**3GPP TSG-RAN WG4 Meeting # 97-e R4-200XXXX**

**Electronic Meeting, 2-13 Nov., 2020**

**Agenda item:** 10.19.1

**Source:** Moderator (China Telecom)

**Title:** Email discussion summary for [97e][122] NR\_PC2\_CA\_R17\_2BDL\_2BUL

**Document for:** Information

# Introduction

This email discussion thread is related to NR PC2 CA basket WI, and will focus on the topic of following aspects:

* Topic #1: Work plan, TR skeleton and revised WID
* Topic#2: UE RF requirements
  + Issue 2-1-1: MSD for n77 PC2 combos
  + Issue 2-1-2: TPs for approval

Note that the table for filling comments is assigned just at the bottom of each section of issues.... But the table for collecting comments for CR/TP is still kept in the original position.

# Topic #1: Work plan, TR skeleton and revised WID

## Companies’ contributions summary

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| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations/Abstracts** |
| [R4-2015186](file:///E:\01%20标准\14%20HPUE\02%20UL_interCA\RAN4_97_e\Docs\R4-2015186.zip) | China Telecom | **Abstract**:This contribution provides the work plan for the WI. |
| [R4-2015187](file:///E:\01%20标准\14%20HPUE\02%20UL_interCA\RAN4_97_e\Docs\R4-2015187.zip) | China Telecom | **Abstract**:This contribution provides the TR skeleton v0.0.1. |
| [R4-2015188](file:///E:\01%20标准\14%20HPUE\02%20UL_interCA\RAN4_97_e\Docs\R4-2015188.zip) | China Telecom | **Abstract**:This contribution provides the draft TR v0.1.0, which was reserved for email approval and aims to reflect the TP approved in this meeting. |
| [R4-2015189](file:///E:\01%20标准\14%20HPUE\02%20UL_interCA\RAN4_97_e\Docs\R4-2015189.zip) | China Telecom | **Abstract**:revised WI to capture comments and new request from RAN4 reflector. |

## 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: Work plan, TR skeleton and revised WID

This sub-topic will discuss rapporteur input for work plan, TR skeleton and revised WID.

**Issue 1-1-1: Work plan**

* Recommended WF
  + It is recommended to approve the work plan of R4-2015186

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| **Company** | **Comments** |
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**Issue 1-1-2: TR skeleton**

* Recommended WF
  + It is recommended to approve the TR skeleton of R4-2015187

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| **Company** | **Comments** |
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**Issue 1-1-3: Revised WID**

* Summarization for the WID revision
  + Add new objectives according to comments. The new objectives aims to specify requirements for 2band DL and 1band UL for both PC2 and PC1.5, which are the fallbacks of 2BDL/2BUL.
  + Add new combos requests from operators by considering the new revised objectives.
* Recommended WF
  + It is recommended to approve the new revised WID of R4-2015189

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| **Company** | **Comments** |
| Qualcomm | The WID revision includes PC1.5 UL CA band combinations. However, the PC1.5 WID that was recently completed only considered intra-band EN-DC, UL MIMO, and TxD. So UL CA has not been considered yet. Would this be a 3 simultaneous PA architecture with (26+26)+23? Is there anything that needs to be evaluated for this in a general sense before this gets put into a basket? |

## 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.*

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|  | **Status summary** |
| **Sub-topic#1** | *Tentative agreements:*  *Candidate options:*  *Recommendations for 2nd round:* |

*Recommendations on WF/LS assignment*

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| --- | --- | --- |
|  | **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*

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| --- | --- |
| **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*

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| **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: UE RF requirements

