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

**Electronic Meeting, 15– 26 August 2022**

**Agenda item:** 9.4.7

**Source:** Moderator (Nokia, Nokia Shanghai Bell)

**Title:** Email discussion summary for [104-e][106] NR\_RF\_FR2\_req\_enh2

**Document for:** Information

# Introduction

*Briefly introduce background, the scope of this email discussion (e.g. list of treated agenda items) and provide some guidelines for email discussion if necessary.*

Contributions regarding maintenance of FR2 DL CA and UL CA requirement (Agenda item 9.4.1) are treated in this email discussion thread.

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

* 1st round: TBA
* 2nd round: TBA

It is appreciated that the delegates for this topic put their contact information in the table below.

Contact information

|  |  |  |
| --- | --- | --- |
| **Company** | **Name** | **Email address** |
| DOCOMO | Ryu Kitagawa | ryuu.kitagawa.pn@nttdocomo.com |
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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)

# Topic #1: Inter-band DL CA requirements

*Main technical topic overview. The structure can be done based on sub-agenda basis.*

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| [**R4-2212189**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2212189.zip)CR on PC2 UE RF requirements for FR2-1 inter-band DL CA | LG Electronics | Summary of change: Remove square ntroduc of delta Rib for FR2-1 PC2 inter-band DL CA requirements.Re-arrange column for 259 and n261 in Table 7.3.2.2-1. |
| [**R4-2212793**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2212793.zip)Discussion on in-gap exemption for inter-band DL CA | vivo | Observation 1: Inter-band CA with 2 adjacent CCs face more critical ACS/IBB requirement than single carrier.Proposal1: The in-gap exemption in ACS/IBB which is similar to intra-band NC CA need apply to FR2 inter-band DL CA |
| [**R4-2212795**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2212795.zip)draft CR on beam management type capability | vivo | Reason for change: R17 new beam ntroduce type capability was ntroduce in TS 38.306 but RAN4 spec still not updated.Summary of change: BM type capability name is updated. |
| [**R4-2213334**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2213334.zip)R17 FR2 Draft CR on separate REFSENS tables for different power classes | OPPO | Reason for change: ΔRIB,P,n and ΔRIB,S,n are defined in 38.101-2 for inter-band CA in last meeting, and all the power classes (1,2,3,5) are within one table with some tables are blank while others with specific values defined.In last meeting it was recognized that this may cause some confusion on the meaning of blank values for some band combinations, for example does that mean no relaxation is allowed or no band combination introduced. However, there is no time to further think about the table format to avoid the misunderstandings due to time limitation.In this draft CR, different tables are used for different power classes to make it clear which band combination is introduced and what is the value to solve the above issues.Summary of change: Separate ΔRIB,P,n and ΔRIB,S,n tables for different power classes are defined. |

## Open issues summary

*Before e-Meeting, moderators shall summarize list of open issues, candidate options and possible WF (if applicable) based on companies’ contributions.*

### Sub-topic 1-1

*Sub-topic description:*

*Open issues and candidate options before e-meeting:*

**Issue 1-1: gap exemption for inter-band DL CA**

* Is the following observation and proposal agreeable? If some technical discussion is needed, please provide comment in 1.3.1. If there is no specific technical issue but only CR contents need to be reviewed, please provide comments in the CR comment collection in 1.3.2
	+ Observation 1: Inter-band CA with 2 adjacent CCs face more critical ACS/IBB requirement than single carrier.
	+ Proposal 1: The in-gap exemption in ACS/IBB which is similar to intra-band NC CA need apply to FR2 inter-band DL
* Recommended WF
	+ TBA

