**3GPP TSG RAN meeting #92e RP-211173**

**Electronic Meeting, June 14-18, 2021**

## Status Report to TSG

**Agenda item:** **9.7.4.8**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **WI / SI Name** | Further enhancements of NR RF requirements for frequency range 2 (FR2) | | | | |
| included in this status report | Study Item:  No | Core part:  Yes | Performance part:  Yes | | Testing part:  No |
| **Acronym** | NR\_RF\_FR2\_req\_enh2 | | | | |
| **Unique ID** | 890059 | | | | |
| **TSG Tdoc of latest approved WI/SI description (if any)** | RP-210914 | | | | |
| **Target Completion Date**  **(indicate if changed)** | Study Item:  n/a | Core part:  03/2022 | Performance part: 06/2022 | Testing part:  n/a | |
| **Overall Completion level** | Study Item:  n/a | Core part:  35% | Performance Part: 15% | Testing part:  n/a | |

Note: Overall completion level percentage numbers should use one of the colors below:

* xx%: Normal progress, no RAN plenary action needed
* xx%: Progress behind schedule, may need RAN plenary intervention. If so, SR should clearly define requested action
* xx%: Progress critically behind, RAN plenary shall intervene. SR should define requested action

**Source:**

|  |  |  |
| --- | --- | --- |
| **Leading WG** | | RAN4 |
| **Rapporteur** | **Name** | Vasenkari, Petri |
| **Company** | Nokia |
| **Email** | Petri.j.vasenkari@nokia.com |

# 1 Work plan related evaluation

|  |  |
| --- | --- |
| **Do you want to modify the time budget for this WI/SI compared to what was endorsed at the last RAN meeting?** | No |

*If you answered No: Then please remove the Excel file from the zip file of this status report.*

*If you answered Yes: Then please fill out the attached Excel template to request a modification of the time budgets for your WI /SI. The Excel table has to be filled out for all affected RAN WGs and up to the target date of the WI/SI. The basis are the endorsed time budgets of the last RAN meeting. Please highlight all changes of the values.  
 One time unit (TU) corresponds to ~ 2 hours in the meeting.  
 If this status report covers a WI with Core and Performance part, then please have one line for each in the attached Excel table.  
 Note: If no Excel table is attached, then this means no time budget change.*

**Additional explanations/motivations for the time budget changes in the attached Excel table:**

# 2. Detailed progress in RAN WGs since last TSG meeting (for all involved WGs)

NOTE: Agreements and Open issues impacted cross-TSG aspects shall be explicitly highlighted

## 2.4 RAN4

#### 2.4.1 Agreements

**RAN4 #98-bis-e Agreements**

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| --- | --- | --- |
| [**R4-2105391**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2105391.zip) | Way forward on IBM Requirements | Nokia, Nokia Shanghai Bell |
| [**R4-2105392**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2105392.zip) | Way forward on UE requirements for CA configurations based on CBM | Qualcomm |
| [**R4-2105393**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2105393.zip) | Way forward on Inter-band UL CA | Samsung |
| [**R4-2105495**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2105495.zip) | FR2 inter-band CA for different frequency band groups with IBM (TP to TS 38.851 | Nokia, Nokia Shanghai Bell, NTT DOCOMO, INC. |
| [**R4-2105394**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2105394.zip) | Way forward on UL gap for FR2 | Apple |
| [**R4-2105395**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2105395.zip) | Way forward on DC location parameters | ZTE Corporation |
| [**R4-2105396**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2105396.zip) | Way forward on new CA BW class notation | ZTE Corporation |
| [**R4-2105397**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2105397.zip) | Draft CR on CA BW class 1600 MHz for fallback group 2 | Xiaomi |
| [**R4-2105785**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2105785.zip) | WF on the RRM requirements or FR2 Inter-band DL CA and UL CA | Nokia |

**RAN4 #99-e Agreements**

CBM: No WF was approved but following issues were agreed in GTW, can be found from Chairman main session minutes.

Agreement

* RAN4 agrees to define CBM requirements in such manner that both single chain and multi chain architectures are possible.

**WF – CBM Tx/Rx requirement framework**

Agreements:

* The requirement framework and PSD condition of each below requirement shall be FFS for each one, respectively.
* REFSENS requirement
* EIS spherical coverage requirement
* ACS and IBB requirement
* Max. input power requirement
* Others
* Potential requirement framework as starting point
* Option 1: Intra-band NC framework including relaxations
* Option 2: Inter-band CA framework including relaxations (∆RIB)
* Other framework is not precluded

From moderator summary [**R4-2107947**](ftp://ftp.3gpp.com/tsg_ran/WG4_Radio/TSGR4_99-e/Docs/R4-2107947.zip)

Sub-topic #3-1 IBM DL interband CA for band combinations within same frequency group.

