**3GPP TSG-RAN WG4 Meeting # 100-e R4-2115020**

**Electronic Meeting, 16th – 27th August, 2021**

**Agenda item:** 8.33

**Source:** Man Hung Ng (Nokia)

**Title:** Email discussion summary for [100-e][120] LTE\_NR\_HPUE\_FWVM

**Document for:** Information

# Introduction

Email discussion for contributions submitted under agenda item 8.33 for High-power UE operation for fixed-wireless/vehicle-mounted use cases in Band 12, Band 5, Band 13, Band n5, Band n13, and Band n71.

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

* 1st round: Discussion and potential approval of revised WID, contributions on coexistence study, and CR to TR 37.880 on Band n71 filter data.
* 2nd round: Approval of revised WID, submitted contributions on coexistence study, and CR to TR 37.880 on Band n71 filter data.

# Topic #1: Revised WID

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2112794 | Nokia | Proposal 1: Revise WID into a basket WI format per RAN secretary’s suggestion.  Observation 1: |

## Open issues summary

### Sub-topic 1-1

**Issue 1-1: WID format**

* Proposals
  + Option 1: Revise the WID into a basket WI format per RAN secretary’s suggestion.
  + Option 2: Keep the current WID format.
* 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.*

Sub topic 1-1

|  |  |
| --- | --- |
| **Company** | **Comments** |
| T-Mobile USA | We support Option 1, to make the WID a basket. However, we think the revised WID should be arranged to have common objectives and band specific objectives, like this:  **Common Objectives:**  1. UE MOP, MPR, and ACLR, considering the interactions between them (e.g. MRP and ACLR) and other related parameters  **Band Specific objectives:**  1. Coexistence studies between HPUE in Band 5 and adjacent channel public safety operation in the same geographical area.  2. UE REFSENS exception due to self-desens.  3. UE A-MPR, and impact of other related parameters (e.g. larger NR spectrum utilization for band n71).  4. Investigate the feasibility of filter with small duplex for B13, n13 and n71.  5. Coexistence study for B13 and n13.p  Additional comment on the revised WID in R4-2112794: T-Mobile USA requested the inclusion of n85, not n86. |
| Nokia | Option 1: There was clear message from MCC that if we want to complete bands in different time scales we need to convert the WI into basket. Otherwise all bands need to be completed same time and with same CR. We agree that objectives needs more work to be “basket WI” like and split for common and band specific makes sense. We would like to provide further revision of WI in 2nd round based on TMO suggestion to get feedback as much as possible before RAN where ultimate decision is done. Note that MCC also requests that we have new TR as SI TR is already under change control, also if this basket continues in REL18 then there will be again new TR. This change is already reflected in revised WID. |
| Verizon | We support Option 1 ! |
| Huawei | We support option 1 with the adjustments commented by T-Mobile.  On the side note, to perform coexistence simulations of B5 and PSNB, some assumption clarifications are needed to be discussed, for example, what is the exact configuration of the power control scheme of the public safety side? For LTE and NR is used but probably another method is needed for public safety. |
| Ericsson | Option 1. We salso support the proposed updates from T-Mobile USA. |

### 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** |
| XXX | Company A |
| Company B |
|  |
| YYY | Company A |
| Company B |
|  |

## 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: There was general agreement to revise the WID into a basket WI format, while there were comments on how to further revise the WID.*  *Candidate options:*  *Recommendations for 2nd round: Nokia to further revise the WID considering the received comments and lead the 2nd round discussion on this sub-topic.* |

### 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** |
| R4-2112794 | *to be revised* |

## Discussion on 2nd round (if applicable)

Sub topic 1-1 (R4-2115075)

|  |  |
| --- | --- |
| **Company** | **Comments** |
| XXX |  |

## Summary on 2nd round (if applicable)

*Moderator tries to summarize discussion status for 2nd round and provided recommendation on CRs/TPs/WFs/LSs Status update suggestion*

|  |  |
| --- | --- |
| **CR/TP/LS/WF number** | **T-doc Status update recommendation** |
| XXX | *Based on 2nd round of comments collection, moderator can recommend the next steps such as “agreeable”, “to be revised”* |
| R4-2115075 | *Agreeable (no comment received on revised WID)* |

# Topic #2: Coexistence Study

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2113853 | Huawei Technologies France | Proposal 1: Contribution not available  Observation 1: |
| R4-2112276 | Nokia, Nokia Shanghai Bell, Verizon | Proposal 1: The simulation results and conclusion that have been recorded in the approved TR 37.880 for High-power UE Vs NB-IoT operation for fixed-wireless/vehicle-mounted use cases in Band 12, Band 5, and Band n71 can also be applied to High-power UE Vs NB-IoT operation for fixed-wireless/vehicle-mounted use cases in Band 13 and Band n13. Therefore, no new coexistence simulation is required for High-power UE Vs NB-IoT operation for fixed-wireless/vehicle-mounted use cases in Band 13 and Band n13.  Observation 1: |

