiaomi | 38.133 | 0930 | - | Rel-16 | F | NR\_RF\_FR2\_req\_enh | postponed |
| R4-2009803 | CR for TS38.133 Rel-16, Corrction for SCell activation delay requirement | CATT | 38.133 | 0931 | - | Rel-16 | F | NR\_newRAT-Core | agreed |
| R4-2009804 | CR for TS38.133 Rel-15, Correction for RRM core requirements | CATT | 38.133 | 0932 | - | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2009805 | CR for TS38.133 Rel-16, Correction for RRM core requirements | CATT | 38.133 | 0933 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2009806 | CR for TS38.133 Rel-15, Correction for test cases of BWP switching | CATT | 38.133 | 0934 | - | Rel-15 | F | NR\_newRAT-Perf | revised |
| R4-2012071 | CR for TS38.133 Rel-15, Correction for test cases of BWP switching | CATT | 38.133 | 0934 | 1 | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2009807 | CR for TS38.133 Rel-16, Correction for test cases of BWP switching | CATT | 38.133 | 0935 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2009809 | CR for RRM requirements for power saving | CATT | 38.133 | 0936 | - | Rel-16 | F | NR\_UE\_pow\_sav-Core | postponed |
| R4-2009844 | CR on CSI-RS based intra-frequency measurement requirement (Introduction, requirement applicability and number of cell and beams) | CATT | 38.133 | 0937 | - | Rel-16 | B | NR\_CSIRS\_L3meas-Core | revised |
| R4-2012170 | CR on CSI-RS based intra-frequency measurement requirement (Introduction, requirement applicability and number of cell and beams) | CATT | 38.133 | 0937 | 1 | Rel-16 | B | NR\_CSIRS\_L3meas-Core | agreed |
| R4-2009864 | CR on RRM requirements for BWP switching delay on multiple CCs | Intel Corporation | 38.133 | 0938 | - | Rel-16 | B | NR\_RRM\_enh-Core | merged |
| R4-2009865 | CR on uplink spatial relation switch delay (section 8.12) | Intel Corporation | 38.133 | 0939 | - | Rel-16 | B | NR\_RRM\_enh-Core | revised |
| R4-2012272 | CR on uplink spatial relation switch delay (section 8.12) | Intel Corporation | 38.133 | 0939 | 1 | Rel-16 | B | NR\_RRM\_enh-Core | agreed |
| R4-2009880 | Introduction of SCell activation/deactivation delay requirements for SCells operating with CCA | Qualcomm Incorporated | 38.133 | 0940 | - | Rel-16 | B | NR\_unlic-Core | revised |
| R4-2012088 | Introduction of SCell activation/deactivation delay requirements for SCells operating with CCA | Qualcomm Incorporated | 38.133 | 0940 | 1 | Rel-16 | B | NR\_unlic-Core | agreed |
| R4-2009881 | Revision of CSSF within gap to include NR positioning measurements with gap sharing | Qualcomm Incorporated | 38.133 | 0941 | - | Rel-16 | B | NR\_pos-Core | revised |
| R4-2012137 | Revision of CSSF within gap to include NR positioning measurements with gap sharing | Qualcomm Incorporated | 38.133 | 0941 | 1 | Rel-16 | B | NR\_pos-Core | revised |
| R4-2012286 | Revision of CSSF within gap to include NR positioning measurements with gap sharing | Qualcomm Incorporated | 38.133 | 0941 | 2 | Rel-16 | B | NR\_pos-Core | agreed |
| R4-2009882 | Introduction of new MG patterns for NR positioning | Qualcomm Incorporated | 38.133 | 0942 | - | Rel-16 | B | NR\_pos-Core | revised |
| R4-2012138 | Introduction of new MG patterns for NR positioning | Qualcomm Incorporated | 38.133 | 0942 | 1 | Rel-16 | B | NR\_pos-Core | revised |
| R4-2012287 | Introduction of new MG patterns for NR positioning | Qualcomm Incorporated | 38.133 | 0942 | 2 | Rel-16 | B | NR\_pos-Core | revised |
| R4-2012304 | Introduction of new MG patterns for NR positioning | Qualcomm Incorporated | 38.133 | 0942 | 3 | Rel-16 | B | NR\_pos-Core | agreed |
| R4-2009883 | Introduction of UE Rx-Tx time difference measurement requirements for NR positioning | Qualcomm Incorporated | 38.133 | 0943 | - | Rel-16 | B | NR\_pos-Core | revised |
| R4-2012130 | Introduction of UE Rx-Tx time difference measurement requirements for NR positioning | Qualcomm Incorporated | 38.133 | 0943 | 1 | Rel-16 | B | NR\_pos-Core | revised |
| R4-2012284 | Introduction of UE Rx-Tx time difference measurement requirements for NR positioning | Qualcomm Incorporated | 38.133 | 0943 | 2 | Rel-16 | B | NR\_pos-Core | agreed |
| R4-2009884 | Introduction of intra-frequency sync and async DAPS HO test cases in FR1 | Qualcomm Incorporated | 38.133 | 0944 | - | Rel-16 | B | NR\_Mob\_enh-Perf | postponed |
| R4-2009887 | CR on TS38.133 for handover test cases | MediaTek inc., Intel | 38.133 | 0945 | - | Rel-15 | F | NR\_newRAT-Perf | revised |
| R4-2012072 | CR on TS38.133 for handover test cases | MediaTek inc., Intel | 38.133 | 0945 | 1 | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2009888 | CR on TS38.133 for handover test cases | MediaTek inc., Intel | 38.133 | 0946 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2009889 | CR on TS38.133 for introducing the PDSCH RMC configuration in cell re-selection test cases | MediaTek inc. | 38.133 | 0947 | - | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2009890 | CR on TS38.133 for introducing the PDSCH RMC configuration in cell re-selection test cases | MediaTek inc. | 38.133 | 0948 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2009893 | CR on TS38.133 for measurement capability of IDLE mode DC/CA measurement (Section 4.2.2.1, 4.4.2) | MediaTek inc. | 38.133 | 0949 | - | Rel-16 | F | LTE\_NR\_DC\_CA\_enh-Core | postponed |
| R4-2009896 | CR on TS38.133 for dual active protocol stack handover (Section 6.1.3) | MediaTek inc. | 38.133 | 0950 | - | Rel-16 | F | NR\_Mob\_enh-Core | withdrawn |
| R4-2012236 | CR on TS38.133 for dual active protocol stack handover (Section 6.1.3) | MediaTek inc. | 38.133 | 0950 | 1 | Rel-16 | F | NR\_Mob\_enh-Core | revised |
| R4-2012265 | CR on TS38.133 for dual active protocol stack handover (Section 6.1.3) | MediaTek inc. | 38.133 | 0950 | 2 | Rel-16 | F | NR\_Mob\_enh-Core | agreed |
| R4-2009899 | CR on TS38.133 for inter-frequency measurement requirement without gap (Section 9.1.5, 9.3.1) | MediaTek inc. | 38.133 | 0951 | - | Rel-16 | F | NR\_RRM\_enh-Core | not pursued |
| R4-2009900 | CR on TS38.133 for intra-frequency measurement definition (Section 9.2.1) | MediaTek inc. | 38.133 | 0952 | - | Rel-16 | F | TEI16 | agreed |
| R4-2009902 | CR on SCell deactivation requirement for R15 | Apple | 38.133 | 0953 | - | Rel-15 | F | NR\_newRAT-Core | merged |
| R4-2009903 | CR on SCell deactivation requirement for R16 | Apple | 38.133 | 0954 | - | Rel-16 | F | NR\_newRAT-Core | merged |
| R4-2009904 | CR on FR2 measurement capability for R15 | Apple | 38.133 | 0955 | - | Rel-15 | F | NR\_newRAT-Core | revised |
| R4-2012066 | CR on FR2 measurement capability for R15 | Apple | 38.133 | 0955 | 1 | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2009905 | CR on FR2 measurement capability for R16 | Apple | 38.133 | 0956 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2009909 | CR on UE measurement capability of NR-U for R16 | Apple | 38.133 | 0957 | - | Rel-16 | B | NR\_unlic-Core | agreed |
| R4-2009917 | CR on RRM requirement based on dual DRX for FR1+FR2 CA | Apple | 38.133 | 0958 | - | Rel-16 | B | TEI16 | revised |
| R4-2012267 | CR on RRM requirement based on dual DRX for FR1+FR2 CA | Apple | 38.133 | 0958 | 1 | Rel-16 | B | TEI16 | agreed |
| R4-2009922 | Update NR Frequency Band Groups to include Band n30 | AT&T | 38.133 | 0959 | - | Rel-16 | F | NR\_n30-Core | agreed |
| R4-2009923 | Update NR Frequency Band Groups to include Band n14 | AT&T | 38.133 | 0960 | - | Rel-16 | F | NR\_n14-Core | agreed |
| R4-2010024 | CR for Table number mismatch for CLI performance tests | LG Electronics Inc. | 38.133 | 0961 | - | Rel-16 | F | NR\_CLI\_RIM-Perf | agreed |
| R4-2010030 | CR on Inter-RAT RSTD measurements (section 9.4.4) | MediaTek inc. | 38.133 | 0962 | - | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2010031 | CR on Inter-RAT RSTD measurements (section 9.4.4) | MediaTek inc. | 38.133 | 0963 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2010032 | CR on active BWP switch in R15 | MediaTek inc. | 38.133 | 0964 | - | Rel-15 | F | NR\_newRAT-Core | revised |
| R4-2012280 | CR on active BWP switch in R15 | MediaTek inc. | 38.133 | 0964 | 1 | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2010033 | CR on active BWP switch in R16 | MediaTek inc. | 38.133 | 0965 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2010035 | CR on active TCI state switch test case (section A.5.5.8.1, A.7.5.8.1) | MediaTek inc. | 38.133 | 0966 | - | Rel-15 | F | NR\_newRAT-Perf | merged |
| R4-2010036 | CR on active TCI state switch test case | MediaTek inc. | 38.133 | 0967 | - | Rel-16 | A | NR\_newRAT-Perf | withdrawn |
| R4-2010044 | CR on multiple SCells activation (section 8.3.7) | MediaTek inc. | 38.133 | 0968 | - | Rel-16 | F | NR\_RRM\_enh-Core | revised |
| R4-2012165 | CR on multiple SCells activation (section 8.3.7) | MediaTek inc. | 38.133 | 0968 | 1 | Rel-16 | F | NR\_RRM\_enh-Core | agreed |
| R4-2010056 | CR on MRTD for FR2 inter-band CA | Apple | 38.133 | 0969 | - | Rel-16 | F | NR\_RF\_FR2\_req\_enh-Core | revised |
| R4-2012151 | CR on MRTD and MTTD for FR2 inter-band CA | Apple | 38.133 | 0969 | 1 | Rel-16 | F | NR\_RF\_FR2\_req\_enh-Core | agreed |
| R4-2010057 | CR on MRTD for FR2 inter-band CA | Apple | 38.133 | 0970 | - | Rel-16 | B | NR\_CSIRS\_L3meas-Core | revised |
| R4-2012181 | CR on MRTD for FR2 inter-band CA | Apple | 38.133 | 0970 | 1 | Rel-16 | B | NR\_CSIRS\_L3meas-Core | agreed |
| R4-2010073 | 38.133 CR on UE measurement capability on the number of frequency layers to be monitored for CSI-RS measurement | CMCC | 38.133 | 0971 | - | Rel-16 | B | NR\_CSIRS\_L3meas-Core | revised |