Work for IBM DL interband CA for band combinations within same frequency group is put on hold until there is operator request.

Sub-topic #3-2 CBM DL interband CA for band combinations between the frequency groups.

In following meetings RAN4 discusses the following two options

1. Label n260+n261 as IBM only

2. Conclude that CBM UE is feasible for n260+n261 and define requirements in REL17

Primary objective is to confirm the feasibility of CBM UE for n260+n261 and then develop requirements.

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| [R4-2107854](ftp://ftp.3gpp.com/tsg_ran/WG4_Radio/TSGR4_99-e/Docs/R4-2107854.zip) | WF on FR2 interband UL CA | Samsung |
| [R4-2108912](ftp://ftp.3gpp.com/tsg_ran/WG4_Radio/TSGR4_99-e/Docs/R4-2108912.zip) | TR 38.851-010 | Nokia, Nokia Shanghai Bell |
| R4-[2108914](ftp://ftp.3gpp.com/tsg_ran/WG4_Radio/TSGR4_99-e/Docs/R4-2108914.zip) | TP to TR 38.851 Applicability of CBM IBM for different CA configurations | Nokia, Nokia Shanghai Bell |
| [R4-2108910](ftp://ftp.3gpp.com/tsg_ran/WG4_Radio/TSGR4_99-e/Docs/R4-2108910.zip) R4-2108911 | CR to 38.307 to add interband CA R16 CATF | Source: Nokia, Nokia Shanghai Bell, NTT DOCOMO |
| [R4-2109787](ftp://ftp.3gpp.com/tsg_ran/WG4_Radio/TSGR4_99-e/Docs/R4-2109787.zip) | Introduction of FR2 DL CA\_n257+n259 and CA\_n258-n260 | Source: Nokia, Nokia Shanghai Bell, NTT DOCOMO |
| [R4-2107857](ftp://ftp.3gpp.com/tsg_ran/WG4_Radio/TSGR4_99-e/Docs/R4-2107857.zip) | WF on UL gap for FR2 | Apple |
| [R4-2107858](ftp://ftp.3gpp.com/tsg_ran/WG4_Radio/TSGR4_99-e/Docs/R4-2107858.zip) | WF on default DC location and offset signalling | Nokia |
| [R4-2107859](ftp://ftp.3gpp.com/tsg_ran/WG4_Radio/TSGR4_99-e/Docs/R4-2107859.zip) | WF on CA BW classes | Xiaomi |
| [R4-2107860](ftp://ftp.3gpp.com/tsg_ran/WG4_Radio/TSGR4_99-e/Docs/R4-2107860.zip) | CR for TS 38.101-2: Introduction of FR2 new CA BW classes | Qualcomm |
| [R4-2108037](ftp://ftp.3gpp.com/tsg_ran/WG4_Radio/TSGR4_99-e/Docs/R4-2108037.zip) | WF on RRM requirements for FR2 Inter-band DL CA and UL CA | Nokia |

#### 2.4.2 Remaining Open issues

**DL interband CA:**

• Study and if feasible define UE requirements for CBM between different freq. groups (e.g. 28GHz + 37GHz).

• Define UE requirements for inter-band CA within the same freq. group (e.g. 28GHz + 28GHz) for common beam management (CBM) based on requested band combinations.

• Study and if feasible define UE RF requirements for inter-band CA within the same freq. group (e.g. 28GHz + 28GHz) for IBM (on hold until there is operator request)

**UL interband CA:**

* Specify requirements for inter-band UL CA for two bands.
* Define requirements for CA\_n257A-n259A based on IBM

**UL gaps for self-calibration and monitoring:**

* Study and, if feasible, introduce UE specific and NW configured gap for general self-calibration and monitoring purposes including
  + UE Tx power management
  + Others self-calibration and monitoring are not precluded
  + UL gap for coherent UL MIMO is within the scope of WI for FR2 enhancement.