## Companies views’ collection for 1st round

### Open issues

*One of the two formats, i.e. either example 1 or 2 can be used by moderators.*

|  |  |
| --- | --- |
| **Company** | **Comments** |
| OPPO | Sub topic 1-1: For clarification, the previous agreement on the in-gap exemption in ACS/IBB is for inter-band CBM, now in the spec there is only inter-band IBM. So the proposal here is to extend the agreement to IBM?If it is, we are ok with that especially considering some bands are close to each other and the ACS/IBB region is overlapping.….Others: |
| vivo | Our concern here is that inter-band CA with two adjacent CCs is hard to meet single carrier ACS/IBB requirement considering the hardware is difficult to split them perfectly, we think this issue exists in current spec because the band combination with adjacent spectrum was introduced. The in-gap exemption is a potential way to avoid this issue and we are also open for other idea.By the way, we only trigger the discussion but not prepare a corresponding CR for this issue in this meeting.  |
| Huawei | Some relaxation could be considered, but may be the in-gap exemption, which is applied for the case with some frequency separation conditions. In addition, diplexer may not be possible for two adjacent bands from implementation perspective. Further clarification and analysis is needed.  |
| Qualcomm | We prefer to not change inter-band requirements to intra-band requirements. We are however ok to introduce the clarification that ‘The requirement does not apply if the interferer of the band being tested overlaps any port of the component carrier on the other band’. |
| ZTE | If it is difficult to implement inter-band DL n258+n261 with one n-plex due to 0 gap between the two bands, then this two bands may not be 2DL inter-band DL CA alone, it may be operated as inter-band DL CA with the third FR2 band and this band combination is only used as the fallback, like some other FR1 band combination. |
| Samsung | Generally speaking we agree some relaxation should be set to allow different UE implementations. Vivo proposal is a conservative way which can be considered as an option, and Qualcomm proposal is at least needed. |
| Apple | Last meeting, we shared same concern for band n258+n261 in our contribution, since it can be that the carriers are adjacent when considering these two bands. As pointed out, the implementation of the n-plexer will not be possible with 0 gaps. Thus, we support the idea to either introduce additional relaxation for this case or an in-gap exemption.  |

### 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** |
| R4-2212189 | Company A |
| Company B |
|  |
| R4-2212795 | Company A |
| Company B |
|  |
| R4-2213334 | Company A |
| Company B |
| Qualcomm: The problem with the proposal is not technical, but it has to do with documentation. An external reference to this table could mislead because the description and contents of the table will have changed. The changes should be made in a backward compatible way, so it is only possible to add information to the legacy table. Alternatively, we’d have to void the existing table and start over which may not be necessary. While we agree that the proposed format is easier to read, we could not propose it during the WI due to lack of backward compatibility.ZTE: For UL CA, separated deltaT tables were used for different power class, maybe it would be better to keep consistency between UL CA and DL CA. |

## 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** | *Tentative agreements:**Candidate options:**Recommendations for 2nd round:* |

### 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**  |
| XXX | *Based on 1st round of comments collection, moderator can recommend the next steps such as “agreeable”, “to be revised”* |

## Discussion on 2nd round (if applicable)

# Topic #2: Inter-band UL CA requirements

*Main technical topic overview. The structure can be done based on sub-agenda basis.*

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| [**R4-2211776**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2211776.zip)PC3 TIB values for FR2 inter-band UL CA | NTT DOCOMO, INC. | This paper showed TIB values of PC3 for FR2 inter-band UL CA. Here we summarize our proposals:**Observation 1: Based on the past discussions, factors of ΔTIB values are expected as follow.**

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Factor** | **PC3** | **PC1/5** |
| **ΔTIB,P,n (dB)** | **ΔTIB,S,n (dB)** | **ΔTIB,P,n (dB)** | **ΔTIB,S,n (dB)** |
| 1 | Thermal consideration for handheld formfactor | X | X | 0.0 | 0.0 |
| 2 | MBR, insertion loss, and so on | 1.5 | 1.5 | 1.5 | 1.5 |
| 3 | Common spherical issue | 0.0 | 1.0 | 0.0 | 1.0 |
| **Total** | **1.5 + X (dB)** | **2.5 + X (dB)** | **1.5 (dB)** | **2.5 (dB)** |

**Observation 2: As a relaxation value considering the thermal issue, the requirements for intra-band CA is a reference.****Observation 3: The MOP relaxation for inter-band UL CA should be at least 5dB.****Observation 4: Relaxation value X for thermal issue should be 3.5 dB.****Proposal 1: For PC3 requirements, factors of ΔTIB,P,n and ΔTIB,S,n are as follows.**