| R4-2012169 | 38.133 CR on UE measurement capability on the number of frequency layers to be monitored for CSI-RS measurement | CMCC | 38.133 | 0971 | 1 | Rel-16 | B | NR\_CSIRS\_L3meas-Core | agreed |
| R4-2010078 | 38.133 CR on cell re-selection requirements for Rel-16 NR HST | CMCC | 38.133 | 0972 | - | Rel-16 | F | NR\_HST-Core | agreed |
| R4-2010084 | CR of missed requirements based on the agreed CRs in RAN4#95-e | LG Electronics Inc. | 38.133 | 0973 | - | Rel-16 | F | 5G\_V2X\_NRSL-Core | revised |
| R4-2012105 | CR of missed requirements based on the agreed CRs in RAN4#95-e | LG Electronics Inc. | 38.133 | 0973 | 1 | Rel-16 | F | 5G\_V2X\_NRSL-Core | agreed |
| R4-2010085 | CR of interruption requirements | LG Electronics Inc. | 38.133 | 0974 | - | Rel-16 | F | 5G\_V2X\_NRSL-Core | revised |
| R4-2012106 | CR of interruption requirements | LG Electronics Inc. | 38.133 | 0974 | 1 | Rel-16 | F | 5G\_V2X\_NRSL-Core | agreed |
| R4-2010099 | CR to TS38.133 on introduction of multi-TRP transmission (Section 7.5 and 7.6) | Samsung | 38.133 | 0975 | - | Rel-16 | B | NR\_eMIMO-Core | not pursued |
| R4-2012149 | CR to TS38.133 on introduction of multi-TRP transmission (Section 7.5 and 7.6) | Samsung | 38.133 | 0975 | 1 | Rel-16 | B | NR\_eMIMO-Core | withdrawn |
| R4-2010107 | CR on definition of inter-frequency measurements without measurement gap (9.3.1) | CMCC | 38.133 | 0976 | - | Rel-16 | F | NR\_RRM\_enh | revised |
| R4-2012166 | CR on definition of inter-frequency measurements without measurement gap (9.3.1) | CMCC | 38.133 | 0976 | 1 | Rel-16 | F | NR\_RRM\_enh | agreed |
| R4-2010116 | CR to T parameters in 8.3.2 of 38.133 | Qualcomm Incorporated | 38.133 | 0977 | - | Rel-15 | F | NR\_newRAT-Core | postponed |
| R4-2010183 | CR on Active BWP switch and Active TCI State Switching requirements - Rel15 | Apple | 38.133 | 0978 | - | Rel-15 | F | NR\_newRAT-Core | revised |
| R4-2012244 | CR on Active BWP switch and Active TCI State Switching requirements - Rel15 | Apple | 38.133 | 0978 | 1 | Rel-15 | F | NR\_newRAT-Core | postponed |
| R4-2010184 | CR on Active BWP switch and Active TCI State Switching requirements - Rel15 | Apple | 38.133 | 0979 | - | Rel-16 | A | NR\_newRAT-Core | postponed |
| R4-2010185 | CR on Requirement for MAC-CE based TCI State Switch-EN-DC-Rel15 | Apple | 38.133 | 0980 | - | Rel-15 | F | NR\_newRAT-Perf | withdrawn |
| R4-2010186 | CR on Requirement for MAC-CE based TCI State Switch-EN-DC-Rel16 | Apple | 38.133 | 0981 | - | Rel-16 | A | NR\_newRAT-Perf | withdrawn |
| R4-2010187 | CR on Requirement for MAC-CE based TCI State Switch-SA-Rel15 | Apple | 38.133 | 0982 | - | Rel-15 | F | NR\_newRAT-Perf | withdrawn |
| R4-2010188 | CR on Requirement for MAC-CE based TCI State Switch-SA-Rel16 | Apple | 38.133 | 0983 | - | Rel-16 | A | NR\_newRAT-Perf | withdrawn |
| R4-2010197 | CR on BWP switch on multiple CCs | Apple | 38.133 | 0984 | - | Rel-16 | F | NR\_RRM\_enh-Core | agreed |
| R4-2010206 | CR for SCell activation delay in FR2 in R15 | MediaTek inc. | 38.133 | 0985 | - | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2010207 | CR for SCell activation delay in FR2 in R16 | MediaTek inc. | 38.133 | 0986 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2010208 | CR on TCI state switch delay in R15 | MediaTek inc. | 38.133 | 0987 | - | Rel-15 | F | NR\_newRAT-Core | revised |
| R4-2012239 | CR on TCI state switch delay in R15 | MediaTek inc., ZTE | 38.133 | 0987 | 1 | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2010209 | CR on TCI state switch delay in R16 | MediaTek inc. | 38.133 | 0988 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2010210 | CR for SCell activation delay in FR2 in R16 | MediaTek inc. | 38.133 | 0989 | - | Rel-16 | F | TEI16 | merged |
| R4-2010213 | CR on active TCI state switch delay in NR-U | MediaTek inc. | 38.133 | 0990 | - | Rel-16 | F | NR\_unlic-Core | merged |
| R4-2010216 | CR for timing requirement for NR-U | MediaTek inc. | 38.133 | 0991 | - | Rel-16 | B | NR\_unlic-Core | revised |
| R4-2012097 | CR for timing requirement for NR-U | MediaTek inc. | 38.133 | 0991 | 1 | Rel-16 | B | NR\_unlic-Core | agreed |
| R4-2010218 | CR for introduction of pathloss reference signal switching delay | MediaTek inc. | 38.133 | 0992 | - | Rel-16 | B | NR\_eMIMO-Core | revised |
| R4-2012148 | CR for introduction of pathloss reference signal switching delay | MediaTek inc. | 38.133 | 0992 | 1 | Rel-16 | B | NR\_eMIMO-Core | agreed |
| R4-2010220 | CR for L1-SINR requirement | MediaTek inc. | 38.133 | 0993 | - | Rel-16 | F | NR\_eMIMO-Core | revised |
| R4-2012147 | CR for L1-SINR requirement | MediaTek inc. | 38.133 | 0993 | 1 | Rel-16 | F | NR\_eMIMO-Core | agreed |
| R4-2010314 | Introduction of CSSF requirement for CSI-RS based L3 measurement | MediaTek inc. | 38.133 | 0994 | - | Rel-16 | B | NR\_CSIRS\_L3meas-Core | postponed |
| R4-2012180 | Introduction of CSSF requirement for CSI-RS based L3 measurement | MediaTek inc. | 38.133 | 0994 | 1 | Rel-16 | B | NR\_CSIRS\_L3meas-Core | withdrawn |
| R4-2010330 | CR on HST cell reselection requirment of interRAT higher priority carrier in TS 38.133 | vivo | 38.133 | 0995 | - | Rel-16 | F | NR\_HST-Core | postponed |
| R4-2010335 | CR on introduction, applicablity and capability for CSI-RS inter-frequency measurement requirements | vivo | 38.133 | 0996 | - | Rel-16 | B | NR\_CSIRS\_L3meas-Core | revised |
| R4-2012171 | CR on introduction, applicability and capability for CSI-RS inter-frequency measurement requirements | vivo | 38.133 | 0996 | 1 | Rel-16 | B | NR\_CSIRS\_L3meas-Core | revised |
| R4-2012250 | CR on introduction, applicability and capability for CSI-RS inter-frequency measurement requirements | vivo | 38.133 | 0996 | 2 | Rel-16 | B | NR\_CSIRS\_L3meas-Core | agreed |
| R4-2010360 | CR for IDLE state measurement relaxation for UE power saving | vivo | 38.133 | 0997 | - | Rel-16 | F | NR\_UE\_pow\_sav-Core | postponed |
| R4-2010362 | CR for RRC based simultaneously BWP switch over multiple CCs | vivo | 38.133 | 0998 | - | Rel-16 | B | NR\_RRM\_enh-Core | merged |
| R4-2010378 | Impact of CGI reading on RLM and BM | Ericsson | 38.133 | 0999 | - | Rel-16 | B | NR\_RRM\_enh-Core | revised |
| R4-2012158 | Impact of CGI reading on L1 and L3 measurement | ZTE | 38.133 | 0999 | 1 | Rel-16 | B | NR\_RRM\_enh-Core | agreed |
| R4-2010380 | Updates to general section for NR-U in 38.133 | Ericsson | 38.133 | 1000 | - | Rel-16 | F | NR\_unlic-Core | postponed |
| R4-2010381 | Conditional handover test cases for NR | Ericsson | 38.133 | 1001 | - | Rel-16 | B | NR\_Mob\_enh-Perf | postponed |
| R4-2010382 | Fine/rough beam assumption for idle mode and measurement procedure test case | Ericsson | 38.133 | 1002 | - | Rel-15 | F | NR\_newRAT-Core | revised |
| R4-2012073 | Fine/rough beam assumption for idle mode and measurement procedure test case | Ericsson | 38.133 | 1002 | 1 | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2010390 | 38.133 CR on introduction of CSI-RS based intra-frequency measurement | Nokia, Nokia Shanghai Bell | 38.133 | 1003 | - | Rel-16 | B | NR\_CSIRS\_L3meas-Core | revised |
| R4-2012176 | 38.133 CR on introduction of CSI-RS based measurement | Nokia, Nokia Shanghai Bell | 38.133 | 1003 | 1 | Rel-16 | B | NR\_CSIRS\_L3meas-Core | agreed |
| R4-2010391 | 38.133 CR on CSI-RS based intra-frequency measurement requirements | Nokia, Nokia Shanghai Bell | 38.133 | 1004 | - | Rel-16 | B | NR\_CSIRS\_L3meas-Core | merged |
| R4-2010392 | 38.133 CR on the performance of CSI-RS based intra-frequency measurement | Nokia, Nokia Shanghai Bell | 38.133 | 1005 | - | Rel-16 | B | NR\_CSIRS\_L3meas-Core | postponed |
| R4-2010465 | Correction of L1-SINR reporting requirements | Ericsson | 38.133 | 1006 | - | Rel-16 | F | NR\_eMIMO-Core | agreed |
| R4-2010470 | CR: Beam management requirements with CCA | Ericsson | 38.133 | 1007 | - | Rel-16 | B | NR\_unlic-Core | revised |
| R4-2012096 | CR: Beam management requirements with CCA | Ericsson | 38.133 | 1007 | 1 | Rel-16 | B | NR\_unlic-Core | revised |
| R4-2012256 | CR: Beam management requirements with CCA | Ericsson | 38.133 | 1007 | 2 | Rel-16 | B | NR\_unlic-Core | agreed |
| R4-2010517 | [CR] Corrections to DAPS Handover | ZTE Corporation | 38.133 | 1008 | - | Rel-16 | F | TEI16 | agreed |
| R4-2010568 | CR on UE requirement for MR-DC early measurement reporting in 38.133 | Nokia, Nokia Shanghai Bell | 38.133 | 1009 | - | Rel-16 | F | LTE\_NR\_DC\_CA\_enh-Core | revised |
| R4-2012113 | CR on UE requirement for MR-DC early measurement reporting in 38.133 | Nokia, Nokia Shanghai Bell | 38.133 | 1009 | 1 | Rel-16 | F | LTE\_NR\_DC\_CA\_enh-Core | revised |
| R4-2012247 | CR on UE requirement for MR-DC early measurement reporting in 38.133 | Nokia, Nokia Shanghai Bell | 38.133 | 1009 | 2 | Rel-16 | F | LTE\_NR\_DC\_CA\_enh-Core | postponed |
| R4-2010572 | CR for FR2 inter-band CA requirements | Nokia, Nokia Shanghai Bell | 38.133 | 1010 | - | Rel-16 | F | NR\_RRM\_enh-Core | revised |
| R4-2012162 | CR for FR2 inter-band CA requirements | Nokia, Nokia Shanghai Bell | 38.133 | 1010 | 1 | Rel-16 | F | NR\_RRM\_enh-Core | revised |
| R4-2012273 | CR for FR2 inter-band CA requirements | Nokia, Nokia Shanghai Bell | 38.133 | 1010 | 2 | Rel-16 | F | NR\_RRM\_enh-Core | agreed |
| R4-2010593 | CR to TS 38.133 - Handover requirements in NR-U | Nokia, Nokia Shanghai Bell | 38.133 | 1011 | - | Rel-16 | D | NR\_unlic-Core | revised |