**DC location:**

* A way to indicate DC location
  + With the consideration of factors affecting DC location if necessary

**CA BW classes:**

* FBG1 for new CA bandwidth class
* FBG3 with 100 MHz CC’s
* Denotation for new CA BW class in FR2 if FBG3 is introduced

# 4. References

**RAN4 #98-bis-e 88 contributions submitted**

|  |  |  |  |
| --- | --- | --- | --- |
| [**R4-2104559**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2104559.zip) | Add beam management type after particular band combination requirement | MediaTek Beijing Inc. | discussion |
| [**R4-2105203**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2105203.zip) | Email discussion summary for [98-bis-e][130] NR\_RF\_FR2\_req\_enh2\_Part\_1 | Moderator (Nokia) | other |
| [**R4-2105391**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2105391.zip) | Way forward on IBM Requirements | Nokia, Nokia Shanghai Bell | other |
| [**R4-2105392**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2105392.zip) | Way forward on UE requirements for CA configurations based on CBM | Qualcomm | other |
| [**R4-2105393**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2105393.zip) | Way forward on Inter-band UL CA | Samsung | other |
| [**R4-2105467**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2105467.zip) | Email discussion summary for [98-bis-e][130] NR\_RF\_FR2\_req\_enh2\_Part\_1 | Moderator (Nokia) | other |
| [**R4-2105495**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2105495.zip) | FR2 inter-band CA for different frequency band groups with IBM (TP to TS 38.851 | Nokia, Nokia Shanghai Bell, NTT DOCOMO, INC. | pCR |
| [**R4-2106287**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2106287.zip) | Discussion on RF requirements for inter-band DL CA based on CBM and IBM | LG Electronics Polska | discussion |
| [**R4-2104490**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2104490.zip) | Draft CR to 38.101-2 on requirements for UEs that support inter-band CA with CBM | Qualcomm Incorporated | draftCR |
| [**R4-2104491**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2104491.zip) | Requirement framework for Inter-band CA with CBM | Qualcomm Incorporated | other |
| [**R4-2105095**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2105095.zip) | Applicability of CBM/IBM for different CA configurations | Xiaomi | discussion |
| [**R4-2106364**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2106364.zip) | Discussion on CBM&IBM for FR2 Inter-band DL CA | ZTE Corporation | other |
| [**R4-2107108**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2107108.zip) | Discussion on FR2 inter-band DL CA with CBM and IBM | Google Inc. | discussion |
| [**R4-2104561**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2104561.zip) | RIB proposal of CA\_n258A-n260A and CA\_n257A-n259A based on IBM | MediaTek Beijing Inc. | discussion |
| [**R4-2104698**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2104698.zip) | UE requirements for CA based on IBM | Sony, Ericsson | other |
| [**R4-2104715**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2104715.zip) | FR2 inter-band CA for different frequency band groups with IBM | Nokia, Nokia Shanghai Bell | pCR |
| [**R4-2105096**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2105096.zip) | Rx requirements for CA\_n258A-n260A and CA\_n257A-n259A based on IBM | Xiaomi | discussion |
| [**R4-2106346**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2106346.zip) | Band specific requirements for DL CA\_n257-n259 including TP for TR 38.851 | NTT DOCOMO INC. | other |
| [**R4-2106365**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2106365.zip) | Discussion on UE requirements for CA configurations of CA\_n258-n260 and CA\_n257-n259 based on IBM | ZTE Corporation | other |
| [**R4-2106565**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2106565.zip) | R17 FR2 Inter-band DL CA with IBM | OPPO | discussion |
| [**R4-2104401**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2104401.zip) | UE RF CBM requirements for CA configurations within same frequency group | Nokia, Nokia Shanghai Bell | discussion |
| [**R4-2104524**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2104524.zip) | Discussion on EIS spherical coverage and Fs,inter for CBM | vivo | discussion |
| [**R4-2104562**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2104562.zip) | Introduce Fs\_inter\_CBM as UE capability for inter-band DL CA based on CBM | MediaTek Beijing Inc. | discussion |
| [**R4-2104699**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2104699.zip) | UE requirements for CA based on CBM | Sony, Ericsson | other |
| [**R4-2105097**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2105097.zip) | Rx requirements for inter-band DL CA within the same frequency groups based on CBM | Xiaomi | discussion |
| [**R4-2106564**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2106564.zip) | R17 FR2 Inter-band DL CA within same frequency group based on CBM | OPPO | discussion |
| [**R4-2107262**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2107262.zip) | inter-band CA DL CA with CBM | HiSilicon Technologies Co. Ltd | other |