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Factor** | **PC3** | **PC1/5** |
| **ΔTIB,P,n (dB)** | **ΔTIB,S,n (dB)** | **ΔTIB,P,n (dB)** | **ΔTIB,S,n (dB)** |
| 1 | Thermal consideration for handheld formfactor | 3.5 | 3.5 | 0.0 | 0.0 |
| 2 | MBR, insertion loss, and so on | 1.5 | 1.5 | 1.5 | 1.5 |
| 3 | Common spherical issue | 0.0 | 1.0 | 0.0 | 1.0 |
| **Total** | **5.0 (dB)** | **6.0 (dB)** | **1.5 (dB)** | **2.5 (dB)** |

**Observation 5: There is concern that the MOP relaxation for handheld formfactor would be double counted by applying both MPR for intra-band and TIB for inter-band.****Proposal 2: Two options are provided as TIB for PC3 as follows. Option1 should be selected when sufficient relaxation for handheld formfactor is provided by MPRinter-band\_CA. Option2 should be selected when it is not.****Option1:**

|  |  |  |  |
| --- | --- | --- | --- |
| NR CA configuration | NR band | ΔTIB,P,n (dB) | ΔTIB,S,n (dB) |
| CA\_n257A-n259A | n257 | 5.01 | 6.02 |
|  | n259 | 5.01 | 6.02 |
| CA\_n260A-n261A | n260 | 5.01 | 6.02 |
|  | n261 | 5.01 | 6.02 |
| NOTE 1:   ΔTIB,P,n is 2.5 dB if this NR band is not single UL CC.NOTE 2:   ΔTIB,S,n is 3.5 dB if this NR band is not single UL CC. |

**Option2:**

|  |  |  |  |
| --- | --- | --- | --- |
| NR CA configuration | NR band | ΔTIB,P,n (dB) | ΔTIB,S,n (dB) |
| CA\_n257A-n259A | n257 | 5.0 | 6.0 |
|  | n259 | 5.0 | 6.0 |
| CA\_n260A-n261A | n260 | 5.0 | 6.0 |
|  | n261 | 5.0 | 6.0 |

 |
| [**R4-2211777**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2211777.zip)CR to TS38.101-2 PC3 TIB for inter-band UL CA | NTT DOCOMO, INC. | Add requirements for FR2 inter-band UL CA for PC3. (n257-n259 and n260-n261 are introduced as a PC3 band combination.)* TIB values for PC3
* MPR for PC3 inter-band CA (CA MPR methodology captured in R4-2207635)
* Carrier leakage
* Inband emissions

Remove some NOTEs that preclude PC3. |
| [**R4-2212188**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2212188.zip)CR on PC2 UE RF requirements for FR2-1 inter-band UL CA | LG Electronics | Remove square brakets of delta Tib for FR2-1 PC2 inter-band UL CA requirementsRemove ‘power class 2’ in Note 2 of Table 6.3.1.2-1 and Table 6.3A.1.2-1.Add ‘n259’ in Table 6.3.1.2-1. |
| [**R4-2212587**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2212587.zip)Draft CR for Rel-17 38.101-2 to correct the configured transmitted power for CA | Xiaomi | the explanation of PPowerclass in configured transmitted power for CA is unclear. Corrected the explanation of PPowerclass. |
| [**R4-2213755**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2213755.zip)CR to 38.101-2: Correction to modified MPR information | Nokia, Qualcomm Inc, Skyworks Inc | FR2 power class 3 MPR as defined in clause 6.2.2.3 of 38.101-2 was modified in Rel-16 and therefore is mandatory in Rel-17. |
| [**R4-2213757**](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_104-e/Docs/R4-2213757.zip)Reply LS to RAN5 LS on ModifiedMPR-Behaviour clarification for different power classes | Nokia | **1. Answers to RAN5 questions**1. For Rel-15 PC3 UE, is the MPR as defined in 38.101-2 v16.2.0 applicable if the UE supports *modifiedMPR-Behaviour* bit 0 UE capability?

Answer: Yes it is.1. For Rel-15 PC2 and 4 UEs, is *modifiedMPR-Behaviour* bit 0 capability applicable?

Answer: Yes it is.1. For Rel-16 PC3 UE, is the MPR as defined in 38.101-2 v16.2.0 mandatory or optional? Also, is the Rel-16 UE expected to signal *modifiedMPR-Behaviour* bit 0=true?

Answer: The changes introduced to PC3 MPR in v16.2.0 are optional to REL16 UE1. For Rel-16 PC2, 4 and 5 UEs, is the PC3 MPR as defined in 38.101-2 v16.2.0 applicable? Also, is *modifiedMPR-Behaviour* bit 0 capability applicable?

