**3GPP TSG-RAN WG4 Meeting # 115 R4-25XXXXX**

**Malta, MT, 19th ‒ 23rd, 2025**

**Agenda item:** 9.1

**Source:** Moderator (Apple)

**Title:** Topic summary for [115][231] Reply\_LS

**Document for:** Information

# Introduction

*This summary covers the following topic in AI 9.2, AI 9.3 and AI 9.4.*

R2-2503163 LS on Collision between MUSIM Gap and Measurement Gap

# Topic #1: Collision between MUSIM Gap and Measurement Gap

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

## Companies’ contributions summary

|  |  |  |  |
| --- | --- | --- | --- |
| **T-doc number** | **Company** | **Title** | **Proposals / Observations** |
| [**R4-2505880**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_115/Docs/R4-2505880.zip) | Apple | Reply LS on Collision between MUSIM Gap and Measurement Gap | Proposal 1: for the scenario where network configures the MUSIM gap without priority and the measurement Gap without priority together, apply the same collision handling based on MGRP. |
| [**R4-2506899**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_115/Docs/R4-2506899.zip) | Ericsson | Discussion on RAN2 LS about MUSIM and MG collision | ***Proposal 1: RAN4 to send LS to reply RAN2 as follow.**** ***When collisions between MUSIM gaps without priority and measurement gap(s) with/without priority, the UE requirement is defined as follow.***
	+ ***In a collision, the gap occasion with longer MGRP will be kept when any measurement gaps in the collision gaps is not assigned a priority; and the gap occasion with shorter MGRP will be dropped.***
	+ ***No requirements apply if any of the two gaps in a collision have the same MGRP.***
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| [**R4-2506995**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_115/Docs/R4-2506995.zip) | vivo | Discussion on reply LS R2-2503163 | **Proposal 1: If priority is not allocated for MUSIM gaps, UE behaviour is not specified and there is no any further RAN4 action on this issue.**  |
| [**R4-2507267**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_115/Docs/R4-2507267.zip) | Nokia | Discussion on collision between MUSIM Gap and measurement Gap | 1. There is no need to re-open the discussion regarding the UE requirements when network selects to configure MUSIM gaps without priorities.
2. There is no need to re-open the discussion about UE requirements for the scenario where the network configure MUSIM gaps with priorities and measurement gaps without priorities.
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| [**R4-2506774**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_115/Docs/R4-2506774.zip) | (NR\_DualTxRx\_MUSIM-Core) Discussion on MUSIM gaps without priority | Huawei, HiSilicon | **Proposal:** **Clarify that collision handling for case where MUSIM gaps are not configured with priority is left to UE implementation, and requirements in clause 9.1.10 do not apply when such MUSIM gaps collide with other gaps.** |
| [**R4-2506775**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_115/Docs/R4-2506775.zip) | (NR\_DualTxRx\_MUSIM-Core) CR on MUSIM gaps without priority | Huawei, HiSilicon | CR based on discussion in 6774 |
| R4-2506776 | (NR\_DualTxRx\_MUSIM-Core) CR on MUSIM gaps without priority R19 | Huawei, HiSilicon | CR based on discussion in 6774 |
| [**R4-2507144**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_115/Docs/R4-2507144.zip) | Discussion on LS on Collision between MUSIM Gap and Measurement Gap | CMCC | ***Proposal 1: for collision between periodic MUSIM gaps where no priprity configured, it is proposed that the collision are handled based on MGRP of the colliding MUSIM gaps. In detail, for each collision between MUSIM gaps, the occasion of the MUSIM gap with longer MGRP shall be kept and the occasion of the MUSIM gap with shorter MGRP shall be dropped. If the colliding MUSIM gaps have the same MGRP, there is no requirements.*** ***Proposal 2: for LS on collision between MUSIM Gap and measurement Gap, it is proposed to reply RAN2 as following*** * ***If there is aperiodic MUSIM gap, the measurement gap occasion or periodic MUSIM gap occasion colliding with the aperiodic MUSIM gap shall be dropped.***
* ***Otherwise, collisions between MUSIM gaps and measurement gaps where no priorities are configured for MUSIM gaps and/or measurement gaps, are handled based on MGRP of the colliding gaps, and the MUSIM gap or measurement gap with longer MGRP shall be kept, the MUSIM gap or measurement gap with shorter MGRP shall be dropped***
* ***If the colliding MUSIM gap and measurement gap have the same MGRP, there is no requirements***
* ***For collisions between MUSIM gaps***
* ***If keep solution is configured, all MUSIM gaps are kept***
* ***If keep solution is not configured, and priority is not configured, collisions between MUSIM gaps are handled based on MGRP of the colliding MUSIM gaps, and the MUSIM gap with longer MGRP shall be kept, the MUSIM gap with shorter MGRP shall be dropped***
* ***If the colliding MUSIM gaps have the same MGRP, there is no requirements***
 |
| [**R4-2507196**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_115/Docs/R4-2507196.zip) | Discussion on MUSIM | ZTECorporation,Sanechips | **Observation 1:** * **NW A will always configure the priority level to all configured periodic MUSIM gaps.**
* **NW A determines whether to configure the MUSIM gap priority or not, but if configured, NW A shall configure the priority for all of MUSIM gaps.**