| [**R4-2104525**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2104525.zip) | Discussion on per UE concept of FR2 UL CA | vivo | discussion |
| [**R4-2106289**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2106289.zip) | Discussion on RF requirements for inter-band UL CA based on IBM | LG Electronics Polska | discussion |
| [**R4-2104560**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2104560.zip) | Proposal on inter-band UL CA requirement framework | MediaTek Beijing Inc. | discussion |
| [**R4-2104706**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2104706.zip) | UE UL CA requirements based on IBM | Sony, Ericsson | other |
| [**R4-2104716**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2104716.zip) | On FR2 inter-band UL CA for different frequency group based on IBM | Nokia, Nokia Shanghai Bell | other |
| [**R4-2104918**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2104918.zip) | Definition of Max EIRP limit for FR2 ULCA | Qualcomm Incorporated | other |
| [**R4-2105098**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2105098.zip) | Tx requirements for inter-band UL CA for two bands between different frequency groups based on IBM | Xiaomi | discussion |
| [**R4-2106402**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2106402.zip) | UE requirements for FR2 UL Inter-band CA from the perspective of Japanese regulations | NTT DOCOMO, INC., SoftBank Corp., KDDI Corporation, Rakuten Mobile, Inc | other |
| [**R4-2106563**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2106563.zip) | R17 FR2 Inter-band UL CA | OPPO | discussion |
| [**R4-2106290**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2106290.zip) | Discussion on feasibility for inter-band DL CA | LG Electronics Polska | discussion |
| [**R4-2104400**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2104400.zip) | UE RF IBM requirements for CA configurations within same frequency group | Nokia, Nokia Shanghai Bell | other |
| [**R4-2105099**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2105099.zip) | The feasibility of inter-band CA within the same frequency group for IBM | Xiaomi | discussion |
| [**R4-2107265**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2107265.zip) | inter-band CA DL CA with IBM | HiSilicon Technologies Co. Ltd | other |
| [**R4-2105042**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2105042.zip) | Discussion on CBM inter-band CA | Samsung | discussion |
| [**R4-2105100**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2105100.zip) | The feasibility of inter-band CA between different frequency groups for CBM | Xiaomi | discussion |
| [**R4-2105205**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2105205.zip) | Email discussion summary for [98-bis-e][132] NR\_RF\_FR2\_req\_enh2\_Part\_3 | Moderator (Apple) | other |
| [**R4-2105394**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2105394.zip) | Way forward on UL gap for FR2 | Apple | other |
| [**R4-2105469**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2105469.zip) | Email discussion summary for [98-bis-e][132] NR\_RF\_FR2\_req\_enh2\_Part\_3 | Moderator (Apple) | other |
| [**R4-2104526**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2104526.zip) | Discussion on gap for PA calibration | vivo | discussion |
| [**R4-2104610**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2104610.zip) | the evaluation metrics for performance gain | CMCC | discussion |
| [**R4-2104849**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2104849.zip) | UL gaps for Tx power management | Apple | discussion |
| [**R4-2104920**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2104920.zip) | Discussion on UL gap for self-calibration and monitoring | ZTE Corporation | discussion |
| [**R4-2105089**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2105089.zip) | Open issues for UL gaps for Body Proximity Sensing (BPS) and calibration | Ericsson, Sony | discussion |
| [**R4-2106396**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2106396.zip) | UE FR2 UL Gap for P-MPR/EIRP enhancements | Nokia, Nokia Shanghai Bell | discussion |
| [**R4-2107034**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2107034.zip) | Consideration on FR2 UL gap for self-calibration | NTT DOCOMO INC. | other |
| [**R4-2107267**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2107267.zip) | On FR2 UL gap for coherence calibration | HiSilicon Technologies Co. Ltd | other |
| [**R4-2107269**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2107269.zip) | on FR2 UL gap for transceiver calibration | HiSilicon Technologies Co. Ltd | other |
| [**R4-2107279**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2107279.zip) | UL calibration gap performance improvement and fall back behavior | Qualcomm Incorporated | discussion |
| [**R4-2107280**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2107280.zip) | UL cal gap types and applicability | Qualcomm Incorporated | discussion |
| [**R4-2105204**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2105204.zip) | Email discussion summary for [98-bis-e][131] NR\_RF\_FR2\_req\_enh2\_Part\_2 | Moderator (Qualcomm) | other |