## Open issues summary

### Sub-topic 2-1

**Issue 2-1: Contribution in R4-2113853**

* Proposals
  + Option 1: Note the contribution.
  + Option 2: Withdraw the contribution.
* Recommended WF
  + TBA

### Sub-topic 2-2

**Issue 2-2: Contribution in R4-2112276**

* Proposals
  + Option 1: Approve proposal 1.
  + Option 2: Revise proposal 1.
  + Option 3: Postpone proposal 1.
* Recommended WF
  + TBA

## Companies views’ collection for 1st round

### Open issues

**Example 2**

Sub topic 2-1

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Verizon | **Issue 2-2: Contribution in R4-2112276**  We support Option 1 and agree the conclusion of this study! |
| Huawei | **We agree on option1 and withdraw R4-2113853** |
| Ericsson | **Issue 2-2: Option 1** |

Sub topic 2-2

|  |  |
| --- | --- |
| **Company** | **Comments** |
| XXX |  |

### 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** |
| XXX | Company A |
| Company B |
|  |
| YYY | Company A |
| Company B |
|  |

## 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: Agree the proposal in R4-2112276.*  *Candidate options:*  *Recommendations for 2nd round: Continue discussion on simulation assumptions for PSNB like uplink power control for contributions to next RAN4 meeting.* |

### 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** |
| *R4-2112276* | *agreeable* |

## 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”.*

Sub topic 2-1

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Nokia | For NR, CLx\_ile is calculated as Pmax – SNRtarget – [-174 + 10log10(ChBW) + NF], similar calculation can be performed for PSNB using the PSNB system parameters in TR 37.880, if this is agreeable. |
| Huawei | We prepared a document with backgrounds about this topic:  www.3gpp.org/ftp/tsg\_ran/WG4\_Radio/TSGR4\_100-e/Inbox/Drafts/%5B100-e%5D%5B120%5D LTE\_NR\_HPUE\_FWVM/PSNB Simulation assumptions/Discussion on Simulation parameters for 850MHz PSNB for region 2.docx  In short:  **Coupling loss x-ile would be governed by the following formula:**    **Where the Pmax= 36dBm, SNRtarget= 16.5 dB, B = 6.25KHz (B unit is in Hz) and  F=5.7dB  as was proposed in Annex B.1 of TR 36.837.**  Also some questions for interpretation of “outage criteria” was asked in the document. We would like other companies to give their opinion about them.. |
| Nokia | ‘An allowed 1dB desense in PS NB portable devices as interference condition’ is stated in section 7.2.2.1.1.1 of TR 37.806. On the other hand, the ACS and blocking performance assumption of PS NB portable devices (against HPUE transmission in adjacent and close-by channel) is not clearly stated in TR 37.806, this needs to be clarified. |
| Huawei | On other point is that, the nature of simulations are different than the ones of 37.880. For example emission power density with different RBs are simulated (TR 37.806 Figure 7.2.2.1.1-7) while in 37.880 other parameters such as interference (SINR Vs CDF or Ptx Vs CDF) are studied. We prefer the similar simulations as 37.880 for PSNB studies. |
| Nokia | We can use SINR degradation as the performance index (like NB-IoT) if this is agreeable. |
| Huawei | We agree on SINR degradation. However, same ACS as the case of NB-IoT in 37.880 could be used. |
| Nokia | Not sure we can assume the same ACS as NB-IoT UE as PS NB devices, as they are two different technologies. |

## Summary on 2nd round (if applicable)

*Moderator tries to summarize discussion status for 2nd round and provided recommendation on CRs/TPs/WFs/LSs Status update suggestion*

|  |  |
| --- | --- |
| **CR/TP/LS/WF number** | **T-doc Status update recommendation** |
| XXX | *Based on 2nd round of comments collection, moderator can recommend the next steps such as “agreeable”, “to be revised”* |
|  | *There were discussions on various PS NB simulation assumptions, like uplink power control, outage criteria, performance metric and ACS/blocking performance. Recommendation is to continue discussions on simulation assumptions and corresponding simulation results for PS NB till next RAN4 meeting.* |

# Topic #3: Band n71 filter data

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2114236 | T-Mobile USA | Proposal 1: Adds data for n71 filters, as well as updated and additional specs for other filters. Also added the definition of FWA and additional filter data for B5 and B12.  Observation 1: |

## Open issues summary

### Sub-topic 3-1

**Issue 3-1: CR to TR 37.880**

* Proposals
  + Option 1: Approve the CR.
  + Option 2: Revise the CR.
  + Option 3: Postpone the CR.
* Recommended WF
  + TBA