| R4-2012086 | CR to TS 38.133 - Handover requirements in NR-U | Nokia, Nokia Shanghai Bell | 38.133 | 1011 | 1 | Rel-16 | D | NR\_unlic-Core | agreed |
| R4-2010594 | CR to TS 38.133 to address NR-U inter-frequency measurements | Nokia, Nokia Shanghai Bell | 38.133 | 1012 | - | Rel-16 | B | NR\_unlic-Core | revised |
| R4-2012099 | CR to TS 38.133 to address NR-U inter-frequency measurements | Nokia, Nokia Shanghai Bell | 38.133 | 1012 | 1 | Rel-16 | B | NR\_unlic-Core | revised |
| R4-2012252 | CR to TS 38.133 to address NR-U inter-frequency measurements | Nokia, Nokia Shanghai Bell | 38.133 | 1012 | 2 | Rel-16 | B | NR\_unlic-Core | agreed |
| R4-2010597 | CR on timing requirements in NR-U | Nokia, Nokia Shanghai Bell | 38.133 | 1013 | - | Rel-16 | B | NR\_unlic-Core | not pursued |
| R4-2010617 | Updates on MRTD and MTTD requirements for FR2 inter-band DL CA | Ericsson, KDDI Corporation, NTT DOCOMO INC | 38.133 | 1014 | - | Rel-16 | B | NR\_RF\_FR2\_req\_enh-Core | postponed |
| R4-2010663 | CR 38.133 (8.3.2-3) Corrections to SCell activation delay requirements | Ericsson | 38.133 | 1015 | - | Rel-16 | F | NR\_newRAT-Core | revised |
| R4-2012235 | CR 38.133 (8.3.2-3) Corrections to SCell activation delay requirements | Ericsson, MediaTek | 38.133 | 1015 | 1 | Rel-16 | F | NR\_newRAT-Core | agreed |
| R4-2010665 | CR 38.133 (8.3.9-8.3.11) Direct SCell activation delay for multiple downlink SCells | Ericsson | 38.133 | 1016 | - | Rel-16 | B | LTE\_NR\_DC\_CA\_enh-Core | revised |
| R4-2012115 | CR 38.133 (8.3.9-8.3.11) Direct SCell activation delay for multiple downlink SCells | Ericsson | 38.133 | 1016 | 1 | Rel-16 | B | LTE\_NR\_DC\_CA\_enh-Core | agreed |
| R4-2010670 | CR 38.133 SCell dormancy switching of multiple SCells | Ericsson | 38.133 | 1017 | - | Rel-16 | F | LTE\_NR\_DC\_CA\_enh-Core | revised |
| R4-2012119 | CR 38.133 SCell dormancy switching of multiple SCells | Ericsson | 38.133 | 1017 | 1 | Rel-16 | F | LTE\_NR\_DC\_CA\_enh-Core | revised |
| R4-2012275 | CR 38.133 SCell dormancy switching of multiple SCells | Ericsson | 38.133 | 1017 | 2 | Rel-16 | F | LTE\_NR\_DC\_CA\_enh-Core | agreed |
| R4-2010703 | CR on delay requirements for SCell dormancy | OPPO | 38.133 | 1018 | - | Rel-16 | B | LTE\_NR\_DC\_CA\_enh-Core | agreed |
| R4-2010705 | CR on RRM Measurement relaxation requirements for UE power saving (TS 38.133) | OPPO | 38.133 | 1019 | - | Rel-16 | B | NR\_UE\_pow\_sav-Core | postponed |
| R4-2010715 | CR on inter-frequency CSI-RS L3 measurement requirements | OPPO | 38.133 | 1020 | - | Rel-16 | B | NR\_CSIRS\_L3meas-Core | revised |
| R4-2012173 | CR on inter-frequency CSI-RS L3 measurement requirements | OPPO | 38.133 | 1020 | 1 | Rel-16 | B | NR\_CSIRS\_L3meas-Core | agreed |
| R4-2010758 | CR to TS 38.133 on MRTD values for FR2 inter-band CA | NEC | 38.133 | 1021 | - | Rel-16 | F | NR\_RF\_FR2\_req\_enh-Core | postponed |
| R4-2010779 | Clarification of SNR values in RLM Test cases | ANRITSU LTD | 38.133 | 1022 | - | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2010780 | Clarification of SNR values in RLM Test cases | ANRITSU LTD | 38.133 | 1023 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2010857 | CR to TS 38.133: Corrections to CSI-RS configurations in A.3.14 (Rel-15) | Rohde & Schwarz | 38.133 | 1024 | - | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2010858 | CR to TS 38.133: Corrections to CSI-RS configurations in A.3.14 (Rel-16) | Rohde & Schwarz | 38.133 | 1025 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2010859 | CR to TS 38.133: Corrections to event triggered test cases (Rel-15) | Rohde & Schwarz | 38.133 | 1026 | - | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2010860 | CR to TS 38.133: Corrections to event triggered test cases (Rel-16) | Rohde & Schwarz | 38.133 | 1027 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2010861 | CR to TS 38.133: Corrections to inter-RAT test cases (Rel-15) | Rohde & Schwarz | 38.133 | 1028 | - | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2010862 | CR to TS 38.133: Corrections to inter-RAT test cases (Rel-16) | Rohde & Schwarz | 38.133 | 1029 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2010863 | CR to TS 38.133: Corrections to AoA setup information in some test cases (Rel-15) | Rohde & Schwarz | 38.133 | 1030 | - | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2010864 | CR to TS 38.133: Corrections to AoA setup information in some test cases (Rel-16) | Rohde & Schwarz | 38.133 | 1031 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2011047 | CR on maintaining handover tests in Rel-15 | Huawei, HiSilicon | 38.133 | 1032 | - | Rel-15 | F | NR\_newRAT-Perf | revised |
| R4-2012075 | CR on maintaining handover tests in Rel-15 | Huawei, HiSilicon | 38.133 | 1032 | 1 | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2011048 | CR on maintaining handover tests in Rel-16 | Huawei, HiSilicon | 38.133 | 1033 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2011050 | CR on maintaining DAPS handover requirements | Huawei, HiSilicon | 38.133 | 1034 | - | Rel-16 | F | NR\_Mob\_enh-Core | merged |
| R4-2011052 | CR on inter-band DAPS handover tests | Huawei, HiSilicon | 38.133 | 1035 | - | Rel-16 | B | NR\_Mob\_enh-Perf | postponed |
| R4-2011053 | CR on PSBCH-RSRP accuracy requirements for NR V2X | Huawei, HiSilicon | 38.133 | 1036 | - | Rel-16 | B | 5G\_V2X\_NRSL-Core | postponed |
| R4-2011058 | CR on L1-SINR measurement accuracy requirements | Huawei, HiSilicon | 38.133 | 1037 | - | Rel-16 | B | NR\_eMIMO-Core | noted |
| R4-2011060 | CR on activation delay requirements for non-maintained PL-RS | Huawei, HiSilicon | 38.133 | 1038 | - | Rel-16 | B | NR\_eMIMO-Core | merged |
| R4-2011064 | CR on maintaining measurement restriction requirements for NR CA | Huawei, HiSilicon | 38.133 | 1039 | - | Rel-16 | F | NR\_RRM\_enh-Core | revised |
| R4-2012163 | CR on maintaining measurement restriction requirements for NR CA | Huawei, HiSilicon | 38.133 | 1039 | 1 | Rel-16 | F | NR\_RRM\_enh-Core | agreed |
| R4-2011067 | CR on RRM requirements for new FR2 FWA UE | Huawei, HiSilicon | 38.133 | 1040 | - | Rel-16 | B | NR\_FR2\_FWA\_Bn257\_Bn258-Core | revised |
| R4-2012200 | CR on RRM requirements for new FR2 FWA UE | Huawei, HiSilicon | 38.133 | 1040 | 1 | Rel-16 | B | NR\_FR2\_FWA\_Bn257\_Bn258-Core | endorsed |
| R4-2011069 | CR on BWP switching delay on mulitple CCs | Huawei, Hisilicon | 38.133 | 1041 | - | Rel-16 | F | NR\_RRM\_enh-Core | revised |
| R4-2012153 | CR on BWP switching delay on mulitple CCs | Huawei, Hisilicon | 38.133 | 1041 | 1 | Rel-16 | F | NR\_RRM\_enh-Core | revised |
| R4-2012266 | CR on BWP switching delay on mulitple CCs | Huawei, Hisilicon | 38.133 | 1041 | 2 | Rel-16 | F | NR\_RRM\_enh-Core | revised |
| R4-2012300 | CR on BWP switching delay on mulitple CCs | Huawei, Hisilicon | 38.133 | 1041 | 3 | Rel-16 | F | NR\_RRM\_enh-Core | agreed |
| R4-2011073 | CR on active TCI state switching for NR-U | Huawei, Hisilicon | 38.133 | 1042 | - | Rel-16 | F | NR\_unlic-Core | revised |
| R4-2012089 | CR on active TCI state switching for NR-U | Huawei, Hisilicon | 38.133 | 1042 | 1 | Rel-16 | F | NR\_unlic-Core | revised |
| R4-2012253 | CR on active TCI state switching for NR-U | Huawei, Hisilicon | 38.133 | 1042 | 2 | Rel-16 | F | NR\_unlic-Core | agreed |
| R4-2011074 | CR on introduction of intra-frequency measurements requirements for NR-U | Huawei, Hisilicon | 38.133 | 1043 | - | Rel-16 | B | NR\_unlic-Core | revised |
| R4-2012101 | CR on introduction of intra-frequency measurements requirements for NR-U | Huawei, Hisilicon | 38.133 | 1043 | 1 | Rel-16 | B | NR\_unlic-Core | revised |
| R4-2012257 | CR on introduction of intra-frequency measurements requirements for NR-U | Huawei, Hisilicon | 38.133 | 1043 | 2 | Rel-16 | B | NR\_unlic-Core | agreed |
| R4-2011075 | CR on introduction of Active BWP switching delay requirements for NR-U | Huawei, Hisilicon | 38.133 | 1044 | - | Rel-16 | B | NR\_unlic-Core | revised |
| R4-2012255 | CR on introduction of Active BWP switching delay requirements for NR-U | Huawei, Hisilicon | 38.133 | 1044 | 1 | Rel-16 | B | NR\_unlic-Core | agreed |
| R4-2011076 | CR on introduction of RRC\_IDLE state moblity requirements for NR-U | Huawei, Hisilicon | 38.133 | 1045 | - | Rel-16 | B | NR\_unlic-Core | revised |
| R4-2012093 | CR on introduction of RRC\_IDLE state moblity requirements for NR-U | Huawei, Hisilicon | 38.133 | 1045 | 1 | Rel-16 | B | NR\_unlic-Core | agreed |
| R4-2011077 | Discussion on RRC re-establishment for NR-U | Huawei, Hisilicon | 38.133 | 1046 | - | Rel-16 | B | NR\_unlic-Core | revised |
| R4-2012087 | Discussion on RRC re-establishment for NR-U | Huawei, Hisilicon | 38.133 | 1046 | 1 | Rel-16 | B | NR\_unlic-Core | agreed |
| R4-2011093 | CR on reporting criteria for EN-DC in 38.133 R15 | Huawei, Hisilicon | 38.133 | 1047 | - | Rel-15 | F | NR\_newRAT-Core | revised |
| R4-2012245 | CR on reporting criteria for EN-DC in 38.133 R15 | Huawei, Hisilicon | 38.133 | 1047 | 1 | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2011094 | CR on reporting criteria for EN-DC in 38.133 R15 | Huawei, Hisilicon | 38.133 | 1048 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2011095 | CR on test cases for Active TCI state switch delay R15 | Huawei, Hisilicon | 38.133 | 1049 | - | Rel-15 | F | NR\_newRAT-Perf | revised |