| [**R4-2105395**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2105395.zip) | Way forward on DC location parameters | ZTE Corporation | other |
| [**R4-2105396**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2105396.zip) | Way forward on new CA BW class notation | ZTE Corporation | other |
| [**R4-2105397**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2105397.zip) | Draft CR on CA BW class 1600 MHz for fallback group 2 | Xiaomi | draftCR |
| [**R4-2105468**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2105468.zip) | Email discussion summary for [98-bis-e][131] NR\_RF\_FR2\_req\_enh2\_Part\_2 | Moderator (Qualcomm) | other |
| [**R4-2104691**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2104691.zip) | Discussion on RRM requirements for FR2 inter-band DL CA | Xiaomi | discussion |
| [**R4-2105101**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2105101.zip) | Introducing new bandwidth classes for FR2 CA | Xiaomi | discussion |
| [**R4-2106907**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2106907.zip) | New FR2 CA BW classes | Apple | other |
| [**R4-2107266**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2107266.zip) | on FR2 CA bandwidth class | HiSilicon Technologies Co. Ltd | other |
| [**R4-2105102**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2105102.zip) | Rx requirements for new bandwidth classes | Xiaomi | discussion |
| [**R4-2106566**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2106566.zip) | R17 DC reporting for more than 2CCs | OPPO | discussion |
| [**R4-2106910**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2106910.zip) | DC location for intra-band UL CA with more than 2 CCs | Apple | other |
| [**R4-2107257**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2107257.zip) | Further study on DC location reporting | HiSilicon Technologies Co. Ltd | other |
| [**R4-2107281**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2107281.zip) | DC location for greater than 2CC | Qualcomm Incorporated | discussion |
| [**R4-2105685**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2105685.zip) | Email discussion summary for [98-bis-e][215] NR\_RF\_FR2\_req\_enh2\_RRM | Moderator (Nokia, Nokia Shanghai Bell) | other |
| [**R4-2105785**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2105785.zip) | WF on the RRM requirements or FR2 Inter-band DL CA and UL CA | Nokia | other |
| [**R4-2105817**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2105817.zip) | Email discussion summary for [98-bis-e][215] NR\_RF\_FR2\_req\_enh2\_RRM | Moderator (Nokia, Nokia Shanghai Bell) | other |
| [**R4-2104632**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2104632.zip) | Considerations on RRM requirements for inter-band DL CA in NR FR2 | vivo | discussion |
| [**R4-2104837**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2104837.zip) | On the feasiblity of CBM with MRTD more than CP length | Apple | discussion |
| [**R4-2104978**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2104978.zip) | Discussion on FR2 inter-band DL CA enhancements | NEC | discussion |
| [**R4-2105141**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2105141.zip) | Support up to 3 us MRTD | Ericsson | other |
| [**R4-2106302**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2106302.zip) | Discussion on MRTD requirements for FR2 inter-band CA based on CBM and IBM | LG Electronics Polska | discussion |
| [**R4-2106393**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2106393.zip) | Discussion on FR2 RF RRM | Nokia, Nokia Shanghai Bell | discussion |
| [**R4-2106394**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2106394.zip) | DraftCR for CBM and IBM applicability | Nokia, Nokia Shanghai Bell | draftCR |
| [**R4-2106506**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2106506.zip) | Discussion on MRTD requirements for inter-band DL CA in FR2 | Intel Corporation | discussion |
| [**R4-2106531**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2106531.zip) | RRM requirements for FR2 inter-band DL CA enhancements | OPPO | discussion |
| [**R4-2106944**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2106944.zip) | Discussion on FR2 inter-band DL CA enhancement | Huawei, HiSilicon | discussion |
| [**R4-2107289**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2107289.zip) | FR2 Inter-band DL CA | Qualcomm Incorporated | discussion |
| [**R4-2106945**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2106945.zip) | Discussion on FR2 inter-band UL CA | Huawei, HiSilicon | discussion |
| [**R4-2106395**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2106395.zip) | UL Gaps for PA calibration and proximity detection | Nokia, Nokia Shanghai Bell | discussion |
| [**R4-2106946**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2106946.zip) | Discussion on UL gaps for self-calibration and monitoring | Huawei, HiSilicon | discussion |
| [**R4-2107078**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_98bis_e/Docs/R4-2107078.zip) | Discussion on RRM impact of UL gaps for self-calibration and monitoring | vivo | discussion |