## Companies’ contributions summary

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| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations/Abstracts** |
| [R4-2015053](file:///E:\01%20标准\14%20HPUE\02%20UL_interCA\RAN4_97_e\Docs\R4-2015053.zip) | ZTE Corporation, CMCC | TP for TR38.xxx\_ PC2 CA\_n3A-n41A |
| [R4-2015054](file:///E:\01%20标准\14%20HPUE\02%20UL_interCA\RAN4_97_e\Docs\R4-2015054.zip) | ZTE Corporation, CMCC | TP for TR38.xxx\_ PC2 CA\_n28A-n41A |
| [R4-2015055](file:///E:\01%20标准\14%20HPUE\02%20UL_interCA\RAN4_97_e\Docs\R4-2015055.zip) | ZTE Corporation, CMCC | TP for TR38.xxx\_ PC2 CA\_n28A-n79A |
| [R4-2015056](file:///E:\01%20标准\14%20HPUE\02%20UL_interCA\RAN4_97_e\Docs\R4-2015056.zip) | ZTE Corporation, CMCC | TP for TR38.xxx\_ PC2 CA\_n40A-n41A |
| [R4-2016441](file:///E:\01%20标准\14%20HPUE\02%20UL_interCA\RAN4_97_e\Docs\R4-2016441.zip) | Qualcomm Incorporated | MSD values for PC2 UL CA for CA\_n2-n77, CA\_n5-n77, and CA\_n66-n77 are provided. Using more aggressive PCB isolation assumptions, it is demonstrated that the MSD can be signficantly improved making the combinations more suitable for operator deployment. Without these assumptions, the UE effectively cannot operate in a network under the condition of harmonic or 2UL IMD interference |

## 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: UE RF requirements

This sub-topic will discuss UE RF requirements for proposed combinations.

**Issue 2-1-1: MSD for n77 PC2 combos**

* Proposals
  + Moderator understands this contribution proposed to use more aggressive assumptions for PC2 MSD calculation; otherwise the conventional assumptions based requirements are too poor to be useful for deployment.
* Recommended WF
  + Collect views on this discussion paper
  + If a WF or some agreements are necessary to align the new assumptions

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| **Company** | **Comments** |
| LGE | We think the 90dB PCB isolation is just derive to reduce MSD level for PC2 DC/CA UE.  In commercial UE, the 90dB isolation level is not possible to achieve the level in small UE form factor. Also NSA UE shall support both LTE and NR variable DC/CA band combinations at least 10 different operating bands. We are fine to revise simulation assumptions to derive MSD level for HPUE in Rel-17. However, RAN4 should consider reasonable PCB isolation level and commercial RF component performance. |
| OPPO | In our understanding, the specification were defined based on the state of art UE design rather from making the requirements look better perspective. If the PCB isolation can be improved so much in commercial UE then we are fine to consider it, but this needs implementation justification.  Another point is that if this is difficult for smart phone, maybe can consider for large form factor UE like CPE? |
| Qualcomm | PCB isolation is never written as a requirement in the specification and it is not our intention to do that. It is only used as a parameter to derive MSD. From our understanding, real commerical small handheld phones are able to achieve MSD values that are comparable to ~90 dB isolation. This is not to say that the device actually achieves 90 dB isolation since there are other factors also to determine MSD. However, real devices can achieve this level of MSD performance so the specs should be written to more closely reflect this. |

**Issue 2-1-2: TPs for approval**

* Proposed TPs
  + R4-2015053, 15054, 15055, 15056
* Recommended WF
  + Collect the comments for proposed TPs in the section 2.3.1. If no comments for certain of TP, the TP will be recommended as approved in the summary for 1st round.

## Companies views’ collection for 1st round

### CRs/TPs comments collection

The following table aims to collect the comments for proposed TPs. If no comments for certain of TP, the TP will be recommended as approved in the summary for 1st round.

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| --- | --- |
| **CR/TP number** | **Comments collection** |
| R4-2015053 | CHTTL: The term “EN-DC” and “DC\_n3A\_n41A” are still used in Table 5.x.3.2-1 and Table 5.x.3.2-2, better to fix them? |
| Company B |
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| R4-2015054 |  |
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| [R4-2016441](file:///E:\\01%20标准\\14%20HPUE\\02%20UL_interCA\\RAN4_97_e\\Docs\\R4-2016441.zip) | Verizon:  We support this type of discussions because the content of contribution provides a new method with assumptions to lower down the possible MSD values significantly. Without these new assumptions, the UE effectively cannot operate in a network under the condition of harmonic or 2UL IMD interference.  RAN4 should adopt the new assumptions in future NR CA and EN-DC works. |
| LGE: please see the above LGE comment in sub-topic 2-1-1. |
| CHTTL: We share the similar view as Verizon.  And we think if the new assumption is agreed, then it should apply to all the UL NR CA and also EN-DC PC2 combination. |
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## Summary for 1st round

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### CRs/TPs

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## 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*

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| --- | --- |
| **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”* |