**3GPP TSG-RAN WG4 Meeting # 103-e R4-2210507**

**Electronic Meeting, May 09 – May 20, 2022**

**Agenda item:** 9.5.1, 9.5.2 and 9.5.3

**Source:** Moderator (CMCC)

**Title:** Email discussion summary for [103-e][304] NR\_Repeater\_RFMaintenance

**Document for:** Information

# Introduction

RAN#90e approved a new “New WID on NR Repeaters” with RAN4 as the responsible WG, which includes development of FR1 FDD specifications as well as TDD specifications for FR1 and FR2. The scope of this email discussion focuses on all RF maintenance requirements, the same as the agenda 9.5.1, 9.5.2, 9.5.3 for current meeting.

List of candidate target of email discussion for 1st round and 2nd round

* 1st round: discuss the open issues, strive to finish all the open issues and collect comment for draft CRs
* 2nd round: strive to approve all draft CRs.

# Topic #1: General requirement maintenance

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| [**R4-2207983**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207983.zip) | Ericsson | CR to 38.106: Corrections to definitions, symbols and abbreviations |
| [**R4-2208132**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208132.zip) | CATT | CR for TS 38.106 R17: clean up of clause 4 |
| [**R4-2209600**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209600.zip) | ZTE Corporation | Proposal 1: not to define the repeater in band n46, n96 and n102 since the existing requirement defined in TS 38.106 is not applicable. |
| [**R4-2209601**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209601.zip) | ZTE Corporation | CR to TS38.106: clarification on the supported operating bands for NR repeater |
| [**R4-2209805**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209805.zip) | Nokia, Nokia Shanghai Bell | CR to TS 38.106 with corrections to repeater core specification |
| [**R4-2210016**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210016.zip) | Huawei | Draft CR Correction to reference point diagram |
| [**R4-2210020**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210020.zip) | Huawei | Draft CR Terms, symbols and abbreviations |
| [**R4-2208797**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208797.zip) | NEC | CR to 38.106: Regional requirements for NR repeaters |

## Open issues summary

Agenda 9.5.1

* + 1. Sub-topic 1-1 supported bands for NR repeater

**Issue 1-1: supported bands for NR repeater**

* Proposals
  + Option 1: not to define the repeater in band n46, n96 and n102 (ZTE)
* Recommended WF
  + Option 1.

## Companies views’ collection for 1st round

### Open issues

Sub topic 1-1

|  |  |
| --- | --- |
| **Company** | **Comments** |
| XXX |  |
| CATT | Seems reasonable. |
| Nokia, Nokia Shanghai Bell | OK with proposal 1. |
| Ericsson | We agree with option 1, it is a good point that the requirements are not correct for unlicensed. |
| DOCOMO | OK with option 1. |
| NEC | Support option 1. |
| Huawei | As emission are for licensed this is reasonable. So option 1 ok. |
| ZTE | During the Rel-17 repeater discussion, there were no discussions related with NR-U band and also requirement definition like UEM related requirement are also based on licensed band, therefore we propose to remove that to avoid the confusion. |
| Qualcomm | We agree with the proposal. |
| CMCC | support option 1 |

### CRs/TPs comments collection

*For close-to-finalize WIs and maintenance work, comments collections can be arranged for TPs and CRs. For ongoing WIs, suggest to focus on open issues discussion on 1st round.*