## Companies views’ collection for 1st round

### Open issues

|  |  |
| --- | --- |
| **Company** | **Comments** |
| T-Mobile USA | Sub topic 3-1: Option 1. Even if there is a new TR for this WID, we don’t see any harm in updating TR 37.880 with updated filter data for B5 and B12, and new filter data for n71.  : |
| Nokia | Fine with option 1. Would be good to have that data also in new TR though. We will provide TR skeleton after this meeting. |
| Huawei | Option 1 with one modification:  Only B85 UL is included in USD7185A and not the full band |
| Qualcomm | Option 2. We suggest creating a table and summarizing the key filter parameters in the table in addition to the links that you’ve provided. The concern is that in the future, those links may die and the information would then no longer be available. Also, the CR includes a comment that there are a second set of filters that might be more suitable for FWA because they are smaller, but in fact, they are huge! 63x15x12mm. There were comments in thread 119 about FWA that there may be many FWA form factors including some that are quite small like USB dongle. This filter could only be used in a large form factor FWA in our estimation. |
| Ericsson | Qualcomm’s suggestion (adding a table summarizing filters’ characteristics, not only web links) is relevant.  Except from this, the TR would be agreeable. |

### 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** |
| XXX | Company A |
| Company B |
|  |
| YYY | Company A |
| Company B |
|  |

## 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: There was general agreement the Band n71 filter data are useful in TR 37.880, while there were suggestions to modify the frequency range of one filter, put the data into table format and include the data in the new TR for this WI.*  *Candidate options:*  *Recommendations for 2nd round: T-Mobile USA to further revise the CR considering the received comments and lead the 2nd round discussion on this sub-topic* |

*Suggestion on WF/LS assignment*

|  |  |  |
| --- | --- | --- |
|  | **WF/LS t-doc Title** | **Assigned Company,**  **WF or LS lead** |
| #1 |  |  |

### 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** |
| R4-2114236 | *to be revised* |

## Discussion on 2nd round (if applicable)

Sub topic 3-1 (R4-2115076)

|  |  |
| --- | --- |
| **Company** | **Comments** |
| T-Mobile USA | Revision of R4-2114236 can be found here: <https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_100-e/Inbox/Drafts/%5B100-e%5D%5B120%5D%20LTE_NR_HPUE_FWVM/Round%202/Rev_R4-2114236_CR_37880-h00_n71.docx>  Hopefully all comments have been addressed. I have asked about the n85 DL Huawei mentioned. |
| Qualcomm | As commented in the first round, the size of the filters even those are that indicated to be smaller may still be too large for FWA. We suggest to modify the wording “In addition to the above filters with 43 dBm capability, there are also filters with input power capabilities of 38 dBm, that are smaller and may be more appropriate for FWA devices.” to add the following sentences “Nonetheless, the filters are still very large and may only be suitable for large form factor FWA. Not all FWA devices may be able to accommodate these filters.” |
| Huawei | @Tmobile: USD7185A covers only band 85 UL and not B85 DL, as shown in its datasheet    We suggest you to change “Band 71/n71 Band 85 duplex-filter [USD7185A (ctscorp.com)](https://www.ctscorp.com/wp-content/uploads/USD7185A.pdf) ” to “Band 71/n71 and Band 85 UL duplex-filter [USD7185A (ctscorp.com)](https://www.ctscorp.com/wp-content/uploads/USD7185A.pdf) ” |

## Summary on 2nd round (if applicable)

*Moderator tries to summarize discussion status for 2nd round and provided recommendation on CRs/TPs/WFs/LSs Status update suggestion*

|  |  |
| --- | --- |
| **CR/TP/LS/WF number** | **T-doc Status update recommendation** |
| XXX | *Based on 2nd round of comments collection, moderator can recommend the next steps such as “agreeable”, “to be revised”* |
| R4-2115076 | *Agreeable (comments received and included in revised CR)* |

# Recommendations for Tdocs

## 1st round

**New tdocs**

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

**Existing tdocs**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Tdoc number** | **Title** | **Source** | **Recommendation** | **Comments** |
| R4-210xxxx | CR on … | XXX | Agreeable, Revised, Merged, Postponed, Not Pursued |  |
| R4-2112794 | FWA revised WID | Nokia | Revised |  |
| R4-2113853 | Coexistence study between aggressor HPUE in B5 and Public Safety UE | Huawei Technologies France | Withdrawn |  |
| R4-2112276 | Proposal on coexistence study for High-power UE Vs NB-IoT operation for fixed-wireless/vehicle-mounted use cases in Band 13 and Band n13 | Nokia, Nokia Shanghai Bell, Verizon | Agreeable |  |
| R4-2114236 | Cr for 37.880: n71 filter data | T-Mobile USA | Revised |  |

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Tdoc number** | **Title** | **Source** | **Recommendation** | **Comments** |
| R4-210xxxx | CR on … | XXX | Agreeable, Revised, Merged, Postponed, Not Pursued |  |
| R4-210xxxx | WF on … | YYY | Agreeable, Revised, Noted |  |
| R4-210xxxx | LS on … | ZZZ | Agreeable, Revised, Noted |  |
| R4-2115075 | FWA revised WID | Nokia | Agreeable |  |
| R4-2115076 | Cr for 37.880: n71 filter data | T-Mobile USA | Agreeable |  |

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

|  |  |  |
| --- | --- | --- |
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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)