**RAN4 #99-bis-e 81 contributions submitted**

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| R4-2107663 | Email discussion summary for [99-e][137] NR\_RF\_FR2\_req\_enh2\_Part\_1 | Moderator (Nokia) | Other |
| [**R4-2108912**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2108912.zip) | TR 38.851-010 | Nokia, Nokia Shanghai Bell | draft TR |
| [**R4-2109980**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2109980.zip) | On MRTD and CBM capability for inter-band DL CA | Ericsson | other |
| R4-2110667 | CR on introduction of completed EN-DC of 2 bands LTE and 1 band NR from RAN4#99-e and RAN4#98-bis-e into TS 38.101-3 | Huawei, HiSilicon | CR |
| [**R4-2109889**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2109889.zip) | Discussion on RX beam switch delay for FR2 inter-band DL CA | NEC | discussion |
| [**R4-2109450**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2109450.zip) | Inter-band DL CA for FR2 | Apple | discussion |
| [**R4-2108914**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2108914.zip) | TP to TR 38.851 Applicability of CBM IBM for different CA configurations | Nokia, Nokia Shanghai Bell | pCR |
| [**R4-2109539**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2109539.zip) | Discussion on UE capability supporting both IBM and CBM | Samsung | discussion |
| [**R4-2110182**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2110182.zip) | UE capability of IBM and CBM | Xiaomi | discussion |
| [**R4-2110435**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2110435.zip) | Further discussion on CBM&IBM for FR2 Inter-band DL CA | ZTE Corporation | other |
| [**R4-2108910**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2108910.zip) | CR to 38.307 to add interband CA R16 CATF | Nokia, Nokia Shanghai Bell, NTT DOCOMO | CR |
| R4-2108911 | CR to 38.307 to add interband CA R17 CATA | Nokia, Nokia Shanghai Bell, NTT DOCOMO | CR |
| [**R4-2109183**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2109183.zip) | Relaxation values of spherical coverage requirement for n257-n259 | NTT DOCOMO INC., Nokia, Nokia Shanghai Bell | other |
| R4-2109184 | CR to TS38.101-2[R17]: Addition of requirements for n257+n259 and n258+n260 | NTT DOCOMO INC. | CR |
| [**R4-2109787**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2109787.zip) | Introduction of FR2 DL CA\_n257+n259 and CA\_n258-n260 | Nokia, Nokia Shanghai Bell, NTT DOCOMO, INC. | CR |
| [**R4-2110822**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2110822.zip) | R17 FR2 Inter-band DL CA with IBM | OPPO | discussion |
| [**R4-2111370**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2111370.zip) | On Rel-17 inter band DL CA with IBM \_FR2 | Huawei, HiSilicon | other |
| [**R4-2108812**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2108812.zip) | Requirement framework for Inter-band CA with CBM | Qualcomm Incorporated | other |
| [**R4-2108913**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2108913.zip) | CA with IBM within same frequency group | Nokia, Nokia Shanghai Bell | other |
| [**R4-2109009**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2109009.zip) | UE requirements for CBM | Sony, Ericsson | other |
| [**R4-2109540**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2109540.zip) | Discussion on CBM requirements of inter-band DL CA | Samsung | discussion |
| [**R4-2109558**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2109558.zip) | View on Inter-band DL CA based on CBM within same frequency group | MediaTek Beijing Inc. | discussion |
| [**R4-2109653**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2109653.zip) | Discussion on RF requirements for inter-band DL CA based on CBM | LG Electronics Polska | discussion |
| [**R4-2109655**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2109655.zip) | Discussion on CBM architecture and requirement | vivo | discussion |
| [**R4-2110183**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2110183.zip) | Rx requirements for inter-band DL CA with CBM | Xiaomi | discussion |
| [**R4-2110824**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2110824.zip) | R17 FR2 Inter-band DL CA within same frequency group based on CBM | OPPO | discussion |
| [**R4-2111169**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2111169.zip) | Discussion on FR2 inter-band DL CA with CBM | Google Inc. | discussion |
| [**R4-2109656**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2109656.zip) | Discussion on FR2 inter-band UL CA | vivo | discussion |
| [**R4-2109010**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2109010.zip) | UE UL CA requirements based on IBM | Sony, Ericsson | other |
| [**R4-2109330**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2109330.zip) | Definition of FR2 EIRP and spherical coverage for ULCA non-overlapping bands n257 and n259 | Qualcomm Incorporated | discussion |
| [**R4-2109559**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2109559.zip) | View on Inter-band UL CA based on IBM within different frequency groups | MediaTek Beijing Inc. | discussion |
| [**R4-2109654**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2109654.zip) | Discussion on RF requirements for inter-band UL CA based on IBM | LG Electronics Polska | discussion |
| [**R4-2109788**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2109788.zip) | On FR2 inter-band UL CA for different frequency group based on IBM | Nokia, Nokia Shanghai Bell | pCR |
| [**R4-2110184**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2110184.zip) | Tx requirements for inter-band UL CA between different frequency groups based on IBM | Xiaomi | discussion |
| [**R4-2110434**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2110434.zip) | Discussion on Max EIRP limit for FR2 ULCA | ZTE Corporation | other |
| [**R4-2110825**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2110825.zip) | R17 FR2 Inter-band UL CA | OPPO | discussion |
| [**R4-2109701**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2109701.zip) | Discussion on feasibility for inter-band DL CA | LG Electronics Polska | discussion |
| [**R4-2109560**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2109560.zip) | View on Inter-band DL CA based on IBM within same frequency group | MediaTek Beijing Inc. | discussion |
| [**R4-2110823**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2110823.zip) | R17 FR2 Inter-band DL CA with IBM for same freq group | OPPO | discussion |
