**3GPP TSG-RAN WG2 Meeting #131 R2-2506447**

**Bengaluru, India, August 25th – 29th, 2025**

**Agenda item: 7.0.2.12**

**Source: ZTE**

**Title: Report of [AT131][016][MUSIM] Offline (ZTE)**

**WID/SID: NR\_DualTxRx\_MUSIM-Core**

**Document for: Discussion and Decision**

# Introduction

This document is to kick off the following email discussion.

* [AT131][016][MUSIM] Offline (ZTE)

 Intended outcome: Discuss both CBs for MUSIM

 Deadline: Thursday

Your feedback before the Wednesday 16:00 would be appreciated.

# Discussion

## On MUSIM Gap

During the on-line discussion, companies have the different understandings on the following Note:

*NOTE: If network does not configure the relative priorities among MUSIM gaps as indicated by the UE, UE behaviour is not specified.*

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| [R2-2505996](file:///C%3A%5CUsers%5Cpanidx%5COneDrive%20-%20InterDigital%20Communications%2C%20Inc%5CDocuments%5C3GPP%20RAN%5CTSGR2_131%5CDocs%5CR2-2505996.zip) Clarification on the MUSIM Gap ZTE Corporation discussion Rel-18 NR\_DualTxRx\_MUSIM-CoreProposal 2: RAN2 to confirm that when network does not configure the priority even the UE has indicated the preferred MUSIM priority, UE behaviour is not specified. - Mediatek thinks this is not needed as RAN4 indicated that there are no requirements and that is different from UE behaviour not specified. *Proposal 3: RAN2 to confirm whether the NOTE below has included the case in the Proposal 2.**NOTE: If network does not configure the relative priorities among MUSIM gaps as indicated by the UE, UE behaviour is not specified.*- Mediatek thinks these are different cases. Ericsson think that it includes the cases where the network doesn’t provide the priorities. Vivo thinks that further clarification are needed. *Proposal 3a: If not included, the NOTE should be further clarified, e.g.**NOTE: If network does not configure the relative priorities among MUSIM gaps (including the case that the network does not configure the priority for the MUSIM Gaps) as indicated by the UE, UE* *behaviour is not specified.*[CB on 2-3]**Agreements**1. No further RAN2 specification impact is required for resolving MUSIM gap and measurement gap collisions, based on the reply LS [1].
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Based on the comments, there are 2 understandings:

* Understanding 1: The case that the “the network does not configure the priority even the UE has indicated the preferred MUSIM priority” has not been included in the current note, but no need to specify it for that it has been clarified in the RAN4’s LS, and has been included in the RAN4 spec.
* Understanding 2: The case that the “the network does not configure the priority even the UE has indicated the preferred MUSIM priority” has been included in the current note.

Both understandings would have no impact to the RAN2 spec, thus RAN2 confirm that no further clarification is needed.

**Proposal 1: RAN2 conclude that no further clarification on the following note is needed.**

*NOTE: If network does not configure the relative priorities among MUSIM gaps as indicated by the UE, UE behaviour is not specified.*

As rapporteur, we think this proposal can be accepted by all of the companies, however if you have different views or disagree with this proposal, please list the comments below.

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| **Company** | **Comments.** |
| Ericsson | Agree.(We consider the existing text “..*network does not configure the relative priorities…”* covers also the case Nw does not configure the priorities at all.) |
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## On *musim-AffectedBandsList*

On musim-AffectedBandslist,CR as following:

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| [R2-2505997](file:///C%3A%5CUsers%5Cpanidx%5COneDrive%20-%20InterDigital%20Communications%2C%20Inc%5CDocuments%5C3GPP%20RAN%5CTSGR2_131%5CDocs%5CR2-2505997.zip) Clarification to musim-AffectedBandsList ZTE Corporation CR Rel-18 38.331 18.6.0 5447 - F NR\_DualTxRx\_MUSIM-Core- Vivo doesn’t think we can agree to the CR this meeting as it is up to UE implementation. ZTE thinks we need clear specification. - Huawei thinks that we can agree on the understanding on the chair minutes and not agree to the CR. [CB Thursday] |

We just intend to clarify whether the maximum or minimum capability would be taken as the upper limit for the temporary capability restriction reporting for the case there are multiple related BC in the UE capability message.

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| ***musim-AffectedBandsList***Indicates the UE's preference on the band(s) and/or combination(s) of bands with restricted capability for MUSIM operation. If the *MUSIM-CapabilityRestrictedBandParameters-r18* with same *musim-bandEntryIndex* appears more than once in the list of bands in a *MUSIM-AffectedBands* entry, the UE supports intra-band non-contiguous CA with restricted capability for MUSIM operation for this band. UE explicitly indicates each band and each combination of bands that are affected. The Network should respect these capability restrictions when configuring the UE with bands or band combinations that contain these bands and/or combination of bands. Fields *musim-MIMO-Layers-DL/UL* and *musim-SupportedBandwidth-DL/UL* indicate the max number of MIMO layers and max bandwidth on each CC of the band, respectively. The band(s) and/or combination(s) of bands are supported in UE capability, and the *musim-MIMO-Layers-DL/UL* and *musim-SupportedBandwidth-DL/UL* range up to the concerned capability of band(s) and/or combination(s) of bands in UE capability.  |