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| [**R4-2207983**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207983.zip) | Nokia: There is also CR R4-2210020 with corrections to Terms clauses with some of the similar corrections, it would be good to align changes. **Huawei:** As stated above this should be merged with R4-2210020, that CR also has some corrections in the main body of the text so maybe easier to use that as starting point (we can merge the changes if that’s ok with Ericsson?)  **ZTE:**   1. For co-location reference antenna. This might be not needed since this is mainly defined for BS type 1-O (e.g. to measure Tx OFF power and co-location spurious emission or injecting interfering signal to NR BS) 2. Δf Separation between the *channel edge* frequency and the nominal -3 dB point of the measuring filter closest to the carrier frequency   Should keep aligned with the following, we don’t have the channel edge.  - Δf is the separation between the *passband edge* frequency and the nominal -3dB point of the measuring filter closest to the carrier frequency.   1. ΔfOBUE Maximum offset of the *operating band* unwanted emissions mask from the downlink *operating band* edge   In Table 6.5.1-1 and Table 6.5.1-2, it’s defined for both downlink and uplink, please remove the downlink to keep the consistency between abbreviation and core requirements;  4)f\_offsetmax The offset to the frequency ΔfOBUE outside the downlink *operating band*  please remove the downlink to keep the consistency between abbreviation and core requirements;   1. Please add the FDL, low and Fdl,high   FUL,low The lowest frequency of the uplink *operating band*  FUL,high The highest frequency of the uplink *operating band*  CMCC: it seems we still need:  Rated total TRP output power: this is the total TRP power per operation band which will be used in FR2 OBUE limit. And  Prated,t,out,TRP: rated total TRP output power per RIB |
| [**R4-2208132**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208132.zip) | Nokia: OK  **Ericsson:**  **The change of “operating band unwanted emissions” to “spurious emissions” for the declaration of category A/B operating band unwanted emissions is not correct. It should be OBUE. There is a separate declaration of operating band unwanted emissions category later in the list.**  **The addition of repeater type 1-H for spurious emissions is incorrect as there is no repeater type 1-H.**  **NEC: No OTA repeater output power requirements for band n41 and n90. No OTA input intermodulation requirements for band n77, n78, and n79.**  Huawei: This covers the correction to the reference point diagram in R4-2210016 as well as other changes so we don’t need R4-210016  **ZTE:**  The emission limits for *repeater type 1-H* specified as the *basic limit* + X (dB) are applicable, unless stated differently in regional regulation.  There is no repeater type 1-H defined in Rel-17, only repeater type 1-C and 2-O is supported  CMCC:  Delete OTA repeater output power for band n41 and n90 as in the third row.  OTA input IMD as in 7.7.2 should be deleted.  For 4.7, since we have define the Rx spurious emission as proposed by DoCoMo, Rx spurious emission requirement should be added. |
| [**R4-2208797**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208797.zip) | **CMCC: should follow the same change as in 2208132 to make these two CR aligned in the end.** |
| Moderator note: both CR 2208797 and CR R4-2208132 include update of the table 4.4-1 List of regional requirements. They should be merged and aligned at the end. | |
| [**R4-2209601**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209601.zip) | Nokia: OK  **Huawei:** The reference should go next to the document number and it should be operating bands plural not operating band. i.e.  NR repeater is designed to operate in the *operating bands* in FR1 and FR2-1 defined in TS 38.104 [2] except the operating bands n46, n96 and n102 ~~[2].~~  **ZTE: fine with huawei’s suggestion** |
| [**R4-2209805**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209805.zip) | DOCOMO: Though it may not be the correction by this CR, the last sentence in clause 6.5.4.1 refers clause 6.5.5.2, but it should refer clause 6.5.4.2.  Huawei: The reference point diagram correction is in this CR as well if its updated then maybe remove that correction to avoid cross over with R4-2209805 (if no need to update maybe the editor can sort out when combining for the big CR?) |
| [**R4-2210016**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210016.zip) | Nokia: The same correction is also included in Nokia correction CR R4-2209805.  Huawei: covered by R4-2209805 so not needed can be noted.  **ZTE:**  in general, okay for that, it should be formal CR instead of draft CR, this is similar as R4-2209805. |
| [**R4-2210020**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210020.zip) | Nokia: Similar comments as for R4-2207983.  Huawei: Suggest using this as a basis for merger with R402207983 as it also includes some other related corrections in other clauses.  **ZTE:**  **gap between passbands:** frequency gap between two consecutive passbands, where the RF requirements in the gap are based on co-existence for un-coordinated operation  **inter-passband gap:** The frequency gap between two supported consecutive *passbands*.  It’s the same and only one should be kept.  For symbol part, some comments on R4-2207983 is also applicable here.  NEC: Need to differentiate passband power and total power. See reply comments for R4-2208796.  **CMCC:**  **What’s the difference between gap between passbands and inter-passband gap?**  **My understanding is that the first one corresponds to intra- operation band and the other corresponds to inter operation band. If so, it seems current description is a little confusing. So how about change it as below:**  **Gap between passbands: frequency gap between two consecutive passbands belonging to the same operation band, where the RF requirements in the gap are based on co-existence for un-coordinated operation.**  **Inter-passband gap: the frequency gap between two supported consecutive passbands belonging to two different consecutive operation band.** |

## Summary for 1st round

### Open issues

*Moderator tries to summarize discussion status for 1st round, list all the identified open issues and tentative agreements or candidate options and suggestion for 2nd round i.e. WF assignment.*

|  |  |
| --- | --- |
|  | Status summary |
| Sub-topic #1-1 | All companies support the proposal.  **Tentative agreements:**  not to define the repeater in band n46, n96 and n102 |

Following sub topic #1-2 is added to capture the controversial issue during the discussion of CRs

|  |  |
| --- | --- |
|  | Status summary |
| Issue #1-2-1 | **Issue #1-2-1: what’s the difference between “gap between passbands” and “inter-passband gap”, do we need such two concepts?**  The understanding of above two concepts is diversity. Huawei (the author for 2210020) shows some explanation of such two definitions.  **Recommendation for 2nd discussion:**  whether to include both “gap between passbands” and “inter-passband gap” into the spec   * Option 1: yes, both of them are needed * Option 2: no, only one is enough.   Recommendation is option 1 |

### CRs/TPs

*Moderator tries to summarize discussion status for 1st round and provides recommendation on CRs/TPs Status update*

*Note: The tdoc decisions shall be provided in Section 3 and this table is optional in case moderators would like to provide additional information.*

|  |  |
| --- | --- |
| **CR/TP number** | **CRs/TPs Status update recommendation** |
| all all CRs | All the CRs have received the comment. So all of them are suggested to be revised. |

## Discussion on 2nd round (if applicable)

|  |  |  |  |
| --- | --- | --- | --- |
| Discussion based on the following WF.**New Tdoc number** | **Title** | **Source** | **Comments** |
|  | WF on remaining issues for RF repeater | CMCC | To capture all the agreements for remaining issues |

### CRs/TPs comments collection

*For close-to-finalize WIs and maintenance work, comments collections can be arranged for TPs and CRs.*

***Companies are welcome to update the CR directly based on the previous version by revision mode.***

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| Revision of **[R4-2207983](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207983.zip)** |  |
| Revision of  **[R4-2208132](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208132.zip)** |  |
| Revision of  **[R4-2208797](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208797.zip)** |  |
| Revision of  **[R4-2209601](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209601.zip)** |  |
| Revision of  **[R4-2209805](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209805.zip)** |  |
| Revision of  **[R4-2210016](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210016.zip)** |  |
| Revision of  **[R4-2210020](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210020.zip)** |  |