| R4-2012076 | CR on test cases for Active TCI state switch delay R15 | Huawei, Hisilicon | 38.133 | 1049 | 1 | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2011096 | CR on test cases for Active TCI state switch delay R15 | Huawei, Hisilicon | 38.133 | 1050 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2011099 | Addition of new default configurations for RMC scheduling | Huawei, Hisilicon | 38.133 | 1051 | - | Rel-15 | F | NR\_newRAT-Perf | revised |
| R4-2012067 | Addition of new default configurations for RMC scheduling | Huawei, Hisilicon | 38.133 | 1051 | 1 | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2011100 | Addition of new default configurations for RMC scheduling\_r16 | Huawei, Hisilicon | 38.133 | 1052 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2011101 | Correction to beam failure detection and link recovery test cases | Huawei, Hisilicon | 38.133 | 1053 | - | Rel-15 | F | NR\_newRAT-Perf | revised |
| R4-2012077 | Correction to beam failure detection and link recovery test cases | Huawei, Hisilicon | 38.133 | 1053 | 1 | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2011102 | Correction to beam failure detection and link recovery test cases\_r16 | Huawei, Hisilicon | 38.133 | 1054 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2011103 | Correction to BWP switching delay test cases | Huawei, Hisilicon | 38.133 | 1055 | - | Rel-15 | F | NR\_newRAT-Perf | revised |
| R4-2012078 | Correction to BWP switching delay test cases | Huawei, Hisilicon | 38.133 | 1055 | 1 | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2011104 | Correction to BWP switching delay test cases\_r16 | Huawei, Hisilicon | 38.133 | 1056 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2011105 | Correction to FR1 intra-frequency measurement with gap test cases | Huawei, Hisilicon | 38.133 | 1057 | - | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2012079 | Correction to FR1 intra-frequency measurement with gap test cases | Huawei, Hisilicon | 38.133 | 1057 | 1 | Rel-15 | F | NR\_newRAT-Perf | withdrawn |
| R4-2011106 | Correction to FR1 intra-frequency measurement with gap test cases\_r16 | Huawei, Hisilicon | 38.133 | 1058 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2011107 | Correction to inter-RAT HO test cases | Huawei, Hisilicon | 38.133 | 1059 | - | Rel-15 | F | NR\_newRAT-Perf | revised |
| R4-2012080 | Correction to inter-RAT HO test cases | Huawei, Hisilicon | 38.133 | 1059 | 1 | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2011108 | Correction to inter-RAT HO test cases\_r16 | Huawei, Hisilicon | 38.133 | 1060 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2011109 | Correction to inter-RAT measurement on NR serving carrier | Huawei, Hisilicon | 38.133 | 1061 | - | Rel-15 | F | NR\_newRAT-Core | postponed |
| R4-2011110 | Correction to inter-RAT measurement on NR serving carrrier\_r16 | Huawei, Hisilicon | 38.133 | 1062 | - | Rel-16 | A | NR\_newRAT-Core | withdrawn |
| R4-2011112 | CR on measurement relaxation for power saving | Huawei, Hisilicon | 38.133 | 1063 | - | Rel-16 | F | NR\_UE\_pow\_sav-Core | postponed |
| R4-2011116 | CR on CSI-RS based intra-frequency measurement requirements | Huawei, Hisilicon | 38.133 | 1064 | - | Rel-16 | B | NR\_CSIRS\_L3meas-Core | revised |
| R4-2012172 | CR on CSI-RS based intra-frequency measurement requirements | Huawei, Hisilicon | 38.133 | 1064 | 1 | Rel-16 | B | NR\_CSIRS\_L3meas-Core | revised |
| R4-2012261 | CR on CSI-RS based intra-frequency measurement requirements | Huawei, Hisilicon | 38.133 | 1064 | 2 | Rel-16 | B | NR\_CSIRS\_L3meas-Core | agreed |
| R4-2011118 | CR on SS-SINR in NR HST | Huawei, Hisilicon | 38.133 | 1065 | - | Rel-16 | B | NR\_HST-Perf | endorsed |
| R4-2011122 | Correction on the interruption requirements due to SRS carrier switching | Huawei, Hisilicon | 38.133 | 1066 | - | Rel-16 | F | NR\_RRM\_enh-Core | revised |
| R4-2012238 | Correction on the interruption requirements due to SRS carrier switching | Huawei, Hisilicon | 38.133 | 1066 | 1 | Rel-16 | F | NR\_RRM\_enh-Core | agreed |
| R4-2011124 | CSSF for inter-frequency measurement without gap in FR2 inter-band CA sceneario | Huawei, Hisilicon | 38.133 | 1067 | - | Rel-16 | F | NR\_RRM\_enh-Core | revised |
| R4-2012167 | CSSF for inter-frequency measurement without gap in FR2 inter-band CA sceneario | Huawei, Hisilicon | 38.133 | 1067 | 1 | Rel-16 | F | NR\_RRM\_enh-Core | agreed |
| R4-2011125 | Correction on inter-frequency without gap measurement requirements | Huawei, Hisilicon | 38.133 | 1068 | - | Rel-16 | F | NR\_RRM\_enh-Core | not pursued |
| R4-2011132 | CR on correction to CSSF within gap R15 | Huawei, Hisilicon | 38.133 | 1069 | - | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2011133 | CR on correction to CSSF within gap R16 | Huawei, Hisilicon | 38.133 | 1070 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2011137 | CR on SCell activation requirements R15 | Huawei, Hisilicon | 38.133 | 1071 | - | Rel-15 | F | NR\_newRAT-Core | revised |
| R4-2012241 | CR on SCell activation requirements R15 | Huawei, Hisilicon | 38.133 | 1071 | 1 | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2011138 | CR on SCell activation requirements R16 | Huawei, Hisilicon | 38.133 | 1072 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2011139 | CR on BWP switching delay requirements R15 | Huawei, Hisilicon | 38.133 | 1073 | - | Rel-15 | F | NR\_newRAT-Core | revised |
| R4-2012242 | CR on BWP switching delay requirements R15 | Huawei, Hisilicon | 38.133 | 1073 | 1 | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2011140 | CR on UL BWP configuration for RRM test cases R15 | Huawei, Hisilicon | 38.133 | 1074 | - | Rel-15 | F | NR\_newRAT-Perf | revised |
| R4-2012068 | CR on UL BWP configuration for RRM test cases R15 | Huawei, Hisilicon | 38.133 | 1074 | 1 | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2011141 | CR on UL BWP configuration for RRM test cases R16 | Huawei, Hisilicon | 38.133 | 1075 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2011142 | CR to add UE beam assumption for TC in A.5.6 R15 | Huawei, Hisilicon | 38.133 | 1076 | - | Rel-15 | F | NR\_newRAT-Perf | revised |
| R4-2012262 | CR to add UE beam assumption for TC in A.5.6 R15 | Huawei, Hisilicon | 38.133 | 1076 | 1 | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2011143 | CR to add UE beam assumption for TC in A.5.6 R16 | Huawei, Hisilicon | 38.133 | 1077 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2011144 | CR on reporting criteria for CLI | Huawei, Hisilicon | 38.133 | 1078 | - | Rel-16 | F | NR\_CLI\_RIM-Core | agreed |
| R4-2011146 | CR on EMR in 38.133 | Huawei, Hisilicon | 38.133 | 1079 | - | Rel-16 | F | LTE\_NR\_DC\_CA\_enh-Core | postponed |
| R4-2011150 | CR on direct SCell activation | Huawei, Hisilicon | 38.133 | 1080 | - | Rel-16 | B | LTE\_NR\_DC\_CA\_enh-Core | revised |
| R4-2012116 | CR on direct SCell activation | Huawei, Hisilicon | 38.133 | 1080 | 1 | Rel-16 | B | LTE\_NR\_DC\_CA\_enh-Core | agreed |
| R4-2011153 | CR on requirements for SCell dormancy | Huawei, Hisilicon | 38.133 | 1081 | - | Rel-16 | F | LTE\_NR\_DC\_CA\_enh-Core | revised |
| R4-2012120 | CR on requirements for SCell dormancy | Huawei, Hisilicon | 38.133 | 1081 | 1 | Rel-16 | F | LTE\_NR\_DC\_CA\_enh-Core | revised |
| R4-2012276 | CR on requirements for SCell dormancy | Huawei, Hisilicon | 38.133 | 1081 | 2 | Rel-16 | F | LTE\_NR\_DC\_CA\_enh-Core | agreed |
| R4-2011155 | CR for general applicability of PRS measurement requirements | Huawei, Hisilicon | 38.133 | 1082 | - | Rel-16 | B | NR\_pos-Core | revised |
| R4-2012125 | CR for general applicability of PRS measurement requirements | Huawei, Hisilicon | 38.133 | 1082 | 1 | Rel-16 | B | NR\_pos-Core | agreed |
| R4-2011158 | CR for measurement requirements for PRS-RSRP | Huawei, Hisilicon | 38.133 | 1083 | - | Rel-16 | B | NR\_pos-Core | revised |
| R4-2012134 | CR for measurement requirements for PRS-RSRP | Huawei, Hisilicon | 38.133 | 1083 | 1 | Rel-16 | B | NR\_pos-Core | revised |
| R4-2012282 | CR for measurement requirements for PRS-RSRP | Huawei, Hisilicon | 38.133 | 1083 | 2 | Rel-16 | B | NR\_pos-Core | agreed |
| R4-2011163 | CR on CSSF and measurement gap related requirements for positioning | Huawei, Hisilicon | 38.133 | 1084 | - | Rel-16 | B | NR\_pos-Core | postponed |
| R4-2011168 | CR to add CSI-RS related reporting criteria for ECID | Huawei, Hisilicon | 38.133 | 1085 | - | Rel-16 | B | NR\_pos-Core | revised |
| R4-2012144 | CR to add CSI-RS related reporting criteria for ECID | Huawei, Hisilicon | 38.133 | 1085 | 1 | Rel-16 | B | NR\_pos-Core | revised |
| R4-2012299 | CR to add CSI-RS related reporting criteria for ECID | Huawei, Hisilicon | 38.133 | 1085 | 2 | Rel-16 | B | NR\_pos-Core | agreed |
| R4-2011171 | CR on multiple SCell activation requirements | Huawei, Hisilicon | 38.133 | 1086 | - | Rel-16 | F | NR\_RRM\_enh-Core | merged |
| R4-2011174 | CR on reporting criteria for CSI-RS measurement | Huawei, Hisilicon | 38.133 | 1087 | - | Rel-16 | B | NR\_CSIRS\_L3meas-Core | merged |
| R4-2011211 | Correction CR to Rel-16 UE power saving requirements | Ericsson | 38.133 | 1088 | - | Rel-16 | F | NR\_UE\_pow\_sav-Core | revised |
| R4-2012123 | Correction CR to Rel-16 UE power saving requirements | Ericsson | 38.133 | 1088 | 1 | Rel-16 | F | NR\_UE\_pow\_sav-Core | revised |
| R4-2012268 | Correction CR to Rel-16 UE power saving requirements | Ericsson | 38.133 | 1088 | 2 | Rel-16 | F | NR\_UE\_pow\_sav-Core | agreed |
| R4-2011242 | Correction to RACH delay in HO delay requirements in NR-U | Ericsson, Qualcomm | 38.133 | 1089 | - | Rel-16 | F | NR\_unlic-Core | merged |
