**3GPP TSG-RAN WG4 Meeting # 99-e R4-210xxxxx**

**Electronic Meeting, May. 19-27, 2021**

**Agenda item:** 8.26

**Source:** Moderator (CATT)

**Title:** Email discussion summary for [99-e][119] NR\_LTE\_V2X\_PC5\_combos

**Document for:** Information

# Introduction

This email discussion summary will discuss the newly introduced band combinations of V2X con-current operation and associated open issues.

The candidate targets of this email discussion for 1st round and 2nd round:

* 1st round
  + Companies to provide comments on open issues involved.
  + Companies to provide comments on TPs and CRs involved.
* 2nd round
  + Further check the revised TPs and CRs if any.
  + Recommend the final status of TPs and CRs.

# Topic #1: Introduce new band combinations

## Companies’ contributions summary

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| --- | --- | --- |
| **T-doc number** | **Company** | **Proposals / Observations** |
| R4-2109043 | CATT | Title: TR 37.875, Band combinations for V2X con-current operation  **For email approval after meeting** |
| [R4-2111427](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2111427.zip) | Huawei, HiSilicon | Title: TP for 37.875: Scope of NR V2X R17 combinations |
| [R4-2109038](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2109038.zip) | CATT | Title: TP on V2X\_n78A-n47A and V2X\_n78A-47A coexistence study |
| [R4-2109039](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2109039.zip) | CATT | Title: CR for TS 38.101-1, Introduce new band combination of V2X\_n78A-n47A |
| [R4-2109041](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2109041.zip) | CATT | Title: CR for TS 38.101-1, Introduce new band combination of V2X\_n79A-n47A  **Resubmission of draft CR R4-2105367 endorsed in RAN4#98-bis-e meeting.** |
| [R4-2109370](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2109370.zip) | Qualcomm Incorporated | Title: Calculation of delta RIB,V2X for V2X\_n79A-n47A and V2X\_n79A-47A  **Proposal 1: The ΔRIB,V2X given in table 2 be adopted for V2X\_n79A-47A**  Table 2 ΔRIB,V2X for V2X\_n79A-47A   |  |  |  | | --- | --- | --- | | V2X inter-band con-current band Combination | E-UTRA or NR Band | ΔRIB,V2X [dB] | | V2X\_n79-47 | n79 | 3.3 | | 47 | 2.3 |   Proposal 2: The ΔRIB,V2X given in table 3 be adopted for V2X\_n79A-n47A  Table 3 ΔRIB,V2X for V2X\_n79A-n47A   |  |  |  | | --- | --- | --- | | V2X inter-band con-current band Combination | E-UTRA or NR Band | ΔRIB,V2X [dB] | | V2X\_n79-n47 | n79 | 3.3 | | n47 | 3.3 |   **Proposal 3: Support of all V2X band combinations is optional**  **Proposal 4: Support of all V2X band combinations that are made release independent to an earlier release is optional in the earlier release** |
| [R4-2110403](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2110403.zip) | Huawei, HiSilicon | Title: Draft CR for 38.101-1 to simplify the configuration and REFSENS for V2X band combinations |
| [R4-2110404](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2110404.zip) | Huawei, HiSilicon | Title: Discussion and TP for TR 37.875 on MSD for V2X\_n79A-n47A and V2X\_n79A\_47A |
| [R4-2109040](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2109040.zip) | CATT | Title: CR for TS 38.101-3, Introduce new band combination of V2X\_n78A-47A |
| [R4-2109042](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2109042.zip) | CATT | CR for TS 38.101-3, Introduce new band combination of V2X\_n79A-47A  **Resubmission of draft CR R4-2105368 endorsed in RAN4#98-bis-e meeting.** |

## Open issues summary

Based on above contributions, the following sub-topics and issues are summarized.