1. Topic #2: Conductive RF core requirement maintenance
   1. Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| [**R4-2207979**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207979.zip) | Ericsson | Proposal 1: Clarify wanted signal type to “NR signal, filling all supported passbands in the operating band and with sufficient carriers to fill each passband. Minimum supported SCS for the operating band”.  Proposal 2: Specify the interfering signal bandwidth to be 10MHz.  Proposal 3: Define a term total output power in the operating band and set the interfering signal level to be 30dB below this value.  Proposal 4: Use the same notes on interfering signal applicability as those applied for the BS requirement. |
| [**R4-2207980**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207980.zip) | Ericsson | Draft CR corresponding to above proposals as in 2207979 |
| [**R4-2208133**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208133.zip) | CATT | CR for TS 38.106 R17: clean up of clause 6 |
| [**R4-2208406**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208406.zip) | CMCC | Draft CR for 38.106: add co-existence requirements for input intermodulation |
| [**R4-2208788**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208788.zip) | NTT DOCOMO, INC. | Observation 1: Defining Rx spurious emissions limits for FR1 TDD repeater was agreed but the requirements have not been reflected in current specification.  Observation 2: The applicability of ACLR relative and absolute limits were missing in current specification.  Proposal 1: RAN4 reflect the Rx spurious emissions limits for TDD repeater in clause 6.5 for TS 38.106 based on the description for BS type 1-C with appropriate modifications for repeater.  Proposal 2: RAN4 add a sentence to clarify the applicability of ACLR relative and absolute limits. |
| [**R4-2208789**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208789.zip) | NTT DOCOMO, INC. | Draft CR corresponding to above proposals as in 2208788 |
| [**R4-2208796**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208796.zip) | NEC | CR to 38.106: Output power definitions for NR repeaters |
| [**R4-2210017**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210017.zip) | Huawei | Draft CR OBUE |
| [**R4-2210019**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210019.zip) | Huawei | Draft CR out of band gain |
| [**R4-2210021**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210021.zip) | Huawei | Draft CR conducted output power |

* 1. Open issues summary

Agenda 9.5.2

* + 1. Sub-topic 2-1 output IMD for FR1

**All following issues are to correct legacy requirement in 38.106 as proposed in R4-2207979, corresponding to draft CR R4-2207980.**

**Issue 2-1-1: the wanted signal type**

* Proposals
  + Option 1: Clarify wanted signal type to “NR signal, filling all supported passbands in the operating band and with sufficient carriers to fill each passband. Minimum supported SCS for the operating band”. (Ericsson)
* Recommended WF
  + Option 1.

|  |  |
| --- | --- |
| **Company** | **Comments** |
| CATT | Ok with the proposal. |
| Nokia, Nokia Shanghai Bell | OK with proposal 1. |
| DOCOMO | OK with option 1. |
| ZTE | Even go with option 1, it’ still not clear yet. What’s the basic unit of carriers for Tx IMD testing,  the maximum *passband* bandwidth with lowest SCS supported on that band?  It’s better to clarify as following, in  min(100 MHz, maximum BW*passband*)  For its detailed carrier placing, this could be done in test configuration similar as NRTC1 and NRTC3 in 38.141-1 for BS conformance testing. It could be addressed in the test configuration part. |
| CMCC | To ZTE, the main motivation of the proposal is to fully fill all the passband(s) in the operation band, so there is no need to consider basic unit of carriers.  We support proposal 1. |

**Issue 2-1-2: the interfering signal bandwidth**

* Proposals
  + Option 1: 10MHz. (Ericsson)
  + Option 2: referring to the minimum channel bandwidth in 38.104.
* Recommended WF
  + TBA.

|  |  |
| --- | --- |
| **Company** | **Comments** |
| CATT | Ok with the proposal. |
| Nokia, Nokia Shanghai Bell | OK with proposal 1. |
| Ericsson | Support option 1, but Option 2 would also be OK for us |
| DOCOMO | OK with both options. |
| NEC | Both option 1 and option 2 are ok for us. |
| ZTE | Option 2 is more preferred. For option 1, in some operating bands, its minimum channel bandwidth would be larger than 10MHz e.g. band n104. To set the 10MHz or 5MHz as interfering signal, it might be not necessarily needed. |
| CMCC | Proposal 2 is preferred considering the diversity of minimum bandwidth. |

**Issue 2-1-3: the interfering signal level**

* Proposals
  + Option 1: define a term total output power in the operating band and set the interfering signal level to be 30dB below this value. (Ericsson)
* Recommended WF
  + Option 1.

|  |  |
| --- | --- |
| **Company** | **Comments** |
| CATT | Ok with the proposal. |
| Nokia, Nokia Shanghai Bell | OK with proposal 1. |
| DOCOMO | OK with option 1. |
| NEC | Ok with option 1. |
| ZTE | Fine with option 1. |
| CMCC | OK with option 1. |

**Issue 2-1-4: the interfering signal position**

* Proposals
  + Option 1: Use the same notes on interfering signal applicability as those applied for the BS requirement. (Ericsson)
* Recommended WF
  + Option 1.

|  |  |
| --- | --- |
| **Company** | **Comments** |
| CATT | Ok with the proposal. |
| Nokia, Nokia Shanghai Bell | OK with proposal 1. |
| DOCOMO | OK with option 1. |
| NEC | Support option 1. |
| Huawei | ok |
| ZTE | It’s okay to reuse the notes of BS requirements |
| CMCC | OK |

* 1. Companies views’ collection for 1st round
     1. Open issues

Please show your comment just after corresponding issues as in section 2.2.1.

* + 1. CRs/TPs comments collection

*For close-to-finalize WIs and maintenance work, comments collections can be arranged for TPs and CRs. For ongoing WIs, suggest to focus on open issues discussion on 1st round.*