| R4-2011244 | Correction to RACH delay in RRC release requirements in NR-U in 38.133 | Ericsson, Qualcomm | 38.133 | 1090 | - | Rel-16 | F | NR\_unlic-Core | agreed |
| R4-2011248 | Partial overlap timer-based and RRC-based BWP switching delay on multiple CCs | Ericsson | 38.133 | 1091 | - | Rel-16 | B | NR\_RRM\_enh-Core | merged |
| R4-2011251 | Interruption requirements under dual DRX | Ericsson | 38.133 | 1092 | - | Rel-16 | C | TEI16 | postponed |
| R4-2011253 | RRM core requirements for FR2 FWA UE power class in 38.133 | Ericsson, SoftBank | 38.133 | 1093 | - | Rel-16 | B | NR\_FR2\_FWA\_Bn257\_Bn258-Core | merged |
| R4-2011304 | CR to 38.133: Correction to TCI state switch delay requirements | ZTE | 38.133 | 1094 | - | Rel-15 | F | NR\_newRAT-Core | not treated |
| R4-2011305 | CR to 38.133 correction to TCI state switch delay requirements | ZTE | 38.133 | 1095 | - | Rel-16 | A | NR\_newRAT-Core | withdrawn |
| R4-2011306 | CR to 38.133: Correction to RRC basd BWP switch delay requirements | ZTE | 38.133 | 1096 | - | Rel-15 | F | NR\_newRAT-Core | revised |
| R4-2012243 | CR to 38.133: Correction to RRC basd BWP switch delay requirements | ZTE | 38.133 | 1096 | 1 | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2011307 | CR to 38.133 correction to RRC based BWP switch delay requirements | ZTE | 38.133 | 1097 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2011308 | CR to 38.133: Correction to interruption requirements for per-FR gap in FR2 | ZTE | 38.133 | 1098 | - | Rel-15 | F | NR\_newRAT-Core | revised |
| R4-2012065 | CR to 38.133: Correction to interruption requirements for per-FR gap in FR2 | ZTE | 38.133 | 1098 | 1 | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2011309 | CR to 38.133 correction to interruption requirements for per-FR gap in FR2 | ZTE | 38.133 | 1099 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2011311 | CR to 38.133 on CGI reading of NR cell | ZTE | 38.133 | 1100 | - | Rel-16 | B | NR\_RRM\_enh-Core | agreed |
| R4-2011329 | CR to TS 38.133: Corrections to Table 9.4.3.3-2 in subclause 9.4.3.3 (Requirements when DRX is used) | Nokia, Nokia Shanghai Bell | 38.133 | 1101 | - | Rel-16 | F | NR\_HST-Core | agreed |
| R4-2011352 | Introduction of RLM requirements for NR-U | Ericsson | 38.133 | 1102 | - | Rel-16 | B | NR\_unlic-Core | revised |
| R4-2012095 | Introduction of RLM requirements for NR-U | Ericsson | 38.133 | 1102 | 1 | Rel-16 | B | NR\_unlic-Core | revised |
| R4-2012254 | Introduction of RLM requirements for NR-U | Ericsson | 38.133 | 1102 | 2 | Rel-16 | B | NR\_unlic-Core | agreed |
| R4-2011356 | Measurement report mapping and additional path reporting for UE Rx-Tx | Ericsson | 38.133 | 1103 | - | Rel-16 | B | NR\_pos-Core | revised |
| R4-2012131 | Measurement report mapping and additional path reporting for UE Rx-Tx | Ericsson | 38.133 | 1103 | 1 | Rel-16 | B | NR\_pos-Core | revised |
| R4-2012259 | Measurement report mapping and additional path reporting for UE Rx-Tx | Ericsson | 38.133 | 1103 | 2 | Rel-16 | B | NR\_pos-Core | agreed |
| R4-2011358 | Measurement report mapping and additional path reporting for RSTD | Ericsson | 38.133 | 1104 | - | Rel-16 | B | NR\_pos-Core | revised |
| R4-2012132 | Measurement report mapping and additional path reporting for RSTD | Ericsson | 38.133 | 1104 | 1 | Rel-16 | B | NR\_pos-Core | revised |
| R4-2012260 | Measurement report mapping and additional path reporting for RSTD | Ericsson | 38.133 | 1104 | 2 | Rel-16 | B | NR\_pos-Core | agreed |
| R4-2011361 | Introduction of new measurement gaps for PRS-based measurements | Ericsson | 38.133 | 1105 | - | Rel-16 | B | NR\_pos-Core | postponed |
| R4-2011363 | Reporting criteria for NR positioning measurements | Ericsson | 38.133 | 1106 | - | Rel-16 | F | NR\_pos-Core | revised |
| R4-2012145 | Reporting criteria for NR positioning measurements | Ericsson | 38.133 | 1106 | 1 | Rel-16 | F | NR\_pos-Core | agreed |
| R4-2011364 | General introduction of NR positioning measurements | Ericsson | 38.133 | 1107 | - | Rel-16 | F | NR\_pos-Core | agreed |
| R4-2012128 | General introduction of NR positioning measurements | Ericsson | 38.133 | 1107 | 1 | Rel-16 | F | NR\_pos-Core | withdrawn |
| R4-2011416 | CR on scheduling restriction for CSI-RS based intra-frequency measurement | Qualcomm CDMA Technologies | 38.133 | 1108 | - | Rel-16 | B | NR\_CSIRS\_L3meas | revised |
| R4-2012174 | CR on scheduling restriction for CSI-RS based intra-frequency measurement | Qualcomm CDMA Technologies | 38.133 | 1108 | 1 | Rel-16 | B | NR\_CSIRS\_L3meas | agreed |
| R4-2011430 | 38133 CR on inter-band FR2 CA MRTD | Nokia, Nokia Shanghai Bell | 38.133 | 1109 | - | Rel-16 | F | NR\_RF\_FR2\_req\_enh | postponed |
| R4-2013033 | [CR] Replacing x in references with correct numbers (Core R15 Cat F) | ZTE | 38.133 | 1110 | - | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2013034 | [CR] Replacing x in references with correct numbers (Core R16 Cat F) | ZTE | 38.133 | 1111 | - | Rel-16 | F | TEI16 | agreed |
| R4-2013035 | [CR] Replacing x in references with correct numbers (Perf R15 Cat F) | ZTE | 38.133 | 1112 | - | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2013036 | [CR] Replacing x in references with correct numbers (Core R16 Cat A) | ZTE | 38.133 | 1113 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2013037 | [CR] Replacing x in references with correct numbers (Perf R16 Cat A) | ZTE | 38.133 | 1114 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2012064 | CR to T parameters in 8.3.2 of 38.133 | Qualcomm Incorporated | 38.133 | 1115 | - | Rel-16 | A | NR\_newRAT-Core | withdrawn |
| R4-2012074 | Fine/rough beam assumption for idle mode and measurement procedure test case | Ericsson | 38.133 | 1116 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2012232 | CR on BWP switching delay requirements R16 | ZTE | 38.133 | 1117 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2009642 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 38.141-1 | CMCC | 38.141-1 | 0139 | - | Rel-17 | B | NR\_SUL\_band\_1880\_1920MHz | revised |
| R4-2011812 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 38.141-1 | CMCC | 38.141-1 | 0139 | 1 | Rel-17 | B | NR\_SUL\_band\_1880\_1920MHz | not pursued |
| R4-2009653 | Introduction of 2300-2400MHz SUL band into Rel-17 TS 38.141-1 | CMCC | 38.141-1 | 0140 | - | Rel-17 | B | NR\_SUL\_band\_2300\_2400MHz | not pursued |
| R4-2009696 | CR for TS 38.141-1: Updates of NR PUSCH performance requirements for HST | NTT DOCOMO, INC. | 38.141-1 | 0141 | - | Rel-16 | B | NR\_HST-Perf | revised |
| R4-2012677 | CR for TS 38.141-1: Updates of NR PUSCH performance requirements for HST | NTT DOCOMO, INC. | 38.141-1 | 0141 | 1 | Rel-16 | B | NR\_HST-Perf | agreed |
| R4-2009697 | CR for TS 38.141-1: Updates of NR PUSCH performance Annex including FRC and channel model for HST | NTT DOCOMO, INC. | 38.141-1 | 0142 | - | Rel-16 | B | NR\_HST-Perf | revised |
| R4-2012678 | CR for TS 38.141-1: Updates of NR PUSCH performance Annex including FRC and channel model for HST | NTT DOCOMO, INC. | 38.141-1 | 0142 | 1 | Rel-16 | B | NR\_HST-Perf | agreed |
| R4-2009788 | CR for TS 38.141-1: Add maximum test system uncertainty for NR HST PUSCH with single port and AWGN | CATT | 38.141-1 | 0143 | - | Rel-16 | F | NR\_HST-Perf | agreed |
| R4-2009837 | CR for TS 38.141-1, Introduction of high speed support declaration for NR HST PRACH | CATT | 38.141-1 | 0144 | - | Rel-16 | B | NR\_HST-Perf | revised |
| R4-2012682 | CR for TS 38.141-1, Introduction of high speed support declaration for NR HST PRACH | CATT | 38.141-1 | 0144 | 1 | Rel-16 | B | NR\_HST-Perf | agreed |
| R4-2010281 | CR on UL timing adjustment conducted performance requirement for TS 38.141-1 | Samsung | 38.141-1 | 0145 | - | Rel-16 | B | NR\_HST-Perf | revised |
| R4-2012686 | CR on UL timing adjustment conducted performance requirement for TS 38.141-1 | Samsung | 38.141-1 | 0145 | 1 | Rel-16 | B | NR\_HST-Perf | agreed |
| R4-2010989 | CR to TS 38.141-1: Performance requirements for URLLC BS demodulation requirements with higher BLER | Huawei, HiSilicon | 38.141-1 | 0146 | - | Rel-16 | B | NR\_L1enh\_URLLC-Perf | revised |
| R4-2012656 | CR to TS 38.141-1: Performance requirements for URLLC BS demodulation requirements with higher BLER | Huawei, HiSilicon | 38.141-1 | 0146 | 1 | Rel-16 | B | NR\_L1enh\_URLLC-Perf | endorsed |
| R4-2010990 | CR to TS 38.141-1: Applicability of URLLC BS demodulation requirements | Huawei, HiSilicon | 38.141-1 | 0147 | - | Rel-16 | F | NR\_L1enh\_URLLC-Perf | revised |
| R4-2012661 | CR to TS 38.141-1: Applicability of URLLC BS demodulation requirements | Huawei, HiSilicon | 38.141-1 | 0147 | 1 | Rel-16 | F | NR\_L1enh\_URLLC-Perf | endorsed |
| R4-2011017 | CR for TS 38.141-1: Introduction of test tolerance for HST PRACH and update measurement setup of performance requirements for NR HST | Huawei, HiSilicon | 38.141-1 | 0148 | - | Rel-16 | F | NR\_HST-Perf | revised |
| R4-2012684 | CR for TS 38.141-1: Introduction of test tolerance for HST PRACH and update measurement setup of performance requirements for NR HST | Huawei, HiSilicon | 38.141-1 | 0148 | 1 | Rel-16 | F | NR\_HST-Perf | agreed |
| R4-2011286 | CR to 38.141-1: Annex H clarification on equlisation calculation (H.6) | Keysight Technologies UK Ltd, Rohde & Schwarz | 38.141-1 | 0149 | - | Rel-15 | F | NR\_newRAT-Perf | revised |