Answer: MPR as defined in v16.2.0 is applicable also to Rel-16 PC2 and PC4 UEs if they indicate with modifiedMPR-Behaviour bit 0 that they support this feature. PC5 was defined during REL17.1. Is any kind of Rel-16 UE supposed to support MPR as defined in 38.101-2 version v16.11.0?

Answer: There are two CRs implemented to MPR section between 16.11.0 and 16.2.0:* R4-2111524 #99e (QCOM/SKWS): CR to 16.7.0: editorial change to address RAN5 concerns on ambiguity for PC3 MPRnarrow.
* R4-2207884 #103e (KS/SKWS): CR to 16.11.0: technical correction on RBstart equation for PC3 MPRnarrow.

As first CR is editorial and second is necessary correction there were no modifiedMPR-Behaviour introduced. When REL16 UE indicates that it supports MPR as defined in v16.2.0 it means that it supports MPR as defined in latest version of REL16 38.101-2. which is currently 16.12.0. 1. For Rel-17 PC3 UE, is the MPR as defined in 38.101-2 v16.2.0 applicable if the UE signals *modifiedMPR-Behaviour* bit 0=true?

Answer: Rel17 38.101 Annex-H is not correct. It should state This bit SHALL be set to 1 instead of MAY. There is a RAN4 CR in this [1]1. For Rel-17 PC3 UE, what is the MPR requirement if the UE signals *modifiedMPR-Behaviour* bit 0=false?

Answer: REL17 UE may not set this bit 0 to false, see [1] |

## Open issues summary

*Before e-Meeting, moderators shall summarize list of open issues, candidate options and possible WF (if applicable) based on companies’ contributions.*

### Sub-topic 2-1 PC3 requirement for FR2 inter-band UL CA

*Sub-topic description:*

*Open issues and candidate options before e-meeting:*

**Issue 2-1-1: FR2 UL CA for PC3**

* Discussion
	+ PC3 was lower prioritized due to possible power and thermal issues. Should PC3 be supported in Rel-17?

**Issue 2-1-2: ΔTIB relaxation factor (Observation 1)**

* Discussion
	+ Is the relaxation breakdown proposed in observation 1 agreeable? Are all necessary factors included? Is there any alternative split of relaxation factors?

**Issue 2-1-3: Factor for thermal issue (Observation 4)**

* Discussion
	+ Is the relaxation for thermal issue 3.5 dB agreeable?

**Issue 2-1-4: Total relaxation (Proposal 1)**

* Discussion
	+ Is the total relaxation values (5.0/6.0dB for peak/spherical) in Proposal 1 agreeable?

**Issue 2-1-5: Intra-band contiguous case (Proposal 2)**

* Discussion
	+ Is proposal 2 option1 agreeable for intraband CA to avoid double-counting of relaxation? Is there any alternative?

### Sub-topic 2-2 Reply LS to RAN5 LS on ModifiedMPR-Behaviour clarification for different power classes

*Sub-topic description*

*Open issues and candidate options before e-meeting:*

**Issue 2-2: LS reply text**

* Discussion
	+ Is each proposed answer agreeable?

If not please provide your comment.