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| [**R4-2207980**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207980.zip) | Nokia: OK  **NEC: Ok in general. Symbols need to be aligned with other CRs.**  Huawei: Ok check the changes to terms and definitions don’t cross over with the CR in topic#1 (R4-2210020)  **CMCC:**  **may need some changes according the conclusion in topic 2-1** |
| Moderator note: R4-2207980 is the correction CR corresponding to sub-topic 2-1. It’s better to discuss all the issues in sub topic 2-1 at first and this CR could be updated according to the conclusion if needed. | |
| [**R4-2208133**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208133.zip) | Nokia: In new additions in Table 6.5.4.2.2-1, ‘BS’ should be replace by ‘repeater’  Ericsson: The statement that the requirement applies to the UL and DL implies that repeaters should meet core requirements in both directions. It may be useful to consider allowing for the possibility of allowing for a one way repeater in the specifications. The statement in the core spec could be clarified to applying in each direction (DL and/or UL) in which the repeater operates or something similar.  **Huawei:**  I think the defiant should perhaps be that the requirements apply in both directions unless specifically stated otherwise (this was my assumption maybe it needs to be made more clear) , this is perhaps a bit safer, and as such would mean it is unnecessary to state they apply in UL and DL.  Again there is a definition of BWpassband in this paper and in R4-2210020, they are slightly different (although both perhaps ok), this may come up a bit in these CR’s what’s best way to handle?  ZTE:  In the coexistence requirements for repeater, n104 is missing.  In addition, the following note is not correct, it should be apply to repeater. If unlicensed band n46, n96 and n102 is excluded from the existing spec, then the corresponding Note in the coexistence requirement should also been removed since it’s not applicable for repeater anymore.  This requirement does not apply to BS operating in Band n46, n96 or n102.  CMCC: the symbol of passband should be aligned with final approved symbol. i.e. should be aligned with final section 3. |
| [**R4-2208406**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208406.zip) | Nokia: OK  NEC: Concern on the text in the general clause. Text in 36.106 can be a good reference.  **Huawei:** The note index in the table is not how we normally do it (note 2) rather than 2  ZTE:  In general, it looks fine, however for band n46, n96 and n102, it need more discussions as mentioned before.  CMCC: according to the agreement in topic 1, I will delete the description for n46, n96 and n102 |
| [**R4-2208789**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208789.zip) | Nokia: OK  NEC: Agree the changes in general. Proposed text for ACLR clarification sounds “whichever is less stringent” applies only to WA class. Modifications are required for table 6.5.5.2-1. Reference for ITU-R SM.329 is [5]. ΔfOBUE is defined in clause 6.5.1.  **Huawei:** I’m not particular fond of using the term receiver for the repeater input, but I guess it keeps it consistent with BS and the meaning is quite clear so unless anyone has a better idea then its ok.  ZTE:  For applicable rule, it should be applicable for WA DL/UL and MR DL we think. For LA DL, UL, it is not needed.  In general, we are okay for Rx spurious emission requirement, the further wording update might be needed for the following text.  For a*ntenna connectors* both BS-side and UE-side supporting both RX and TX in TDD, the requirements apply during the *transmitter OFF period*. For *antenna connectors* both BS-side and UE-side in FDD, the RX spurious emissions requirements are superseded by the TX spurious emissions requirements, as specified in clause 6.5.4. |
| Moderator note: Reason for changes in above CR are also listed in R4-2208788 as below:  Proposal 1: RAN4 reflect the Rx spurious emissions limits for TDD repeater in clause 6.5 for TS 38.106 based on the description for BS type 1-C with appropriate modifications for repeater.  Proposal 2: RAN4 add a sentence to clarify the applicability of ACLR relative and absolute limits. | |
| [**R4-2208796**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208796.zip) | CATT: we didn’t see critical problem for this change but also needs to see if there’s any impact to other parts. There’re some proposal to correct “off period” and “on period” in this meeting.  Nokia: In general, fine, need to align with other CRs on the same change.  Huawei: I don’t see the need for the passband power and operating band power as each passband is confined to a single operating band (by the passband definition), again we need to check this with other papers on the definitions (R402210020). The definition of the input power needed to generate the output power conditions seems to be removed. The new formulation does not imply this is a fixed (declared) level and as such the accuracy requiems are meaningless, if it’s just any level that achieves the desired output then the output power will always be exact (within MU). To have this input level defined and this can then link directly to the conformance declarations where it’s needed.  I don’t understand the rational of replacing Prated,out,TRP with Prated,p,TRP , the “in” and “out” seems useful.  I don’t think there is the need for both passband power and RIB power as a RIB as defined as operating band specific and a passband is also operating band specific, so they are effectively the same thing.  NEC: To Huawei, most of requirements, such as repeater output power requirement, are defined by passband power. However, for output intermodulation requirement, interfering signal level shall be decided based on the rated total output power. Total output power and passband output power will be different when there are plural passbands in the operating band. Issue 2-1-3 is related to this. All companies agree to use total output power.  For input power, we agree it should be differentiated from output power. However, input power is used only in (OTA) repeater output power requirement clauses and symbols are defined locally. Therefore, we do not think the symbols for input power need to be defined in the symbols clause. It would be better to use the symbols like in BS spec. We do not see suffix “out” for output power related symbols in BS spec.  For “Prated,out,TRP”, we should clarify whether it indicates passband power or total power. We can consider all power related symbols are on output power unless defined locally.  Again, passband power and operating band specific RIB power are different when there are some passbands in the operating band.  CMCC:  the update of 7.2.2 should be aligned to final approved symbol and terms.  we are open to whether we need to emphasize “passband” for rated output power term and rated TRP output power term, the legacy terms without the work of passband seems also OK for us since we have emphasized per passband in the explanation.  We are open to whether use emphasize the subscript “p” in the symbols? Original subscript “out” also seems OK.  We also support to add the terms and symbols to include the concept of total power per operation band.  For 6.2.1, we maybe don’t need to change the symbol and subscript “out” is also OK rather than using subscript “p”  For 6.2.2, for the core requirement, maybe we don’t need to emphasize the lowest input level and the core requirement is applicable for any input level. Only in conformance testing, we may need the lowest input level.  The update of power in 7.6.1 and 7.6.2 should be aligned with final approved symbols and terms. |
| Moderator note: both CR 2208796 and the CR 2207983 include the definition of rated output power per passband and rated total output power per operation band. They should be aligned at the end. | |
| [**R4-2210017**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210017.zip) | CATT: The term “*passband bandwidth*” needs to be updated depending on the discussion in this meeting.  Nokia: In general OK, but “passband bandwidth” requires update  NEC: Agree in general.  **ZTE:**  Fine with the updates, the current formulation is only applicable for type 1-H. |
| Moderator note: both CR 2210017 and CR R4-2208796 include the update of Prated,x in 6.5.3.2.3, they should be aligned at the end. | |
| [**R4-2210019**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210019.zip) | Nokia: OK  **ZTE:**  Fine with the updates. |
| [**R4-2210021**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210021.zip) | CATT: The same comment as 10017.  Nokia: In general OK, but “passband bandwidth” requires update  **ZTE:**  Fine with the updates. |