| R4-2012587 | CR to 38.141-1: Annex H clarification on equlisation calculation (H.6) | Keysight Technologies UK Ltd, Rohde & Schwarz,Nokia | 38.141-1 | 0149 | 1 | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2011289 | CR to 38.141-1: Annex H clarification on equlisation calculation (H.6) | Keysight Technologies UK Ltd, Rohde & Schwarz,Nokia | 38.141-1 | 0150 | - | Rel-16 | A | NR\_newRAT-Perf | revised |
| R4-2012753 | CR to 38.141-1: Annex H clarification on equlisation calculation (H.6) | Keysight Technologies UK Ltd, Rohde & Schwarz,Nokia | 38.141-1 | 0150 | 1 | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2009643 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 38.141-2 | CMCC | 38.141-2 | 0199 | - | Rel-17 | B | NR\_SUL\_band\_1880\_1920MHz | revised |
| R4-2011813 | Introduction of 1880-1920MHz SUL band into Rel-17 TS 38.141-2 | CMCC | 38.141-2 | 0199 | 1 | Rel-17 | B | NR\_SUL\_band\_1880\_1920MHz | not pursued |
| R4-2009654 | Introduction of 2300-2400MHz SUL band into Rel-17 TS 38.141-2 | CMCC | 38.141-2 | 0200 | - | Rel-17 | B | NR\_SUL\_band\_2300\_2400MHz | not pursued |
| R4-2009780 | CR for TS 38.141-2: Correction on half-power vertical beam width for the out of band CLTA | CATT | 38.141-2 | 0201 | - | Rel-15 | F | NR\_newRAT-Perf | not pursued |
| R4-2009781 | CR for 38.141-2: correction on half-power vertical beam width for the out of band CLTA | CATT | 38.141-2 | 0202 | - | Rel-16 | A | NR\_newRAT-Perf | withdrawn |
| R4-2009785 | CR for TS 38.141-2: Introduction of NR PUSCH UL timing adjustment performance requirement for scenario Z | CATT | 38.141-2 | 0203 | - | Rel-16 | B | NR\_HST-Perf | agreed |
| R4-2009786 | CR for 38.141-2: appendix for NR PUSCH UL timing adjustment for scenario Z | CATT | 38.141-2 | 0204 | - | Rel-16 | B | NR\_HST-Perf | withdrawn |
| R4-2009787 | CR for TS 38.141-2: Add maximum test system uncertainty for NR HST PUSCH with single port and AWGN | CATT | 38.141-2 | 0205 | - | Rel-16 | F | NR\_HST-Perf | agreed |
| R4-2009838 | CR for TS 38.141-2, Introduction of high speed support declaration for NR HST | CATT | 38.141-2 | 0206 | - | Rel-16 | B | NR\_HST-Perf | revised |
| R4-2012683 | CR for TS 38.141-2, Introduction of high speed support declaration for NR HST | CATT | 38.141-2 | 0206 | 1 | Rel-16 | B | NR\_HST-Perf | agreed |
| R4-2009968 | CR to TS 38.141-2: Improvement of out-of-band CLTA characteristics | Ericsson | 38.141-2 | 0207 | - | Rel-15 | F | NR\_newRAT-Perf | not pursued |
| R4-2009969 | CR to TS 38.141-2: Improvement of out-of-band CLTA characteristics | Ericsson | 38.141-2 | 0208 | - | Rel-16 | A | NR\_newRAT-Perf | withdrawn |
| R4-2010284 | Clarification CR on NR-FR2-TM3.1 | Samsung | 38.141-2 | 0209 | - | Rel-15 | F | NR\_newRAT-Perf | revised |
| R4-2012590 | Clarification CR on NR-FR2-TM3.1 | Samsung | 38.141-2 | 0209 | 1 | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2010285 | Clarification CR on NR-FR2-TM3.1 | Samsung | 38.141-2 | 0210 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2010492 | CR for TS 38.141-2: NR FR2 test model 2 | Huawei, HiSilicon | 38.141-2 | 0211 | - | Rel-15 | F | NR\_newRAT-Perf | revised |
| R4-2012591 | CR for TS 38.141-2: NR FR2 test model 2 | Huawei, HiSilicon | 38.141-2 | 0211 | 1 | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2010493 | CR for TS 38.141-2: NR FR2 test model 2 | Huawei, HiSilicon | 38.141-2 | 0212 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2010764 | CR to TS 38.141-2: Additional requirements for EESS protection (rel-15) | NEC | 38.141-2 | 0213 | - | Rel-15 | F | NR\_newRAT-Perf | revised |
| R4-2012581 | CR to TS 38.141-2: Additional requirements for EESS protection (rel-15) | NEC, Nokia, Ericsson | 38.141-2 | 0213 | 1 | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2010765 | CR to TS 38.141-2: Additional requirements for EESS protection (rel-16) | NEC | 38.141-2 | 0214 | - | Rel-16 | A | NR\_newRAT-Perf | revised |
| R4-2012748 | CR to TS 38.141-2: Additional requirements for EESS protection (rel-16) | NEC, Nokia, Ericsson | 38.141-2 | 0214 | 1 | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2010846 | Increase of step size for FR2 in-band blocking conformance test | Ericsson | 38.141-2 | 0215 | - | Rel-15 | F | NR\_newRAT-Perf | revised |
| R4-2012592 | Increase of step size for FR2 in-band blocking conformance test | Ericsson | 38.141-2 | 0215 | 1 | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2010847 | Increase of step size for FR2 in-band blocking conformance test | Ericsson | 38.141-2 | 0216 | - | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2010991 | CR to TS 38.141-2: FRC for URLLC BS performance requirements | Huawei, HiSilicon | 38.141-2 | 0217 | - | Rel-16 | B | NR\_L1enh\_URLLC-Perf | revised |
| R4-2012657 | CR to TS 38.141-2: FRC for URLLC BS performance requirements | Huawei, HiSilicon | 38.141-2 | 0217 | 1 | Rel-16 | B | NR\_L1enh\_URLLC-Perf | endorsed |
| R4-2011018 | CR for TS 38.141-2: Introduction of test tolerance for NR HST PRACH | Huawei, HiSilicon | 38.141-2 | 0218 | - | Rel-16 | F | NR\_HST-Perf | revised |
| R4-2012685 | CR for TS 38.141-2: Introduction of test tolerance for NR HST PRACH | Huawei, HiSilicon | 38.141-2 | 0218 | 1 | Rel-16 | F | NR\_HST-Perf | agreed |
| R4-2011287 | CR to 38.141-2: Annex L clarification on equlisation calculation (L.6) | Keysight Technologies UK Ltd, Rohde & Schwarz | 38.141-2 | 0219 | - | Rel-15 | F | NR\_newRAT-Perf | revised |
| R4-2012588 | CR to 38.141-2: Annex L clarification on equlisation calculation (L.6) | Keysight Technologies UK Ltd, Rohde & Schwarz,Nokia | 38.141-2 | 0219 | 1 | Rel-15 | F | NR\_newRAT-Perf | agreed |
| R4-2011290 | CR to 38.141-2: Annex L clarification on equlisation calculation (L.6) | Keysight Technologies UK Ltd, Rohde & Schwarz,Nokia | 38.141-2 | 0220 | - | Rel-16 | A | NR\_newRAT-Perf | revised |
| R4-2012754 | CR to 38.141-2: Annex L clarification on equlisation calculation (L.6) | Keysight Technologies UK Ltd, Rohde & Schwarz,Nokia | 38.141-2 | 0220 | 1 | Rel-16 | A | NR\_newRAT-Perf | agreed |
| R4-2011392 | CR to TS 38.141-2: Out-of-band co-location test antenna definition | Nokia, Nokia Shanghai Bell | 38.141-2 | 0221 | - | Rel-15 | F | NR\_newRAT-Perf | not pursued |
| R4-2011393 | CR to TS 38.141-2: Out-of-band co-location test antenna definition | Nokia, Nokia Shanghai Bell | 38.141-2 | 0222 | - | Rel-16 | A | NR\_newRAT-Perf | withdrawn |
| R4-2009591 | LTE/NR spectrum sharing in Band 40/n40 | Reliance Jio | 38.307 | 0024 | - | Rel-17 | B | DSS\_LTE\_B40\_NR\_Bn40-Core | revised |
| R4-2011824 | LTE/NR spectrum sharing in Band 40/n40 | Reliance Jio | 38.307 | 0024 | 1 | Rel-17 | B | DSS\_LTE\_B40\_NR\_Bn40-Core | endorsed |
| R4-2009703 | Adding NR FDD Intra-band CA and FR1 3CC Inter-band CA into Release Independence | Dish Network | 38.307 | 0025 | - | Rel-16 | A | TEI16 | withdrawn |
| R4-2009704 | Adding NR FDD Intra-band CA and FR1 3CC Inter-band CA into Release Independence | Dish Network | 38.307 | 0026 | - | Rel-15 | B | TEI15 | not pursued |
| R4-2009705 | Adding NR FDD Intra-band CA and FR1 3CC Inter-band CA into Release Independence | Dish Network | 38.307 | 0027 | - | Rel-16 | A | TEI16 | withdrawn |
| R4-2010061 | CR for 38.307: Introduction of Power Class 1.5 | T-Mobile USA | 38.307 | 0028 | - | Rel-16 | B | LTE\_NR\_B41\_Bn41\_PC29dBm-Core | agreed |
| R4-2010633 | CR to TS 38.307 on NR-DC release-independent | ZTE Corporation | 38.307 | 0029 | - | Rel-16 | B | NR\_CADC\_R16\_2BDL\_xBUL-Core | not pursued |
| R4-2011414 | Beam correspondence – SRS configuration corrections in section 5.2.1.3.7 | Keysight Technologies UK Ltd | 38.810 | 0013 | - | Rel-16 | F | FS\_NR\_test\_methods | agreed |
| R4-2009954 | CR to capture WRC-19 impact on NR bands in TR38.817-01 | Apple Inc. | 38.817-01 | 0020 | - | Rel-15 | F | NR\_newRAT-Core | revised |
| R4-2011689 | CR to capture WRC-19 impact on NR bands in TR38.817-01 | Apple Inc. | 38.817-01 | 0020 | 1 | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2009955 | CR to capture WRC-19 impact on NR bands in TR38.817-01 Cat-A | Apple Inc. | 38.817-01 | 0021 | - | Rel-16 | A | NR\_newRAT-Core | agreed |
| R4-2011186 | CR to TS 38.817-02: Clarification on calculation of step frequencies for defining the Category B radiated Tx spurious emission limits in FR2 | Nokia, Nokia Shanghai Bell | 38.817-02 | 0068 | - | Rel-15 | F | NR\_newRAT-Core | revised |
| R4-2012585 | CR to TS 38.817-02: Clarification on calculation of step frequencies for defining the Category B radiated Tx spurious emission limits in FR2 | Nokia, Nokia Shanghai Bell | 38.817-02 | 0068 | 1 | Rel-15 | F | NR\_newRAT-Core | agreed |
| R4-2010831 | CR for 38.827 on editorial corrections | Huawei,HiSilicon | 38.827 | 0001 | - | Rel-16 | F | NR\_MIMO\_OTA | not treated |
| R4-2009826 | REFSENS requirements for NR V2X band n38 | CATT | 38.886 | 0001 | - | Rel-16 | F | 5G\_V2X\_NRSL-Core | not pursued |
| R4-2009829 | Switching period for NR V2X in ITS band | CATT | 38.886 | 0002 | - | Rel-16 | F | 5G\_V2X\_NRSL-Core | revised |
| R4-2011716 | CR for 38.886, Switching period for NR V2X in ITS band | CATT | 38.886 | 0002 | 1 | Rel-16 | F | 5G\_V2X\_NRSL-Core | not pursued |
| R4-2010139 | CR for TR38.886: Correction on TR38.886 for V2X UE Tx and Rx requirements | LG Electronics France | 38.886 | 0003 | - | Rel-16 | F | 5G\_V2X\_NRSL-Core | revised |
| R4-2011939 | CR for TR38.886: Correction on TR38.886 for V2X UE Tx and Rx requirements | LG Electronics France | 38.886 | 0003 | 1 | Rel-16 | F | 5G\_V2X\_NRSL-Core | agreed |

