**3GPP TSG-RAN WG4 Meeting # 98-e R4-210XXXX**

**Electronic Meeting, 25 Jan. – 05 Feb., 2021**

**Agenda item:** 9.20

**Source:** Moderator (China Unicom)

**Title:** Email discussion summary for [98e] [ENDC\_UE\_PC2\_R17\_NR\_TDD]

**Document for:** Information

# Introduction

*Briefly introduce background, the scope of this email discussion and provide some guidelines for email discussion if necessary.*

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

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

# Topic #1: PC2 for EN-DC

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

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2100266 | Verizon | TP for TR 37.826 for DC\_2\_n77 |
| R4-2100268 | Verizon | TP for TR 37.826 for DC\_5\_n77 |
| R4-2100269 | Verizon | TP for TR 37.826 for DC\_13\_n77 |
| R4-2100271 | Verizon | TP for TR 37.826 for DC\_66\_n77 |
| R4-2100286 | LGE | **Proposal 1**: For cross-band isolation issue of PC2 DC UE, the proposed MSD values in Table 3 shall be considered in TS38.101-3.  **Proposal 2**: For IMD problem by dual uplink transmission, the proposed MSD values in Table 7 shall be considered in TS38.101-3. |

## 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: TP for TR 37.826

* Recommended WF
  + Consider the proposed values in Table-7 of R4-2100286, it is recommended to approve the PC2 combinations captured in TP R4-2100266, R4-2100268, R4-2100269 and R4-2100271 with agreeable MSD values.

## Companies views’ collection for 1st round

### Open issues

|  |  |
| --- | --- |
| **Company** | **Comments** |
| ZTE | Sub topic 1-1: We think the MSD should be discussed for case a(23+23) and case b(23+26) for PC2 FDD-TDD ENDC combination separately.  A question for clarification, the cross band isolation MSD for 2+n41, 66+n41 and 7+n78 are only applied for case b(23+26) power configuration? And also for IMD MSD, is it only applied to case b(23+26) power configuration?  For the TPs, it seems all of the TPs are not use the TR template, i.e. not split the subclause for case a(23+23) and case b(23+26) . Also we think it is no need to include OOB exception blocking requirements since it have already included for PC3 combination.  Others: |
| Huawei | Sub topic 1-1:  Our MSD estimation for the EN-DC combos are listed below.   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **Combo** | **IMD Order** | **IMD** | **LGE (R4-2100286)** | **Verizon, Ericsson** | **Huawei** | | DC\_2A\_n77A | IMD2 | B2-n77 | 32.6 | 32 | 31.7 | |  | IMD4 | 3\*B2-n77 | 17.5 | 20 | 19.8 | | DC\_5A\_n77A | IMD4 | 3\*B5-n77 | 17.7 | 20.3 | 17.8 | |  | IMD5 | 4\*B5-n77 | N/A | 20.5 | [16.4] | | DC\_13A\_n77A | IMD5 | 4\*B13-n77 | 11.3 | 20.5 | 14.3 | | DC\_66A\_n77A | IMD2 | B66-n77 | 34.6 | 37 | 31.4 | |  | IMD5 | 3\*B66-2\*n77 | 10.8 | 20 | <3 |   There’re significant variations on the MSD for IMD5 of DC\_66A\_n77A. On the other hand, our estimation is close to LGE’s for DC\_13A\_n77A. The cause of MSD is IMD5 in both cases, but the orders of the frequency components are different. Moreover, for DC\_13A\_n77A, the main source of IMD5 is PA forward mixing, however, this is no longer the case for DC\_66A\_n77A. We encourage companies to double check IMD5 for DC\_66A\_n77A. |

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

*Recommendations 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 provides recommendation on CRs/TPs Status update*

|  |  |
| --- | --- |
| **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)

## 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”* |

# Topic #2: MSD for PC2 combinations

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

## Companies’ contributions summary

|  |  |  |
| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2101184 | CHTTL | **Proposal 1**: RAN4 should continue discussing the possibility of improving MSD requirements. The starting point can be from the existing PC2 combinations in the specifications.  **Proposal 2**: Agree on the new capability for the improved MSD. If the UE support this capability for specific inter-band EN-DC combinations with IM2/IM3 self-desense issue, the rule for single UL allowance is not applicable and dual uplink shall be mandatorily supported. |
| R4-2102415 | Qualcomm | **Proposal 1**: Two options have been presented in this paper. Our preference is Option 1.  ***Option 1***: Define two sets of MSD values – one according to more aggressive assumptions and the other using conventional assumptions. Companies are free to use aggressive assumptions according to their own technical judgment and experience. There is no need to agree to the assumptions themselves, but only to the final MSD value.  ***Option 2***: For MSD values > 10 dB, do not list any specific value in 3GPP (just specify as >10 dB). The actual value could then possibly come as an operator requirement outside of 3GPP. |

## 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

*Sub-topic description:*

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

**Issue 2-1: MSD for PC2 combinations**

* Proposals:
  + Option 1: MSD requirements are calculated based on existing assumptions.
  + Option 2: RAN4 study the possibility of improving MSD requirements based on options listed in R4-2101184 and R4-2102415.
* Recommended WF
  + TBA

## Companies views’ collection for 1st round

### Open issues

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Nokia | Sub topic 2-1:  We support Option 2. For R4-2101184, we agree with the proposal 1. For proposal 2, we would not need “the rule for single UL allowance is not applicable and”.  For R4-2102415, we support Option 1 in principle, but we also need to think about if we specify aggressive MSD and non-aggressive MSD only for PC2 and/or those for PC3.    Others: |
| ZTE | Currently, we support option 1. But in principle we also agree with the possibility for the MSD improvements. So if the aggressive parameters are approved for MSD improving, we can also accept option 2. In addition, we have a question for clarification. if define two sets of MSD value, does it mean that the completed combination with high MSD needs to be re-defined? Even for PC3.  Moreover, it seems it would be no need to introduce capability for MSD, MSD value is the RF requirement to illustrate the self-interference and are calculated by different parameters assumption. |
| Huawei | Sub topic 2-1:  We support option 1. The 3GPP convention is to define the minimum requirements. For the same UE power class, there should be only one set of requirements. Some implementations may perform better under the same channel conditions, which can be seen by the network from CQI report or ACK/NACK feedback. This is business as usual. There’s no need to define new capability for this. Moreover, the scheduling of dual UL is under the control of the base station. The benefit of defining two sets of MSD values is dubious. |

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

*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** |
| 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)

## 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”* |