| [**R4-2109576**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2109576.zip) | View on Inter-band DL CA based on CBM within different frequency groups | MediaTek Beijing Inc. | discussion |
| [**R4-2111371**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2111371.zip) | On Rel-17 inter band DL CA with CBM \_FR2 | Huawei, HiSilicon | other |
| R4-2107664 | Email discussion summary for [99-e][138] NR\_RF\_FR2\_req\_enh2\_Part\_2 | Moderator (Apple) | Other |
| [**R4-2109341**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2109341.zip) | UL gaps for Tx power management RF aspect | Apple | discussion |
| [**R4-2109657**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2109657.zip) | Discussion on gap for PMPR calibration | vivo | discussion |
| [**R4-2109744**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2109744.zip) | Network impact of UE FR2 UL Gap for UE Tx power enhancement | Nokia, Nokia Shanghai Bell | discussion |
| [**R4-2109762**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2109762.zip) | Discussion on UL gap for self-calibration and monitoring | ZTE Corporation | discussion |
| [**R4-2110033**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2110033.zip) | FR2 UL gap for power management (P-MPR) and Tx calibration (peak EIRP) | NTT DOCOMO INC. | other |
| [**R4-2110826**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2110826.zip) | R17 FR2 UL gap for coherent UL MIMO | OPPO | discussion |
| [**R4-2111151**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2111151.zip) | Further consideration on UL calibration gaps | Ericsson | discussion |
| [**R4-2111383**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2111383.zip) | On FR2 UL gap for coherence calibration | Huawei, HiSilicon | other |
| [**R4-2108797**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2108797.zip) | UL Gap testability and configuration aspects | Qualcomm Incorporated | discussion |
| [**R4-2109745**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2109745.zip) | Requirements and test cases of for P-MPR/EIRP enhancements for UE FR2 UL Gap | Nokia, Nokia Shanghai Bell | other |
| [**R4-2110827**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2110827.zip) | R17 FR2 UL gap for power management | OPPO | discussion |
| R4-2107665 | Email discussion summary for [99-e][139] NR\_RF\_FR2\_req\_enh2\_Part\_3 | Moderator (Qualcomm) | Other |
| R4-2107860 | CR for TS 38.101-2: Introduction of FR2 new CA BW classes | Qualcomm | CR |
| [**R4-2109528**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2109528.zip) | Considerations on new CA BW class notation | ZTE Corporation | discussion |
| [**R4-2110161**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2110161.zip) | New FR2 CA BW classes | Apple | other |
| [**R4-2110162**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2110162.zip) | CR for TS 38.101-2: Introduction of FR2 new CA BW classes | Apple | CR |
| [**R4-2110185**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2110185.zip) | Discussion on FR2 new CA BW class denotation and definition | Xiaomi | discussion |
| [**R4-2111381**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2111381.zip) | on FR2 CA bandwidth class | Huawei, HiSilicon | other |
| [**R4-2108798**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2108798.zip) | DC location solution RAN4 aspects | Qualcomm Incorporated | discussion |
| [**R4-2109004**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2109004.zip) | DC location parameters for both FR1 and FR2 | Nokia, Nokia Shanghai Bell | other |
| [**R4-2109658**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2109658.zip) | Discussion on DC location of FR2 intra-band CA | vivo | discussion |
| [**R4-2110821**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2110821.zip) | R17 DC reporting for more than 2CCs | OPPO | discussion |
| R4-2108145 | Email discussion summary: [99-e][221] NR\_RF\_FR2\_req\_enh2\_RRM | Moderator (Nokia) | other |
| [**R4-2108969**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2108969.zip) | FR2 Inter-band DL CA | Qualcomm Incorporated | discussion |
| [**R4-2109256**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2109256.zip) | Further discussion on RRM requirements for FR2 inter-band DL CA | Xiaomi | discussion |
| [**R4-2109546**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2109546.zip) | Discussions on Inter-band DL CA enhancements | NTT DOCOMO, INC. | discussion |
| [**R4-2109613**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2109613.zip) | For RRM requirements for inter-band DL CA in NR FR2 | vivo | discussion |
| [**R4-2109706**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2109706.zip) | Discussion on MRTD for FR2 inter-band CA based on CBM | LG Electronics Polska | discussion |
| [**R4-2109751**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2109751.zip) | Discussion on MRTD requirements for inter-band DL CA in FR2 | ZTE Corporation | discussion |
| [**R4-2109854**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2109854.zip) | Discussion on CBM MRTD requirement for FR2 inter-band DL CA | MediaTek inc. | discussion |
| [**R4-2109888**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2109888.zip) | Discussion on FR2 inter-band DL CA enhancements | NEC | discussion |
| [**R4-2110059**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2110059.zip) | RRM requirements for FR2 inter-band DL CA enhancements | OPPO | discussion |
| [**R4-2110301**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2110301.zip) | Discussion on FR2 inter-band DL CA enhancement | Huawei, HiSilicon | discussion |
| [**R4-2110419**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2110419.zip) | Support up to 3 us MRTD | Ericsson | other |
| [**R4-2110949**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2110949.zip) | MRTD requirements for CBM UEs | Intel Corporation | discussion |
| [**R4-2111280**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2111280.zip) | Discussion on FR2 RF RRM | Nokia, Nokia Shanghai Bell | discussion |
| [**R4-2111281**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2111281.zip) | UL CA for IBM | Nokia, Nokia Shanghai Bell | discussion |
| [**R4-2109363**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2109363.zip) | UL gaps for Tx power management RRM aspect | Apple | discussion |
| [**R4-2111260**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2111260.zip) | Discussion on RRM impacts of UL gaps for self-calibration and monitoring | vivo | discussion |