## Companies views’ collection for 1st round

### Open issues

**Example 1**

|  |  |
| --- | --- |
| **Company** | **Comments** |
| OPPO | **Issue 2-1-1: FR2 UL CA for PC3**For clarification, the Rel-17 FR2 enhancement WI was closed with no exception sheet. If PC3 is going to be discussed further, is it be considered as Rel-17 maintenance? Not sure how quick this can be finished considering the discussion history of PC3 UE. If long, probably can be considered in Rel-18 to be discussed in a well-organized manner.**For Issue 2-1-2 to Issue 2-1-4:**We may need more time to analyse these factors and values.**Issue 2-1-5: Intra-band contiguous case (Proposal 2)**If there is double counting issue for PC3, then probably also have issue for PC1/5 since only thermal is additionally considered. But seems it is not considered in PC1/5, if this is the case, we prefer to align different PC handling in this issue.**Issue 2-2: LS reply text**There are some other LS proposals and discussions in thread 140 (LS handling), should be discussed together. |
| DOCOMO | **Issue 2-1-1:**RAN4 agreed on PC1/2/5 requirements, so we can discuss the PC3 requirements for handheld device. PC3 discussion is not excluded from Rel-17 WI. PC3 is default power class and handheld UE is a high priority device for us.**Issue 2-1-2 / Issue 2-1-3 / Issue 2-1-4:**We agree with these proposals. Further subdivision of relaxation factors is acceptable, but the proposed TIB values (5.0/6.0dB for peak/spherical) is sufficient as relaxation for Handheld UE. In our understanding, this is the largest relaxation value proposed in previous PC3 discussions.**Issue 2-1-5:**Corrected the sentence in 2.2.1 because Option1 is a proposal to avoid double-counting of relaxation.We prefer Option1, but we would like to get other companies' views. |
| vivo | Sub-topic 2-1We appreciate the effort on PC3 requirement but in our understanding, the key conflict for PC3 UE in UL CA is the “total UE power” concept. Before we confirm whether and how this concept will be applied to UE, we think it’s hard to achieve any consensus on specific relaxation value. |
| DOCOMO(After GTW) | Thank you for the discussion in GTW and the comments on this table.Some companies commented that it would be hard to reach consensus on any relaxation value for PC3. This seems to be mostly related to total power issue. However, “total power concept” is not specified as RAN4 requirements, it is just relaxation factor. Therefore, in our understanding, this concern only affects TIB requirements for inter-band UL CA.Please consider that the total relaxation values (TIB) are set to 5.0/6.0dB for peak/spherical. This is a very conservative value based on past discussions. If you think the relaxation for total power issues is needed, is this proposed mitigation value insufficient?Of course, it is best that breakdown of the relaxation factors is clear, but we think this proposal is compromise that many companies can accept. The introduction of this requirement does not conclude the discussion of the total power concept. |
| Huawei | **Issue 2-1-1: FR2 UL CA for PC3**Though PC3 is not in the exception sheet of the closed Rel-17 WI, we are open to consider it if it is easier to reach consensus without too much effort in RAN4. **Issue 2-1-2: ΔTIB relaxation factor (Observation 1)**The factors considered for PC3 are ok for us. We think that even for FWA UE, thermal issue should be considered as well though it may not be that severe as for PC3 UE. **Issue 2-1-3: Factor for thermal issue (Observation 4)**The total relaxation proposed in observation 4 is acceptable for us. **Issue 2-1-5: Intra-band contiguous case (Proposal 2)**Our preference is option 2. If we don't consider the total power concept and rely on the delta Tib method, then we should accept the relaxation considered by this parameter.  |
| Qualcomm | We are ok with the Docomo proposal. The proposal is very conservative because it adds 3 dB or more of relaxation on top of agreed relaxation values for FWA to get easy agreement. In our view 3 + dB should be sufficient for thermally limited implementation. Moreover we have previously shown that power dissipation during FR2+FR2 ULCA testing is comparable to intra DLCA (R4-2207635).Issue 2-1-1: FR2 UL CA for PC3:We do not see the need to preclude a power class from early implementation of an enhancement feature. Support enabling PC3.Issue 2-1-5: Intra-band contiguous case (Proposal 2)Option 2 is agreeable. Unfortunately, the relaxation are large for the general intra+inter case. We would like to point out that the special ‘single CC MPR’ applicability for intra-CA would still apply to each band, if the conditions are met for each band. |
| Sony | **Issue 2-1-1:**We understand the demand from the operator for supporting PC3, but the proposed relaxation value needs to be further discussed. However, we can accept that to NOT exclude PC3 from Rel-17 RAN4 spec. **Issue 2-1-2, Issue 2-1-3, and Issue 2-1-4 (related to the relaxation value):** The relaxation value is proposed based on the assumption that inter-band CA has similar total power as intra-band CA, but we don’t see the technical analysis on the actual thermal issue. Therefore, we are not ready to accept such a relaxation at this stage.  |
| LG Electronics | **Issue 2-1-1:**Based on RAN4#102-e GTW agreement, PC3 seems not to be excluded in Rel-17.* Discuss PC3-specific requirements after step 1a (i.e., Delta\_TIB values and total power issue).