* 1. Summary for 1st round
     1. Open issues

*Moderator tries to summarize discussion status for 1st round, list all the identified open issues and tentative agreements or candidate options and suggestion for 2nd round i.e. WF assignment.*

|  |  |
| --- | --- |
|  | Status summary |
| issue #2-1-1 | Except for one company, all other companies support the proposal. Besides, some echo is received to the only one concern. so maybe we could approve the proposal.  **Tentative agreement:**  For output IMD, clarify wanted signal type to “NR signal, filling all supported passbands in the operating band and with sufficient carriers to fill each passband. Minimum supported SCS for the operating band” |
| Issue #2-1-2 | One company prefer option 1, two companies prefer option 2. three companies are OK for both option 1 and option 2. Considering we have to finish this discussion, moderator suggest following tentative agreement.  **Tentative agreement:**  For output IMD, the interfering signal bandwidth refer to the minimum channel bandwidth in 38.104. |
| Issue #2-1-3 | All companies support the proposal  **Tentative agreements:**  For output IMD, define a term total output power in the operating band and set the interfering signal level to be 30dB below this value. |
| Issue #2-1-4 | All companies support the proposal  **Tentative agreements:**  For output IMD, Use the same notes on interfering signal applicability as those applied for the BS requirement. |

Following topic 2-2 is added to include the controversial issues during the discussion of CR.

|  |  |
| --- | --- |
| Issue #2-2-1  New issue exists in the CR discussion. | **Issue #2-2-1: for FR2, whether to add the definition of rated total TRP output power per operation band in the spec which indicate the total power summed among all passbands in one operation band.**  Some companies think the passband power and operation band specific RIB are different but others think they are the same thing. We should finish this discussion before updating the CR.  **Recommendation for 2nd discussion:**  rated **total** TRP output power **per operation band** and the rated TRP output power **per passband**   * Option 1: they are different, so need to add new definition/symbol in the spec, i.e. rated **total** TRP output power and symbol Prated, t,TRP * Option 2: they are the same thing, so don’t need to add new symbol/definition in the spec, i.e. rated TRP output power is enough.   **Recommended WF for above issue is option 1.** |
| Issue #2-2-2  New issue exists in the CR discussion. | **Issue #2-2-2: the symbols to describe TRP power.**  The original TS use subscript “in” and “out” to indicate the rated input power and output power. CR R4-2208796 suggests to delete the input power i.e. all symbols with subscript “in”. from moderator’s understanding, we have to retain subscript “in” related symbols as approved previously to avoid make the tolerance requirements meaningless. So the tentative agreement is that:  **Tentative agreements:**  **Still retain all input power related symbols, i.e. symbols with subscript “in”.**  CR R4-2208796 suggest to use subscript “p” to indicate passband output power. But in original TS, subscript “out” is used for output power per passband. Huawei suggest to still retain subscript “out” because it is more clearly to show the output power.  **Recommendation for 2nd discussion:**  The subscript of symbols to show output power per passband   * Option 1: subscript “out” * Option 2: subscript “p”.   **Recommended WF for above issue is option 1.** |
| Issue #2-2-3  New issue exists in the CR discussion. | **Issue #2-2-3: whether to emphasize the requirement applies to UL and DL explicitly? E.g. frequency stability and out of band gain requirements**  two CR suggest to add such description of DL and UL applicability but two comments suggest not to explicitly add.  **Recommendation for 2nd discussion:**  Whether to explicitly emphasize the requirement applies to UL and DL? E.g. frequency stability and OOB gain   * Option 1: yes, emphasize requirements apply for DL and UL. So approve relative updates in CRs R4-2208133 and R4-2208134 * Option 2: no, keep the RF requirements as it was in version h00.   **Recommended WF for above issue is option 2.** |

* + 1. CRs/TPs

*Moderator tries to summarize discussion status for 1st round and provides recommendation on CRs/TPs Status update*

*Note: The tdoc decisions shall be provided in Section 3 and this table is optional in case moderators would like to provide additional information.*

|  |  |
| --- | --- |
| **CR/TP number** | **CRs/TPs Status update recommendation** |
| all CRs | *All the CRs have received the comment. So all of them are suggested to be revised.* |

* 1. Discussion on 2nd round (if applicable)

Discussion based on the following WF.

|  |  |  |  |
| --- | --- | --- | --- |
| **New Tdoc number** | **Title** | **Source** | **Comments** |
|  | WF on remaining issues for RF repeater | CMCC | To capture all the agreements for remaining issues |

### CRs/TPs comments collection

*For close-to-finalize WIs and maintenance work, comments collections can be arranged for TPs and CRs.*

***Companies are welcome to update the CR directly based on the previous version by revision mode.***

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| revision of  **[R4-2207980](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207980.zip)** |  |
| revision of  **[R4-2208133](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208133.zip)** |  |
| revision of  **[R4-2208406](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208406.zip)** |  |
| revision of  **[R4-2208789](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208789.zip)** |  |
| revision of  **[R4-2208796](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208796.zip)** |  |
| revision of  **[R4-2210017](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210017.zip)** |  |
| revision of  **[R4-2210019](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210019.zip)** |  |
| revision of  **[R4-2210021](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210021.zip)** |  |

1. Topic #3: Radiated RF core requirement maintenance
   1. Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| T-doc number | Company | Proposals / Observations |
| [**R4-2207981**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207981.zip) | Ericsson | Proposal 1: Confirm the UL power scaling as agreed last meeting |
| [**R4-2207982**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207982.zip) | Ericsson | CR to 38.106: TDD off power radiated requirement correction |
| [**R4-2208134**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208134.zip) | CATT | CR for TS 38.106 R17: clean up of clause 7 |
| [**R4-2209804**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209804.zip) | Nokia, Nokia Shanghai Bell | CR to TS 38.106 with OTA intermodulation requirement updates |
| [**R4-2210018**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210018.zip) | Huawei | Draft CR Correction to OTA unwanted emissions |
| [**R4-2210022**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210022.zip) | Huawei | Draft CR radiated output power |

* 1. Open issues summary

Agenda 9.5.3.