17.05.2021 minor adaptations for RAN #92e

28.01.2021 minor adaptations for RAN #91e

09.11.2020 minor adaptations for RAN #90e

31.08.2020 minor adaptations for RAN #89e

20.04.2020 minor adaptations for RAN #88e

18.02.2020 minor adaptations for RAN #87e

14.11.2019 minor adaptations for RAN #86

18.08.2019 minor adaptations for RAN #85

12.05.2019 minor adaptations for RAN #84

27.02.2019 minor adaptations for RAN #83

21.11.2018 completion levels with colours added (for RAN #82)

v04.81 31.07.2018 simplification of template and addition of cross-TSG aspects (for RAN #81)

v04.80 21.05.2018 minor adaptations for RAN #80

v04.79 26.02.2018 minor adaptations for RAN #79

v04.78 18.11.2017 minor adaptations for RAN #78

v04.77 06.08.2017 minor adaptations for RAN #77

v04.76 15.05.2017 minor adaptations for RAN #76

v04.75 31.01.2017 minor adaptations for RAN #75

v04.74 28.10.2016 minor adaptations for RAN #74

v04.73 01.09.2016 adaptations for RAN #73 (time units in extra Excel table, RAN6 reporting included)

v04.72 26.05.2016 adaptations for RAN #72 (introduction of NR & GERAN TUs)

v04.71 10.02.2016 minor adaptations for RAN #71

v04.70 30.10.2015 minor adaptations for RAN #70

v04.69 12.08.2015 minor adaptations for RAN #69

v04.68 21.05.2015 minor adaptations for RAN #68

v04.67 01.02.2015 minor adaptations for RAN #67

v04.66 16.11.2014 minor adaptations for RAN #66

v04.65 16.08.2014 minor adaptations for RAN #65

v04.64 22.05.2014 minor adaptations for RAN #64

v04.63 24.01.2014 restructuring for RAN #63 to cover Core & Perf. in one doc file

v03.62 11.11.2013 section 1.2.3 adapted for RAN #62

v03 11.08.2013 section 1.2.3 added on time budget

v02 07.05.2010 history added, some spelling corrections

v01 13.11.2009 First version of the template