Annex C: Lists of liaisons

C1: Incoming liaison statements

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| --- | --- | --- | --- | --- | --- |
| **Document** | **Original** | **Title** | **From** | **Decision** | **Reply TDoc** |
| R4-2009502 |  | NGMN Liaison Statement to 3GPP RAN4 on 5G NR Over The Air test methodologies and performance requirements | NGMN Alliance Project | noted | (none) |
| R4-2009503 |  | Resolutions of the World Radiocommunication Conference, 2019 (WRC-19) 01PC(FMD)O-2020-001473 | WRC-19 | noted | (none) |
| R4-2009504 | R1-2004784 | LS response to RAN2 LS on Guard Symbols in IAB | RAN1 | noted | (none) |
| R4-2009505 | R1-2004912 | LS on categories for terrestrial broadcast | RAN1 | noted | (none) |
| R4-2009506 | R1-2004915 | LS to RAN2 on NR-U RSSI Measurement Duration | RAN1 | noted | (none) |
| R4-2009507 | R1-2004954 | Reply LS on RAN4 IAB-MT feature list agreement | RAN1 | noted | (none) |
| R4-2009508 | R1-2004959 | LS on the UE DL PRS processing | RAN1 | noted | (none) |
| R4-2009509 | R1-2004965 | LS on UE capability on wideband carrier operation for NR-U | RAN1 | noted | (none) |
| R4-2009510 | R1-2004992 | Reply LS on NR-U SSB monitoring capabilities | RAN1 | noted | (none) |
| R4-2009511 | R1-2004994 | LS Reply on DCP Open Issues | RAN1 | noted | (none) |
| R4-2009512 | R1-2004998 | LS to RAN2 on initial BWP for NR-U | RAN1 | noted | (none) |
| R4-2009513 | R1-2005081 | LS on SCell Dormancy | RAN1 | noted | (none) |
| R4-2009514 | R1-2005096 | LS on updated Rel-16 RAN1 UE features lists for NR | RAN1 | noted | (none) |
| R4-2009515 | R1-2005098 | LS on sidelink synchronization timing reference | RAN1 | noted | (none) |
| R4-2009516 | R1-2005109 | LS on updated Rel-16 RAN1 UE features lists for NR after RAN1#101-e | RAN1 | noted | (none) |
| R4-2009517 | R1-2005118 | LS on further updated Rel-16 RAN1 UE features list for LTE | RAN1 | noted | (none) |
| R4-2009518 | R2-2005851 | LS reply to RAN4 on UE declaring beam failure due to LBT failures during active TCI switching | RAN2 | noted | (none) |
| R4-2009519 | R2-2005858 | LS to RAN4 on RRM relaxation in power saving | RAN2 | noted | (none) |
| R4-2009520 | R2-2006030 | Reply LS on Rel-16 UE feature lists | RAN2 | noted | (none) |
| R4-2009521 | R2-2006192 | Reply LS on supporting Rel-16 NR HST from Rel-15 Ues | RAN2 | noted | (none) |
| R4-2009522 | R2-2006264 | Reply LS on inter-frequency measurement without gap | RAN2 | noted | (none) |
| R4-2009523 | R2-2006287 | Reply LS RAN4 on RRM Enhanced Measurement Reporting | RAN2 | noted | (none) |
| R4-2009524 | R2-2006318 | Reply LS on SCell dormancy requirement scope | RAN2 | noted | (none) |
| R4-2009525 | R2-2006322 | LS on UE capability xDD differentiation for SUL/SDL bands | RAN2 | noted | (none) |
| R4-2009526 | R2-2006352 | LS on Clarification on RAN4 features of NE-DC | RAN2 | noted | (none) |
| R4-2009527 | R2-2006448 | Reply LS on XDD-FRX Differentiation | RAN2 | noted | (none) |
| R4-2009528 | R3-204399 | Response LS on Exchange of information related to SRS-RSRP measurement resource configuration for UE-CLI | RAN3 | noted | (none) |
| R4-2009529 | R5-202805 | LS on ambiguity in output power requirements for power class 2 UE for EN-DC | RAN5 | noted | (none) |
| R4-2009530 | R5-202806 | LS on RF testing of 4Rx capable UE | RAN5 | noted | (none) |
| R4-2009531 | R5-202963 | LS on structure of NR CA reference sensitivity requirements in 38.101-1 | RAN5 | noted | (none) |
| R4-2009532 | RP-201392 | LS on introducing UE capability for power class for NR band in MR-DC combination | RAN | noted | (none) |
| R4-2009533 |  | New work item in SE21 on measurement methodologies for 5G AAS in the field | CEPT ECC WG SE | noted | (none) |
| R4-2013038 | R2-2008395 | Reply LS on Rel-16 UE feature lists | RAN2 | noted | (none) |
| R4-2013039 | R1-2006195 | LS on UE behavior for P/SP-CSI-RS reception in NR-U | RAN1 | noted | (none) |
| R4-2013040 | R1-2007245 | Reply LS on feasibility of UL FPT modes and transparent TxD for certain UE implementations | RAN1 | noted | (none) |
| R4-2013041 | R2-2008497 | LS on UE capability | RAN2 | noted | (none) |
| R4-2013042 | R1-2005196 | LS to RAN4 on Phase noise and other RF Impairment modelling | RAN1 | noted | (none) |

C2: Outgoing liaison statements

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Document** | **Title** | **To** | **Cc** | **reply to i/c LS** |
| R4-2011679 | LS on Rel-16 RAN4 UE features lists for NR and LTE | RAN2 | RAN1 |  |
| R4-2011681 | Reply LS on RAN1 UE feature lists for 5G V2X service | RAN1, RAN2 | - |  |
| R4-2011687 | Reply LS on UE capability xDD differentiation for SUL/SDL bands | RAN2 | RAN1 | R4-209525 |
| R4-2011688 | Reply LS on Clarification on RAN4 features of NE-DC | RAN 2 | - | R2-2006352 |
| R4-2011710 | LS to RAN5 on measurement point for 5G V2X UE | RAN5 | - |  |
| R4-2011713 | LS on definition of NR V2X con-current operation | RAN1. RAN2 | - |  |
| R4-2011721 | Reply LS on power control for NR-DC | RAN2 | RAN1 | R2-2000294 |
| R4-2011724 | LS on FR1 intra-band UL CA UE capability | RAN2 | - |  |
| R4-2011733 | LS on MPE enhancements | RAN2 | - |  |
| R4-2011741 | LS on UE capability for FR2 inter-band CA | RAN2 | - |  |
| R4-2011745 | LS on UL power boost mode and IBE relaxation | RAN2 | - |  |
| R4-2011746 | LS on clarification for the UE behavior when UL shift is optional | RAN2 | - |  |
| R4-2011751 | Reply LS on RF testing of 4Rx capable UE | RAN5 | - | R4-2009530 |
| R4-2011787 | LS on UE capability for PC2 inter-band EN-DC (LTE FDD+NR TDD) | RAN2 | - |  |
| R4-2011903 | LS on NR power class clarification | GCF CAG | RAN5 | R4-2006116 |
| R4-2011906 | LS on additional DC location reporting for intra-band UL CA | RAN1, RAN2 | - |  |
| R4-2011913 | LS on NB-IoT certification testing | The US Federal Communications Commission | - |  |
| R4-2011929 | LS on updated Rel-16 RAN4 UE features lists for NR and LTE | RAN2 | RAN1 |  |
| R4-2011931 | LS reply to RAN1on UE capability on wideband carrier operation for NR-U | RAN1, RAN2 | - | R1-2004965 |
| R4-2012112 | LS response on measurement capability for EMR | RAN2 | - | R2-2002376 |
| R4-2012122 | Reply LS on RRM relaxation in power saving | RAN2 | - | R2-2005858 |
| R4-2012143 | Reply LS on positioning SRS during DRX inactive time | RAN2 | RAN1 | R2-2003877 |
| R4-2012156 | Reply LS on CGI reading with autonomous gaps | RAN2 | - | R2-2002219 |
| R4-2012269 | LS on multiple BWP switch impact on HARQ design in dormancy SCell | RAN1 | - |  |
| R4-2012281 | Reply LS on SCell Dormancy | RAN1 | - | R1-2005081 |
| R4-2012285 | LS on new measurement gap patterns for NR positioning | RAN2 | - |  |
| R4-2012297 | LS on EMR measurement requirements in NR | RAN2 | - |  |
| R4-2012563 | LS to RAN2 on IAB-MT feature list | RAN2 | - |  |
| R4-2012708 | Reply LS to NGMN on 5G NR Over The Air test methodologies and performance requirements | NGMN | RAN5, RAN | R4-2009502 |
| R4-2012770 | LS on Test Methodology for UE URLLC Ultra Low BLER Tests | RAN5 | - |  |