* + 1. Sub-topic 3-1 FR2 UL power scalling

**Issue 3-1: FR2 UL power scalling**

* Proposals
  + Option 1: Confirm the UL power scaling as agreed last meeting as below. (Ericsson)

|  |  |  |
| --- | --- | --- |
| **Repeater class** | **Prated,out,TRP** | **Prated,out,EIRP** |
| Wide Area | (note 1) | (note 2) |
| Local Area | ≤ + 35 + X dBm, Note 3 | ≤ + 55 + X dBm, Note 3 |
| NOTE1: There is no upper limit for the Prated,out,TRP of the *repeater type 2-O* UL transmission.  NOTE2: There is no upper limit for the Prated,out,ERP of the *repeater type 2-O* UL transmission.  NOTE3: X = [10\*log (ceil (*passband* bandwidth/100MHz))] | | |

* Recommended WF
  + Option 1 and delete the bracket in above table as in draft CR 2210022.
  1. Companies views’ collection for 1st round
     1. Open issues

Sub topic 3-1

|  |  |
| --- | --- |
| **Company** | **Comments** |
| XXX |  |
| CATT | Ok. |
| Nokia, Nokia Shanghai Bell | OK with proposal 1. |
| Ericsson | OK with the proposal |
| DOCOMO | OK with recommended WF. |
| NEC | Ok in general.  Do we need separate notes to indicate no upper limit for Prated,out,TRP and Prated,out,EIRP? For BS type 1-H rated output power limits, notes for Prated,c,sys and Prated,c,TABC are merged. It makes the spec a little bit simpler. |
| Huawei | ok |
| ZTE | This value is derived by FCC regulatory requirement, not sure whether we could further update it. This is different from FR1 where maximum output power is mainly decided by 3GPP via coexistence study.  47 CFR Part 30, "UPPER MICROWAVE FLEXIBLE USE SERVICE, §30.202   Power limits", FCC. |
| QCOM | The proposal is fine |
| CMCC | We support the proposal.  the only update is to delete original bracket, this could be acceptable. |

.

* + 1. CRs/TPs comments collection

*For close-to-finalize WIs and maintenance work, comments collections can be arranged for TPs and CRs. For ongoing WIs, suggest to focus on open issues discussion on 1st round.*

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| [**R4-2207982**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207982.zip) | **Company A:**  **Company B:**  **ZTE:** we are fine with that. |
| [**R4-2208134**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208134.zip) | Ericsson: The statement that the requirement applies to the UL and DL implies that repeaters should meet core requirements in both directions. It may be useful to consider allowing for the possibility of allowing for a one way repeater in the specifications. The statement in the core spec could be clarified to applying in each direction (DL and/or UL) in which the repeater operates or something similar.  For OOB gain, we propose to reword “The requirement is based on the TRP approach when the gain is calculated.” To “The requirement is based on the ratio of TRP output power to directional input power”.  For ACRR, the requirement is a ratio of gain not of power. Propose “The ACRR is a ratio of gain in the adjacent channel to gain in the wanted channel. The gain in each case is defined as the ratio of TRP output power to directional input power”.  Note that if the input signal levels and directions in the wanted and adjacent channels are the same then ACRR reduces to a ratio of output powers. For the conformance test, the input power level and direction will likely be the same, but for the core requirement we should be more generic and define as a gain ratio.  Huawei: The changes in clause 7.2 are captured in R4-2210022 along with some additional changes, clause 7.2 should perhaps be removed from this CR.  As with the conducted part I think stating that requirements apply to UL and DL is not necessary as this should be the default.  **ZTE:** we are fine with that. |
| [**R4-2209804**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209804.zip) | Huawei: OK  **ZTE:**  Fine with that. |
| [**R4-2210018**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210018.zip) | **NEC: Need discussion on terms and symbols. It should be clarified OBUE limits depend on rated total TRP output power.**  **ZTE:**  Fine with that.  **CMCC: according to BS spec, the OBUE limit is related to rated total TRP power. This means this is the total power among all the passbands belonging to one band rather than power per passbands. So original version should be retained but maybe we need to update the symbol.** |
| [**R4-2210022**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210022.zip) | **Nokia:** Some updates in R4-2210022 similar to corrections included in R4-2209805  Huawei: Some cross over with R4-2208134 and R4-2209805 where the reference correction is made, in both cases there are more changes in this CR (correcting carrier power references and removing square brackets) so suggest removing section 7.2 from other 2 CRs?  **ZTE:**  Need to further discuss on the scaling factor for FR2 repeater. |

* 1. Summary for 1st round
     1. Open issues

*Moderator tries to summarize discussion status for 1st round, list all the identified open issues and tentative agreements or candidate options and suggestion for 2nd round i.e. WF assignment.*

|  |  |
| --- | --- |
|  | Status summary |
| Sub-topic #3-1 | The motivation of this sub-topic is to confirm the UL power scaling defined in last meeting and delete the bracket. Although original proposal is only for FR2 but FR1 has the same issue. So moderator try to list the tentative agreement for both FR1 and FR2.  One company still has concern and not sure whether we need the power scaling considering FR2 UL output power is based on FCC regulation rather than based on co-existence. But majority companies support to delete the square bracket.  Besides, since one company suggest to merge the note1and note 2 as BS 1-H to make the spec simpler. This is also listed as tentative agreement.  **Tentative agreements:**     * For FR2 UL power scaling, delete the bracket and X=10\*log (ceil (passband bandwidth/100MHz)) * For FR1 UL power scaling, delete the bracket and X=10\*log (ceil (passband bandwidth/20MHz)) * For FR2 UL output power, merge the note 1 and note 2 in about table to make the spec simpler. |