And, there was no description on specific power class in the WID. However, for reaching the requirements of PC3, it may require some meeting cycles. We would like to avoid discussing the issue with multiple meeting cycles.  |
| Samsung | We are okay with DOCOMO proposed relaxation values. If the relaxation values could be agreed, we are okay to enable PC3 in Rel-17.Issue 2-1-5: Intra-band contiguous case (Proposal 2)Option 2 is seems better as the baseline assumes single CC per band for inter-band CA. For intra-&inter-CA, further discussion is needed for both DL CA and UL CA on how to apply the relaxations. |
| Apple | Issue 2-1-1: FR2 UL CA for PC3In order to specify the remaining PC3 requirements RAN4 needs to achieve agreements on several open issues and completion seems to require several more meetings. Also, there are formal challenges as the open issues on PC3 have not been put into an exception sheet when the WI was closed. RAN4 should consider to aim for next release. Shifting completion to another release would grant RAN4 the time to get through all the remaining issues without rush. The open topics (e.g. Delta\_TIB and total power concept according to 1a from R4-2206508 and other topics such as thermal issues) could have multiple company sources and solid study. |
| Nokia | We are ok to introduce PC3 however, the proposed relaxations are too large and would not bring sysem performance improvement as UE most of the time falls back to 1 UL.We also need to make sure that the factor for thermal issue is a dynamic factor and is not applied when UE is fall back to 1 UL.These two aspects should be further discussed. |
| Verizon | **Issue 2-1-1:**We support to not exclude PC3 from Rel-17. However, we do not support the proposed ranges of relaxation as they are too large. RAN4 needs further discussion.  |

### CRs/TPs comments collection

*Major close to finalize WIs and Rel-15 maintenance, comments collections can be arranged for TPs and CRs. For Rel-16 on-going WIs, suggest to focus on open issues discussion on 1st round.*

|  |  |
| --- | --- |
| **CR/TP number** | **Comments collection** |
| R4-2211777 | Company A |
| Company B |
|  |
| R4-2212188 | Company A |
| Company B |
|  |
| R4-2212587 |  |
| R4-2213755 | OPPO: We have a similar paper R4-2213323 submitted to thread 103 (Rel-17 maintenance), but with different changes. In our paper, the modified MPR for PC3 is removed from Rel-17.If understand correctly, current Rel-17 spec doesn’t include two MPRs which is different from Rel-16 where the MPR in before and after 16.2.0 is different, thus need the modified MPR to indicate which MPR is applied, however, in Rel-17 there is only one MPR and no need for Rel-17 UE to indicate the applied MPR since it is no other choice and it is mandatory.Therefore, this paper and our paper R4-2213323 need to be discussed further.Huawei: we think the modified MPR bits should be kept in the later release specification even though there is only one set of requirements in the spec. |

## 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** | *Tentative agreements:**Candidate options:**Recommendations for 2nd round:* |

### CRs/TPs

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

|  |  |
| --- | --- |
| **CR/TP number** | **CRs/TPs Status update recommendation**  |
| XXX | *Based on 1st round of comments collection, moderator can recommend the next steps such as “agreeable”, “to be revised”* |

## Discussion on 2nd round (if applicable)

*Moderator can provide summary of 2nd round here. Note that recommended decisions on tdocs should be provided in the section titled ”Recommendations for Tdocs”.*

# Recommendations for Tdocs

## 1st round

**New tdocs**

|  |  |  |  |
| --- | --- | --- | --- |
| **New Tdoc number** | **Title** | **Source** | **Comments** |
|  | WF on … | YYY |  |
|  | LS on … | ZZZ | To: RAN\_X; Cc: RAN\_Y |
|  |  |  |  |

**Existing tdocs**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Recommendation**  | **Comments** |
| R4-22xxxxx |  | CR on … | XXX | Agreeable, Revised, Merged, Postponed, Not Pursued |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

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

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| --- | --- | --- | --- | --- | --- |
| **Tdoc number** | **Revised to** | **Title** | **Source** | **Recommendation**  | **Comments** |
| R4-22xxxxx |  | CR on … | XXX | Agreeable, Revised, Merged, Postponed, Not Pursued |  |
| R4-22xxxxx |  | WF on … | YYY | Agreeable, Revised, Noted |  |
| R4-22xxxxx |  | LS on … | ZZZ | Agreeable, Revised, Noted |  |
|  |  |  |  |  |  |

Notes:

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3. Do not include hyper-links in the documents