Annex D: List of agreed/approved new and revised Work Items

|  |  |  |  |
| --- | --- | --- | --- |
| **Document** | **Title** | **Source** | **new/revised** |

Annex E: List of draft Technical Specifications and Reports

|  |  |  |  |
| --- | --- | --- | --- |
| **Document** | **Spec** | **vers** | **Doc title** |
| R4-2010091 | 36.717-03-02 | 0.0.1 | TR 36.717-03-02 v0.0.1 TR Skeleton for LTE-A inter-band CA for x bands (x=3,4,5) DL with 2 bands UL in Rel-17 |
| R4-2010130 | 37.717-11-21 | 0.0.1 | TR 37.717-11-21 v0.0.1 TR skeleton: LTE(xDL/1UL)+ NR(2DL/1UL) DC in Rel-17 |
| R4-2010222 | 38.717-04-02 | 0.0.1 | skeleton on TR38.717-04-02 for NR CA/DC with 4DL/2UL |
| R4-2010223 | 38.809 | 0.2.0 | TR 38.809 V0.3.0 |
| R4-2010226 | 38.831 | 0.2.0 | TR v0.2.0 |
| R4-2010367 | 37.717-11-11 | 0.0.0 | TR skeleton for TR 37.717-11-11 Rel-17 Dual Connectivity (DC) of 1 LTE band (1DL/1UL) and 1 NR band (1DL/1UL) |
| R4-2010369 | 37.717-11-11 | 0.0.0 | TR 37.717-11-11 v0.1.0 Rel-17 Dual Connectivity (DC) of 1 LTE band (1DL/1UL) and 1 NR band (1DL/1UL) |
| R4-2010370 | 38.921 | 0.1.0 | TR 38.921 V 0.1.0 |
| R4-2010371 | 37.717-21-11 | 0.0.1 | TR skeleton of TR 37.717-21-11 |
| R4-2010399 | 37.717-41-11 | 0.0.1 | draftTR 37.717-41-11 v0.0.1 |
| R4-2010400 | 37.717-41-11 | 0.0.1 | draftTR 37.717-41-11 v0.1.0 |
| R4-2010658 | 37.717-33 | 0.0.1 | TR 37.717-33 v0.0.1 |
| R4-2010659 | 37.717-33 | 0.0.1 | TR 37.717-33 v0.1.0 |
| R4-2010661 | 37.717-11-31 | 0.0.1 | TR 37.717-11-31\_v0.0.1 |
| R4-2010662 | 37.717-11-31 | 0.0.1 | TR 37.717-11-31\_v0.1.0 |
| R4-2010680 | 38.717-01-01 | 0.0.1 | TR skeleton 38.717-01-01 v0.0.1 Rel-17 NR Intra-band |
| R4-2010681 | 37.717-31-11 | 0.0.1 | TR skeleton 37.717-31-11 v0.0.1 Rel-17 DC combinations LTE 3DL and one NR band |
| R4-2010682 | 38.717-04-01 | 0.0.1 | TR skeleton 38.717-04-01 v0.0.1 Rel-17 NR Inter-band 4 bands CA |
| R4-2010790 | 38.717-02-01 | 0.0.1 | TR 38.717-02-01 v0.0.1 |
| R4-2010791 | 38.717-03-02 | 0.0.1 | TR 38.717-03-02 v0.0.1 |
| R4-2010792 | 38.717-02-01 | 0.1.0 | TR 38.717-02-01 v0.1.0 |
| R4-2010793 | 38.717-03-02 | 0.1.0 | TR 38.717-03-02 v0.1.0 |
| R4-2010828 | 36.717-02-02 | 0.0.1 | TR skeleton 36.717-02-02 |
| R4-2011223 | 37.717-00-00 | 0.0.1 | TR 37.717-00-00 v0.0.1 |
| R4-2011224 | 37.717-00-00 | 0.1.0 | TR 37.717-00-00 v0.1.0 |
| R4-2011228 | 38.717-05-01 | 0.0.1 | TR 38.717-05-01 v0.0.1 |
| R4-2011229 | 38.717-05-01 | 0.1.0 | TR 38.717-05-01 v0.1.0 |
| R4-2011334 | 36.717-02-01 | 0.0.1 | TR skeleton for TR 36.717-02-01 Rel-17 LTE inter-band CA for 2 bands DL and 1 band UL CA |
| R4-2011406 | 36.717-04-01 | 0.0.1 | TR 36.717-04-01 v0.0.1 |
| R4-2011503 | 36.717-03-01 | 0.0.1 | TR skeleton for Rel-17 LTE inter-band CA for 3 bands DL with 1 band UL |
| R4-2011626 | 38.717-02-01 | 0.0.1 | TR 38.717-02-01 v0.0.1 |
| R4-2011795 | 37.875 | 0.0.0 | TR 37.875 skeleton for V2X new band combinations |
| R4-2011885 | 37.717-11-21 | 0.1.0 | TR 37.717-11-21 v0.1.0 TR skeleton: LTE(xDL/1UL)+ NR(2DL/1UL) DC in Rel-17 |
| R4-2011887 | 38.717-04-01 | 0.1.0 | Draft TR 38.717-04-01 v0.1.0 Rel-17 NR Inter-band 4 bands CA |
| R4-2011888 | 38.717-01-01 | 0.1.0 | Draft TR 38.717-01-01 v0.1.0 Rel-17 NR Intra-band |
| R4-2011889 | 37.717-21-11 | 0.1.0 | Draft TR of TR 37.717-21-11 v0.1.0 |
| R4-2011890 | 37.717-31-11 | 0.1.0 | Draft TR 37.717-31-11 v0.1.0 Rel-17 DC combinations LTE 3DL and one NR band |
| R4-2011891 | 38.717-04-02 | 0.1.0 | Draft TR38.717-04-02 for NR CA/DC with 4DL/2UL v0.1.0 |
| R4-2011892 | ? | .. | Draft TR for Rel-17 LTE inter-band CA for 3 bands DL with 1 band UL v0.1.0 |
| R4-2011893 | 36.717-04-01 | 0.1.0 | TR 36.717-04-01 v0.1.0 |
| R4-2011894 | 36.717-03-02 | 0.1.0 | TR 36.717-03-02 v0.1.0 TR Skeleton for LTE-A inter-band CA for x bands (x=3,4,5) DL with 2 bands UL in Rel-17 |
| R4-2012566 | ? | .. | IAB TS spec update after RAN4 96e |

Annex F: List of action items

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Meeting/Number** | **Agenda item** | **Document** | **Details** | **Responsible** | **Due by** |

Annex G: List of decisions

|  |  |  |  |
| --- | --- | --- | --- |
| **Meeting/Number** | **Agenda item** | **Document** | **Details** |

Annex H: List of participants

|  |  |  |
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| LIN, hui | HuaWei Technologies Co., Ltd | 3GPPMEMBER (CCSA) |
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| LIU, GUANG | Sequans Communications | 3GPPMEMBER (ETSI) |
| LIU, Liang | China Mobile International Ltd | 3GPPMEMBER (CCSA) |
| LIU, Liehai | HUAWEI TECH. GmbH | 3GPPMEMBER (ETSI) |
| LIU, Qifei | Guangdong OPPO Mobile Telecom. | 3GPPMEMBER (CCSA) |
| LIU, Ruichao | Spreadtrum Communications | 3GPPMEMBER (CCSA) |
| LIU, Ye | Huawei Technologies France | 3GPPMEMBER (ETSI) |
| LIU, Yifan | Apple GmbH | 3GPPMEMBER (ETSI) |
| LO, Anthony | Nokia UK | 3GPPMEMBER (ETSI) |
| MA, Jinwen | Verizon Switzerland AG | 3GPPMEMBER (ETSI) |
| MA, Zhifeng | Jetflow | 3GPPMEMBER (CCSA) |
| MAJMUNDAR, Milap | AT&T GNS Belgium SPRL | 3GPPMEMBER (ETSI) |
| MALEKAFZALIARDAKANI, Reihaneh | Ericsson GmbH, Eurolab | 3GPPMEMBER (ETSI) |
| MARTINEZ, Luis | Ericsson Inc. | 3GPPMEMBER (ATIS) |
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| MASAL, Abhijeet | CEWiT | 3GPPMEMBER (TSDSI) |
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| NAKATOGAWA, Tsuyoshi | NHK | 3GPPMEMBER (ARIB) |
| NANGIA, Vijay | Motorola Mobility UK Ltd. | 3GPPMEMBER (ETSI) |
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| NG, Man Hung | Nokia France | 3GPPMEMBER (ETSI) |
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| NIU, Huaning | Apple Hungary Kft. | 3GPPMEMBER (ETSI) |
| NOEL, Laurent | Skyworks Solutions Inc. | 3GPPMEMBER (ETSI) |
| NOGAMI, Toshizo | SHARP Corporation | 3GPPMEMBER (ARIB) |
| NORTON, Mark | U.S. Department of Defense | 3GPPMEMBER (ATIS) |
| NOVLAN, Thomas | AT&T | 3GPPMEMBER (ATIS) |
| OGUMA, Yuta | NTT DOCOMO INC. | 3GPPMEMBER (TTC) |
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| PRIALE, Camila | Apple GmbH | 3GPPMEMBER (ETSI) |
| PU, Xiaolin | Ericsson-LG Co., LTD | 3GPPMEMBER (TTA) |
| QIU, Haijie | Samsung Electronics Co., Ltd | 3GPPMEMBER (TTA) |
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| RASCHKOWSKI, Leszek | Fraunhofer HHI | 3GPPMEMBER (ETSI) |
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| ROSE, Ian | ANRITSU LTD | 3GPPMEMBER (ETSI) |
| RUMNEY, Moray | Keysight Technologies UK Ltd | 3GPPMEMBER (ETSI) |
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