**3GPP TSG-RAN WG4 Meeting #****99-e** **R4-2107940
Electronic Meeting, 19th – 27th May 2021**

**Agenda item:** 8.39.1

**Source:** Moderator (Ericsson)

**Title:** Email discussion summary for [99-e][130] ENDC\_PC2\_R17\_xLTE\_yNR

**Document for:** Information

# Introduction

This email discussion is for Rel-17 ENDC\_PC2\_R17\_xLTE\_yNR which was approved in WI [RP-210816](https://www.3gpp.org/ftp/TSG_RAN/TSG_RAN/TSGR_91e/Docs/RP-210816.zip) at RAN #91.

# Topic #1: General

## Companies’ contributions summary

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| --- | --- | --- |
| **T-doc number** | **Title** | **Company** |
| [R4-2108901](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2108901.zip) | TP for TR 37.827 for DC\_2-13\_n66-n77 | Verizon Denmark |
| [R4-2108902](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2108902.zip) | TP for TR 37.827 for DC\_2-13-66\_n77 | Verizon Denmark |
| [R4-2108903](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2108903.zip) | TP for TR 37.827 for DC\_13-66\_n2-n77 | Verizon Denmark |
| [R4-2108904](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2108904.zip) | TP for TR 37.827 for DC\_2-66\_n5-n77 | Verizon Denmark |
| [R4-2108905](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2108905.zip) | TP for TR 37.827 for DC\_2-5-66\_n77 | Verizon Denmark |
| [R4-2108906](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2108906.zip) | TP for TR 37.827 for DC\_13\_n66-n77  | Verizon Denmark |
| [R4-2108907](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2108907.zip) | TP for TR 37.827 for DC\_13\_n2-n77  | Verizon Denmark |
| [R4-2110745](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2110745.zip) | TP for PC2 DC\_2\_66-n41 | Huawei Tech.(UK) Co.. Ltd |
| [R4-2110957](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2110957.zip) | TP for PC2 DC\_2\_66-n41 | Huawei Tech.(UK) Co.. Ltd |

## Open issues summary

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| --- | --- |
| **Company** | **Comments** |
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## Companies views’ collection for 1st round

### Open issues

### CRs/TPs comments collection

Please provide feedback comments in table below on whether the TP’s need to be revised. If not commented they are to be captured in TR and in a big CR for email approval after the meeting.

|  |  |  |  |
| --- | --- | --- | --- |
| **T-doc number** | **Title** | **Company** | **Comment** |
| [R4-2108901](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2108901.zip) | TP for TR 37.827 for DC\_2-13\_n66-n77 | Company A |  |
| Company B |  |
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|  |  |
| [R4-2108902](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2108902.zip) | TP for TR 37.827 for DC\_2-13-66\_n77 | Company A |  |
| Company B |  |
|  |  |
|  |  |
| [R4-2108903](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2108903.zip) | TP for TR 37.827 for DC\_13-66\_n2-n77 | Company A |  |
| Company B |  |
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| [R4-2108904](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2108904.zip) | TP for TR 37.827 for DC\_2-66\_n5-n77 | Company A |  |
| Company B |  |
|  |  |
|  |  |
| [R4-2108905](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2108905.zip) | TP for TR 37.827 for DC\_2-5-66\_n77 | Company A |  |
| Company B |  |
|  |  |
|  |  |
| [R4-2108906](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2108906.zip) | TP for TR 37.827 for DC\_13\_n66-n77  | CHTTL | In the coexistence study and the MSD, I think we only need to focus on the IMD generated by DC\_13A\_n77A that falls into the third band, n66, in this case.(Note that usually track changes are needed to be used for all the TP content) |
| Apple | The MSD test points for n77 do not fall into the US Band n77 frequency ranges. |
|  |  |
|  |  |
| [R4-2108907](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2108907.zip) | TP for TR 37.827 for DC\_13\_n2-n77  | CHTTL | In the coexistence study and the MSD, I think we only need to focus on the IMD generated by DC\_13A\_n77A that falls into the third band, which is n2 in this case.(Note that usually track changes are needed to be used for all the TP content) |
| Apple | The MSD test points for n77 do not fall into the US Band n77 frequency ranges. |
|  |  |
|  |  |
| [R4-2110745](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2110745.zip) | TP for PC2 DC\_2\_66-n41 | Company A |  |
| Company B |  |
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| [R4-2110957](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2110957.zip) | TP for PC2 DC\_2\_66-n41 | CHTTL | same contribution as above? |
| Huawei | R4-2110957 is the same as R4-2110745, which has been withdrawn due to typos. |
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## 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*