* + 1. CRs/TPs

*Moderator tries to summarize discussion status for 1st round and provides recommendation on CRs/TPs Status update*

*Note: The tdoc decisions shall be provided in Section 3 and this table is optional in case moderators would like to provide additional information.*

|  |  |
| --- | --- |
| **CR/TP number** | **CRs/TPs Status update recommendation** |
| all CRs | *all CRs are suggested to be revisited.* |

* 1. Discussion on 2nd round (if applicable)

Discussion based on the following WF.

|  |  |  |  |
| --- | --- | --- | --- |
| **New Tdoc number** | **Title** | **Source** | **Comments** |
|  | WF on remaining issues for RF repeater | CMCC | To capture all the agreements for remaining issues |

### CRs/TPs comments collection

*For close-to-finalize WIs and maintenance work, comments collections can be arranged for TPs and CRs.*

***Companies are welcome to update the CR directly based on the previous version by revision mode.***

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| revision of  **[R4-2207982](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207982.zip)** |  |
| revision of  **[R4-2208134](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208134.zip)** |  |
| revision of  **[R4-2209804](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209804.zip)** |  |
| revision of  **[R4-2210018](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210018.zip)** |  |
| revision of  **[R4-2210022](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210022.zip)** |  |

# Recommendations for Tdocs

## 1st round

**New tdocs**

|  |  |  |  |
| --- | --- | --- | --- |
| **New Tdoc number** | **Title** | **Source** | **Comments** |
|  | WF on remaining issues for RF repeater | CMCC | To capture all the agreements for remaining issues |

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Recommendation** | **Comments** |
| **[R4-2207980](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207980.zip)** |  | Draft CR to 38.106: Conducted requirements corrections | Ericsson | Revised |  |
| **[R4-2207982](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207982.zip)** |  | CR to 38.106: TDD off power radiated requirement correction | Ericsson | Revised |  |
| **[R4-2207983](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207983.zip)** |  | CR to 38.106: Corections to definitons, symbols and abbreviations | Ericsson | Revised |  |
| **[R4-2208132](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208132.zip)** |  | CR for TS 38.106 R17: clean up of clause 4 | CATT | Revised |  |
| **[R4-2208133](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208133.zip)** |  | CR for TS 38.106 R17: clean up of clause 6 | CATT | Revised |  |
| **[R4-2208134](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208134.zip)** |  | CR for TS 38.106 R17: clean up of clause 7 | CATT | Revised |  |
| **[R4-2208406](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208406.zip)** |  | Draft CR for 38.106: add co-existence requirements for input intermodulation | CMCC | Revised |  |
| **[R4-2208789](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208789.zip)** |  | Draft CR for corrections on unwanted emission requirements for FR1 NR repeater | NTT DOCOMO, INC. | Revised |  |
| **[R4-2208796](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208796.zip)** |  | CR to 38.106: Output power definitions for NR repeaters | NEC | Revised |  |
| **[R4-2208797](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208797.zip)** |  | CR to 38.106: Regional requirements for NR repeaters | NEC | Not Pursued | Note: 2208797 do not need to be revised because it only include table 4.4-1 which will be captured into CATT’s CR |
| **[R4-2209601](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209601.zip)** |  | CR to TS38.106: clarification on the supported operating bands for NR repeater | ZTE Corporation | Revised |  |
| **[R4-2209804](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209804.zip)** |  | CR to TS 38.106 with OTA intermodulation requirement updates | Nokia, Nokia Shanghai Bell | agreed |  |
| **[R4-2209805](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209805.zip)** |  | CR to TS 38.106 with corrections to repeater core specification | Nokia, Nokia Shanghai Bell | Revised |  |
| **[R4-2210016](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210016.zip)** |  | Draft CR Correction to reference point diagram | Huawei | Not Pursued | Note: 2210016 do not need to be revised because it only include reference point diagram which will be captured into Nokia’s CR |
| **[R4-2210017](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210017.zip)** |  | Draft CR OBUE | Huawei | Revised |  |
| **[R4-2210018](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210018.zip)** |  | Draft CR Correction to OTA unwanted emissions | Huawei | Revised |  |
| **[R4-2210019](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210019.zip)** |  | Draft CR out of band gain | Huawei | Revised |  |
| **[R4-2210020](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210020.zip)** |  | Draft CR Terms, symbols and abbreviations | Huawei | Revised |  |
| **[R4-2210021](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210021.zip)** |  | Draft CR conducted output power | Huawei | Revised |  |
| **[R4-2210022](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210022.zip)** |  | Draft CR radiated output power | Huawei | Revised |  |

**Moderator note:**

We have some overlapping CRs in this meeting. Following volunteers are invited to help merge all the overlapping content in one CR. And remaining CRs should remove the overlapping content and only contain the remaining content except for the overlapping content captured in volunteer’s CR.