### Sub-topic 1-1: Sensitivity degradation for V2X\_n79A-n47A and V2X\_n79A-47A

**Issue 1-1-1: MSD/ΔRIB,V2X for V2X\_n79A-n47A and V2X\_n79A-47A**

* Proposals
  + Option 1: Adopt the following ΔRIB,V2X for V2X\_n79A-n47A and V2X\_n79A-47A proposed in paper [R4-2109370](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2109370.zip).
* Table 1: ΔRIB,V2X for V2X\_n79A-47A

|  |  |  |
| --- | --- | --- |
| V2X inter-band con-current band Combination | E-UTRA or NR Band | ΔRIB,V2X [dB] |
| V2X\_n79-47 | n79 | 3.3 |
| 47 | 2.3 |

* Table 2: ΔRIB,V2X for V2X\_n79A-n47A

|  |  |  |
| --- | --- | --- |
| V2X inter-band con-current band Combination | E-UTRA or NR Band | ΔRIB,V2X [dB] |
| V2X\_n79-n47 | n79 | 3.3 |
| n47 | 3.3 |

* + Option 2: Adopt the following MSD for V2X\_n79A-n47A and V2X\_n79A-47A proposed in paper [R4-2110404](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2110404.zip).

Table 3: Reference sensitivity exceptions (MSD) due to cross band isolation for V2X

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| UL band | DL band | SCS of UL/DL band (kHz) | LCRB of UL band | UL band BW(MHz) | LCRB of DL band | DL band BW (MHz) | MSD value of DL band (dB) |
| n79 | n47 | 15 | 216 | 40 | 50 | 10 | 3 |

Table 4: Reference sensitivity exceptions (MSD) due to cross band isolation for NR V2X

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| UL band | DL band | SCS of UL/DL band (kHz) | LCRB of UL band | UL band BW(MHz) | LCRB of DL band | DL band BW (MHz) | MSD value of DL band (dB) |
| n79 | 47 | 15 | 216 | 40 | 50 | 10 | 3 |

* Recommended WF
  + Need more discussion.

### Sub-topic 1-2: Clarification on V2X con-current operation

**Issue 1-2-1: V2X band combination in Rel-17**

* Proposals
  + Option 1: Support of all V2X band combinations is optional.
* Recommended WF
  + Need more discussion.

**Issue 1-2-2: V2X band combination in Rel-16**

* Proposals
  + Option 1: Support of all V2X band combinations that are made release independent to an earlier release is optional in the earlier release
* Recommended WF
  + Need more discussion.

## Companies views’ collection for 1st round

### Open issues

**Issue 1-1-1: MSD/ΔRIB,V2X for V2X\_n79A-n47A and V2X\_n79A-47A**

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| --- | --- |
| **Company** | **Comments** |
| Huawei | Option 2, it’s reasonable to specify MSD for this band combination. Delta R is just used for insertion loss. |
|  |  |

**Issue 1-2-1: V2X band combination in Rel-17**

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| **Company** | **Comments** |
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**Issue 1-2-2: V2X band combination in Rel-16**

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| **Company** | **Comments** |
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### 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** |
| [R4-2111427](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2111427.zip)  (TP for 37.875: Scope of NR V2X R17 combinations) |  |
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| [R4-2109038](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2109038.zip)  (TP on V2X\_n78A-n47A and V2X\_n78A-47A coexistence study) |  |
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| [R4-2109039](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2109039.zip)  (CR for TS 38.101-1, Introduce new band combination of V2X\_n78A-n47A) |  |
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| [R4-2110403](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2110403.zip)  (Draft CR for 38.101-1 to simplify the configuration and REFSENS for V2X band combinations) |  |
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| [R4-2110404](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2110404.zip)  (Discussion and TP for TR 37.875 on MSD for V2X\_n79A-n47A and V2X\_n79A\_47A) |  |
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| [R4-2109040](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2109040.zip)  (CR for TS 38.101-3, Introduce new band combination of V2X\_n78A-47A) |  |
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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.*

|  |  |
| --- | --- |
|  | **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”* |
| [R4-2111427](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2111427.zip) |  |
| [R4-2109038](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2109038.zip) |  |
| [R4-2109039](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2109039.zip) |  |
| [R4-2109041](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2109041.zip) |  |
| [R4-2110403](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2110403.zip) |  |
| [R4-2110404](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2110404.zip) |  |
| [R4-2109040](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2109040.zip) |  |
| [R4-2109042](https://www.3gpp.org/ftp/TSG_RAN/WG4_Radio/TSGR4_99-e/Docs/R4-2109042.zip) |  |

## Discussion on 2nd round (if applicable)

## Open issues summary

## Companies views’ collection for 2st round

### Open issues

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| --- | --- |
| **Company** | **Comments** |
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### CRs/TPs comments collection

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| --- | --- |
| **CR/TP number** | **Comments collection** |
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## 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”* |
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# 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 |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

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 |  |
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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