|  |  |  |
| --- | --- | --- |
|  | **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**  |
| [R4-2108901](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2108901.zip) | TP for TR 37.827 for DC\_2-13\_n66-n77, no comments received, ready for approval |
| [R4-2108902](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2108902.zip) | TP for TR 37.827 for DC\_2-13-66\_n77, no comments received, ready for approval |
| [R4-2108903](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2108903.zip) | TP for TR 37.827 for DC\_13-66\_n2-n77, no comments received, ready for approval |
| [R4-2108904](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2108904.zip) | TP for TR 37.827 for DC\_2-66\_n5-n77, no comments received, ready for approval |
| [R4-2108905](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2108905.zip) | TP for TR 37.827 for DC\_2-5-66\_n77, no comments received, ready for approval |
| [R4-2108906](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2108906.zip) | TP for TR 37.827 for DC\_13\_n66-n77, revision needed |
| [R4-2108907](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2108907.zip) | TP for TR 37.827 for DC\_13\_n2-n77, revision needed  |
| [R4-2110745](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2110745.zip) | TP for PC2 DC\_2\_66-n41, to be withdrawn |
| [R4-2110957](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2110957.zip) | TP for PC2 DC\_2\_66-n41, no comments received, ready for approval |

## Discussion on 2nd round (if applicable)

Provide revisions to be agreed for below documents:

|  |  |
| --- | --- |
| **CR/TP number** | **CRs/TPs Status update recommendation**  |
| Revision of [R4-2108906](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2108906.zip) | TP for TR 37.827 for DC\_13\_n66-n77 |
| Company A: |
| Revision of [R4-2108907](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2108907.zip) | TP for TR 37.827 for DC\_13\_n2-n77  |
| Company A: |

## 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**  |
| R4-2107837 | TP for TR 37.827 for DC\_13\_n66-n77 (revision of [R4-2108906](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2108906.zip))Final version to be uploaded in Inbox and ready for approval |
| R4-2107838 | TP for TR 37.827 for DC\_13\_n2-n77 (revision of R4-2108907)Final version to be uploaded in Inbox and ready for approval |

# Topic #2: Notification in TS on completed PC2 combinations

## Companies’ contributions summary

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| --- | --- | --- | --- |
| **T-doc number** | **Title** | **Company** | **Proposals / Observations** |
| [R4-2108804](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2108804.zip) | Handling of PC2 uplink configurations with more than 2 DL bands | Nokia, Nokia Shanghai Bell, CHTTL, Verizon | Observation 1: Clarification on which PC2 configurations with more than two DL bands are completed or not in TS38.101-3 is needed.Observation 2: The same issue applies to PC2 uplink inter band CA with more than two DL bands.Observation 3: The issue can be resolved by adding NOTE in EN-DC configuration tables. We, however, are open to discuss if there are better ways to address the issue.Proposal: RAN4 should address the issue raised in this contribution and invite more suitable resolutions to address it in future meetings. |

## Open issues summary

**Issue 2.2-1:**Discuss the following options regarding notification on completed PC2 combinations:

1. no indication needed in 38.101-3
2. indication using notes
3. other alternatives