We give an example in the cover sheet of the CR, e.g. Band A related Reporting in the UE Capability is as below:

* BC 1 with band A+ band B: Band A: DL MIMO layer 4, DL Bandwidth 100M
* BC 2 with band A+ band C: Band A: DL MIMO layer 2, DL Bandwidth 50M

If we take the maximum value as the upper limit, then the UE can report temporary capability restriction with capability even stronger than band A capability in the BC2, e.g. musim-MIMO-Layers-DL = 4 Layer /musim-SupportedBandwidth-DL= 80M, the supported capability for the BC1/2 would be

* BC 1 with band A+ band B: Band A: DL MIMO layer 4, DL Bandwidth 80M
* BC 2 with band A+ band C: Band A: DL MIMO layer 2, DL Bandwidth 50M

Another example is when the UE reports temporary capability restriction for band A with musim-MIMO-Layers-DL = 4 Layer /musim-SupportedBandwidth-DL= 30M, the supported capability for the BC1/2 would be

* BC 1 with band A+ band B: Band A: DL MIMO layer 4, DL Bandwidth 30M
* BC 2 with band A+ band C: Band A: DL MIMO layer 2, DL Bandwidth 30M

However if we take the minimum capability as the upper limit, which would be a quite strict restriction for the UE temporary capability reporting. Thus the concerned maximum capability of band(s) and/or combination(s) of bands in UE capability would be taken as the upper limit for the temporary capability restriction. For each concerned band or band combination, the lowest value of the musim-MIMO-Layers-DL/UL/musim-SupportedBandwidth-DL/UL and the concerned capability in the UE capability determines the supported maximum MIMO layers and maximum bandwidth, based on this the TP is also provided.

**Proposal 2: Agree the CR R2-2506446 with the modification as following.**

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| ***musim-AffectedBandsList***Indicates the UE's preference on the band(s) and/or combination(s) of bands with restricted capability for MUSIM operation. If the *MUSIM-CapabilityRestrictedBandParameters-r18* with same *musim-bandEntryIndex* appears more than once in the list of bands in a *MUSIM-AffectedBands* entry, the UE supports intra-band non-contiguous CA with restricted capability for MUSIM operation for this band. UE explicitly indicates each band and each combination of bands that are affected. The Network should respect these capability restrictions when configuring the UE with bands or band combinations that contain these bands and/or combination of bands. Fields *musim-MIMO-Layers-DL/UL* and *musim-SupportedBandwidth-DL/UL* indicate the max number of MIMO layers and max bandwidth on each CC of the band, respectively. The band(s) and/or combination(s) of bands are supported in UE capability, and the *musim-MIMO-Layers-DL/UL* and *musim-SupportedBandwidth-DL/UL* range up to the concerned maximum capability of band(s) and/or combination(s) of bands in UE capability. For each concerned band or band combination, the lowest value of the *musim-MIMO-Layers-DL/UL*/*musim-SupportedBandwidth-DL/UL* and the concerned capability in the UE capability determines the supported maximum MIMO layers and maximum bandwidth. |

As rapporteur, we think this proposal can be accepted by most of the companies, however if you have different views or disagree with this proposal, please list the comments below.

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| **Company** | **Comments** |
| Ericsson | Maybe these changes makes the text more clear that the rule applies to each individual field.For each concerned band or band combination, the lowest value of each *musim-MIMO-Layers-DL/UL*/*musim-SupportedBandwidth-DL/UL* and the corresponding UE capabilities determines the supported maximum MIMO layers and maximum bandwidth in DL/UL, respectively. |
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# Conclusions

**Proposal 1: RAN2 conclude that no further clarification on the following note is needed.**

*NOTE: If network does not configure the relative priorities among MUSIM gaps as indicated by the UE, UE behaviour is not specified.*

**Proposal 2: Agree the CR R2-2506446 with the modification as following.**

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| ***musim-AffectedBandsList***Indicates the UE's preference on the band(s) and/or combination(s) of bands with restricted capability for MUSIM operation. If the *MUSIM-CapabilityRestrictedBandParameters-r18* with same *musim-bandEntryIndex* appears more than once in the list of bands in a *MUSIM-AffectedBands* entry, the UE supports intra-band non-contiguous CA with restricted capability for MUSIM operation for this band. UE explicitly indicates each band and each combination of bands that are affected. The Network should respect these capability restrictions when configuring the UE with bands or band combinations that contain these bands and/or combination of bands. Fields *musim-MIMO-Layers-DL/UL* and *musim-SupportedBandwidth-DL/UL* indicate the max number of MIMO layers and max bandwidth on each CC of the band, respectively. The band(s) and/or combination(s) of bands are supported in UE capability, and the *musim-MIMO-Layers-DL/UL* and *musim-SupportedBandwidth-DL/UL* range up to the concerned maximum capability of band(s) and/or combination(s) of bands in UE capability. For each concerned band or band combination, the lowest value of each *musim-MIMO-Layers-DL/UL*/*musim-SupportedBandwidth-DL/UL* and the corresponding UE capabilities in the UE capability message determines the supported maximum MIMO layers and maximum bandwidth in DL/UL, respectively. |