|  |  |  |
| --- | --- | --- |
| Overlapping content | CRs which include the overlapping content | Expert |
| 3. definitions, symbols and abbreviations | **[R4-2207983](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207983.zip)** Ericsson  **[R4-2208796](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208796.zip)** NEC  **[R4-2210020](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210020.zip)** Huawei  **[R4-2207980](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207980.zip)** Ericsson  **[R4-2208133](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208133.zip)** CATT  **[R4-2209805](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209805.zip)** Nokia | Ericsson |
| table 4.4-1 List of regional requirements | **[R4-2208132](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208132.zip)** CATT  **[R4-2208797](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208797.zip)** NEC  **[R4-2208789](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208789.zip)** NTT DOCOMO, INC. | CATT  Note: 2208797 is suggested as noted because it only include table 4.4-1 which will be captured into CATT’s CR |
| 4.2.2 The reference point diagram | **[R4-2209805](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209805.zip)** Nokia  **[R4-2210016](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210016.zip)** Huawei | Nokia  Note: 2210016 do not need to be revised because it only include reference point diagram which will be captured into Nokia’s CR |
| 6.2.1 repeater output power: general | **[R4-2210021](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210021.zip)** Huawei  **[R4-2208796](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208796.zip)** NEC | NEC |
| 6.5.3.2.3 medium range OBUE | **[R4-2210017](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210017.zip)** Huawei  **[R4-2208796](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208796.zip)** NEC  **[R4-2209805](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209805.zip)** Nokia | Huawei |
| 6.4 out of band gain | **[R4-2210019](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210019.zip)** Huawei  **[R4-2208133](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208133.zip)** CATT | Huawei |
| 7.9 OTA transmit OFF power | **[R4-2207982](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2207982.zip)** Ericsson  **[R4-2208134](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208134.zip)** CATT  **[R4-2209805](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209805.zip)** Nokia | Ericsson |
| 7.2.1 OTA output power: general | **[R4-2210022](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2210022.zip)** Huawei  **[R4-2208796](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208796.zip)** NEC  **[R4-2208134](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2208134.zip)** CATT  **[R4-2209805](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_103-e/Docs/R4-2209805.zip)** Nokia, Nokia Shanghai Bell | NEC |

Notes:

1. Please include the summary of recommendations for all tdocs across all sub-topics incl. existing and new tdocs.
2. For the Recommendation column please include one of the following:
   1. CRs/TPs: Agreeable, Revised, Merged, Postponed, Not Pursued
   2. Other documents: Agreeable, Revised, Noted
3. For new LS documents, please include information on To/Cc WGs in the comments column
4. Do not include hyper-links in the documents

## 2nd round

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Recommendation** | **Comments** |
| R4-2210629 | new | WF on remaining issues for RF repeater | CMCC | Agreeable |  |
| R4-2207980 | R4-2210827 | Draft CR to 38.106: Conducted requirements corrections | Ericsson | To be endorsed |  |
| R4-2207982 | R4-2210828 | CR to 38.106: TDD off power radiated requirement correction | Ericsson | To be endorsed |  |
| R4-2207983 | R4-2210829 | CR to 38.106: Corections to definitons, symbols and abbreviations | Ericsson | To be endorsed |  |
| R4-2208132 | R4-2210830 | CR for TS 38.106 R17: clean up of clause 4 | CATT | To be endorsed |  |
| R4-2208133 | R4-2210831 | CR for TS 38.106 R17: clean up of clause 6 | CATT | To be endorsed |  |
| R4-2208134 | R4-2210832 | CR for TS 38.106 R17: clean up of clause 7 | CATT | To be endorsed |  |
| R4-2208406 | R4-2210833 | Draft CR for 38.106: add co-existence requirements for input intermodulation | CMCC | To be endorsed |  |
| R4-2208789 | R4-2210834 | Draft CR for corrections on unwanted emission requirements for FR1 NR repeater | NTT DOCOMO, INC. | To be endorsed |  |
| R4-2208796 | R4-2210835 | CR to 38.106: Output power definitions for NR repeaters | NEC | To be endorsed |  |
| R4-2209601 | R4-2210836 | CR to TS38.106: clarification on the supported operating bands for NR repeater | ZTE Corporation | To be endorsed |  |
| R4-2209804 |  | CR to TS 38.106 with OTA intermodulation requirement updates | Nokia, Nokia Shanghai Bell | Agreed |  |
| R4-2209805 | R4-2210838 | CR to TS 38.106 with corrections to repeater core specification | Nokia, Nokia Shanghai Bell | To be endorsed |  |
| R4-2210017 | R4-2210839 | Draft CR OBUE | Huawei | To be endorsed |  |
| R4-2210018 | R4-2210840 | Draft CR Correction to OTA unwanted emissions | Huawei | To be endorsed |  |
| R4-2210019 | R4-2210841 | Draft CR out of band gain | Huawei | To be endorsed |  |
| R4-2210020 | R4-2210842 | Draft CR Terms, symbols and abbreviations | Huawei | To be endorsed |  |
| R4-2210021 | R4-2210843 | Draft CR conducted output power | Huawei | withdraw | **All original contents have been merged to other CRs** |
| R4-2210022 | R4-2210844 | Draft CR radiated output power | Huawei | withdraw | **All original contents have been merged to other CRs** |
| R4-2208797 |  | CR to 38.106: Regional requirements for NR repeaters | NEC | Not Pursued | Note: 2208797 do not need to be revised because it only include table 4.4-1 which will be captured into CATT’s CR |
| R4-2210016 |  | Draft CR Correction to reference point diagram | Huawei | Not Pursued | Note: 2210016 do not need to be revised because it only include reference point diagram which will be captured into Nokia’s CR |

Notes:

1. Please include the summary of recommendations for all tdocs across all sub-topics.
2. For the Recommendation column please include one of the following:
   1. CRs/TPs: Agreeable, Revised, Merged, Postponed, Not Pursued
   2. Other documents: Agreeable, Revised, Noted
3. Do not include hyper-links in the documents

# Annex

Contact information

|  |  |  |
| --- | --- | --- |
| **Company** | **Name** | **Email address** |
| CATT | Huiping Shan | shanhuiping@catt.cn |
| Nokia | Bartlomiej Golebiowski | bartlomiej.golebiowski@nokia.com |
| DOCOMO | Kotaro Takamiya | koutarou.takamiya.ga@nttdocomo.com |
| NEC | Tetsu Ikeda | tetsu.ikeda@nec.com |
| Qualcomm | Valentin Gheorghiu | vgheorgh@qti.qualcomm.com |
| CMCC | Chunxia Guo | guochunxia@chinamobile.com |

Note:

1. Please add your contact information in above table once you make comments on this email thread.
2. If multiple delegates from the same company make comments on single email thread, please add you name as suffix after company name when make comments i.e. Company A (XX, XX)