## Companies views’ collection for 1st round

### Open issues

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| --- | --- |
| **Company** | **Comments** |
| Nokia | Issue 2.2-1: b) or c), we are open to discuss alternatives, but we need something if we agree with a CR for the introduction of PC2 configurations with more than 2 DL bands |
| ZTE | Issue 2.2-1: If we go with a), it will foreseen several new tables will be needed in the spec. b) is a simply way( c) is not excluede if any).For b), we have a question for clarification:It seems b) is based on this approach of ‘one way could be adding NOTEs configurations whose MSD analyses have completed’. As mentioned in the contribution, “not possible to check if MSD analysis is completed or not for configurations which do not have MSD issues at all, since they are not listed in the MSD tables.”, for these case, it seems the note will exclude the PC2 ENDC configuration. We take DC\_1A-3A\_n78A for instance:

| EN-DCconfiguration | Uplink EN-DCconfiguration(NOTE 1) |
| --- | --- |
| DC\_1A-3A\_n78A5, 14DC\_1A-3A\_n78C5, 14DC\_1A-3C\_n78A5, 14 | DC\_1A\_n78A14DC\_3A\_n78A |
| DC\_1A-5A\_n78A5 DC\_1A-5A\_n78C5DC\_1A-1A-5A\_n78A | DC\_1A\_n78ADC\_5A\_n78A |
| NOTE 14: PC3 or PC2 Uplink EN-DC configuration is applicable to EN-DC configurations. |

No MSD issue for 3+n78 -->n1, however, DC\_3A\_n78A can still be used as PC2 UL ENDC configuraiton.Also, we are not sure if it can apply to NR CA since BCS needs to be considered for NR CA. |
| Verizon | We agree with ZTE and support Operation b).For BCS, a statement is also needed to ensure the same configurations, including the BCS.  |
| CHTTL | Thank you Nokia for continue this discussion as we raised from the last RAN4 meeting. We also think this needs to be resolved, otherwise the spec will remain unclear on what is supported.we also support b) or c) (if there are other alternatives)To ZTE, The table is just an example that only PC2 UL DC\_1A\_n78A is requested and completed for pairing with DL DC\_1A-3A\_n78A/DC\_1A-3A\_n78C/DC\_1A-3C\_n78A. So if PC2 UL DC\_3A\_n78A is also supported, the corresponding note can be added, so it will not preclude any completed PC2 configuration. |
| Huawei | We support option b). Following the point made by ZTE, perhaps the note should also indicate the CA combinations whose MSD values are to be completed. |
| Ericsson | We support option b) |

### 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.*

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| --- | --- | --- | --- |
| **CR/TP number** | **Title** | **Company** | **Comments collection** |
|  |  |  | Company A |
| Company B |
|  |
|  |  |  | 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:seems like a general consensus to indicate PC2 support by the use of Notes**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)

It is suggested that Nokia provides Notes that can be agreed during 2nd round, The intention is that these notes can be agreed during 2nd round so that they can be implemented by the rapporteur together with the new combinations in the big CR for email approval.

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Nokia | We don’t think we need to revise the NOTE that we proposed in our contribution ***at this moment***. To ZTE:For b), we have a question for clarification:Thank you for the question. Configurations whose MSD analysis are completed can have the NOTE so that we don’t think we need to include the information saying MSD analysis is completed or not. Regarding CA, the same issue applies. And what we need to do is the same or similar so that here we’d like to fucus on EN-DC where more than 2DL bands to be introduced.For new BCS, in case BCS which has new channel bandwidth combinations which are not covered by the existing BCS, then, anyway, the BCS will be introduced after checking MSD for those new channel bandwidth combinations, then, it must be OK.Finally, 38.101-1 or -3 is the specifications so that we basically capture what the analysis is done… |
| CHTTL | Support Nokia. |
| Verizon | Agree and support Nokia !!!  |

## 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**  |
| [R4-2108804](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2108804.zip) | Handling of PC2 uplink configurations with more than 2 DL bandsProposed to be approved.The notes agreed in R4-2108804 are to be implemented by the rapporteur in the big CR R4-2111078 for email approval. |