**Observation 2: For measurement gap, it contains two kinds of gap which are Type-1 measurement gap and Typ-2 measurement gap. For Typ-1 measurement gap, it doesn’t have any priority level. For Type-2 measurement gap, it could be understood as concurrent gap which has the priority gap. Among these, one special case is if single gap is configured via Type-2 signaling, this single gap has no priority level.****Proposal 1: The following cases shall be considered:****Table 1 MUSIM colliding with Type-1 measurement gap and Type-2 measurement gap**

|  |  |  |  |
| --- | --- | --- | --- |
| **Case** | **MUSIM gap priority** | **Typ-1 measurement gap priority** | **Type-2 measurement gap priority** |
| **1** | **Yes** | **No** | **Yes** |
| **2** | **Yes** | **/** | **No, special case** |
| **3** | **No** | **/** | **Yes** |
| **4** | **No** | **No** | **No, special case** |

**Proposal 2: When MUSIM gaps colliding with Type-1 measurement gaps, the following collision processing shall be considered:****Table 2 The collision processing for MUSIM gaps colliding with Type-1 measurement gaps**

|  |  |  |  |
| --- | --- | --- | --- |
| **Case** | **MUSIM gap priority** | **Typ-1 measurement gap priority** | **Collision processing** |
| **1** | **Yes** | **No** | **Based on MGRP** |
| **2** | **Yes** | **/** | **/** |
| **3** | **No** | **/** | **/** |
| **4** | **No** | **No** | **Based on MGRP** |

**Proposal 3: When MUSIM gaps colliding with Type-2 measurement gaps, the following collision processing shall be considered:****Table 3 The collision processing for MUSIM gaps colliding with Type-2 measurement gaps**

|  |  |  |  |
| --- | --- | --- | --- |
| **Case** | **MUSIM gap priority** | **Type-2 measurement gap priority** | **Collision processing** |
| **1** | **Yes** | **Yes** | **Based on priority** |
| **2** | **Yes** | **No, special case** | **Based on MGRP** |
| **3** | **No** | **Yes** | **Based on priority** |
| **4** | **No** | **No, special case** | **Based on MGRP** |

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| [**R4-2507199**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_115/Docs/R4-2507199.zip) | Draft LS to RAN2 on MUSIM gap and measurement gap | ZTECorporation,Sanechips | LS based on discussion in 7196 |
| [**R4-2507821**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_115/Docs/R4-2507821.zip) | Discussion on Collision between MUSIM Gap and Measurement Gap | MediaTek inc. | Proposal 1: RAN4 has already defined requirements for collision handling between MUSIM gap and MG when priority is not configured for one or both of them.Proposal 2: RAN4 to send a reply LS to RAN2 to address RAN2 question regarding the collision between the MUSIM Gap and Measurement Gap. |
| [**R4-2507822**](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_115/Docs/R4-2507822.zip) | MediaTek inc. | Reply LS on collision handling between MUSIM gaps and MGs | LS reply based on discussion in 7822. |
|  |  |  |  |

## Open issues summary

*Before Meeting, moderators shall summarize list of open issues, candidate options and possible WF (if applicable) based on companies’ contributions.*

On the collision between the MUSIM Gap and Measurement Gap (for the UE supporting *musim-GapPriorityPreference* capability) in R18, RAN2 identified that the network can configure the MUSIM gap without priority and the measurement Gap with priority together and vice versa. In addition, it is also supported from RAN2 specification that the network can configure the MUSIM gap without priority and the measurement Gap without priority together.

RAN2 respectfully ask RAN4 on whether UE requirement is needed for the above collision cases.

### Sub-topic 1-1

*Sub-topic description:*

*Open issues and candidate options before meeting:*

**Issue 1-1: how to handle the case where the network configured the MUSIM gap without priority and the measurement Gap without priority together?**

* Proposals
	+ Option 1: Apple, CMCC

For the scenario where network configures the MUSIM gap without priority and the measurement Gap without priority together, apply the same collision handling based on MGRP.

* + Option 2: Ericsson

When collisions between MUSIM gaps without priority and measurement gap(s) with/without priority, the UE requirement is defined as follow.

* + In a collision, the gap occasion with longer MGRP will be kept when any measurement gaps in the collision gaps is not assigned a priority; and the gap occasion with shorter MGRP will be dropped.

No requirements apply if any of the two gaps in a collision have the same MGRP.

* + Option 3: vivo

If priority is not allocated for MUSIM gaps, UE behaviour is not specified and there is no any further RAN4 action on this issue.

* + Option 4: Nokia

There is no need to re-open the discussion regarding the UE requirements when network selects to configure MUSIM gaps without priorities.

* + Option 5: Huawei, HiSilicon

Clarify that collision handling for case where MUSIM gaps are not configured with priority is left to UE implementation, and requirements in clause 9.1.10 do not apply when such MUSIM gaps collide with other gaps.

* + Option 6: MediaTek

RAN4 has already defined requirements for collision handling between MUSIM gap and MG when priority is not configured for one or both of them.

* + Option 7: ZTE

Proposal 1: The following cases shall be considered:

**Table 1 MUSIM colliding with Type-1 measurement gap and Type-2 measurement gap**

|  |  |  |  |
| --- | --- | --- | --- |
| **Case** | **MUSIM gap priority** | **Typ-1 measurement gap priority** | **Type-2 measurement gap priority** |
| **1** | **Yes** | **No** | **Yes** |
| **2** | **Yes** | **/** | **No, special case** |
| **3** | **No** | **/** | **Yes** |
| **4** | **No** | **No** | **No, special case** |

Proposal 2: When MUSIM gaps colliding with Type-1 measurement gaps, the following collision processing shall be considered:

**Table 2 The collision processing for MUSIM gaps colliding with Type-1 measurement gaps**

|  |  |  |  |
| --- | --- | --- | --- |
| **Case** | **MUSIM gap priority** | **Typ-1 measurement gap priority** | **Collision processing** |
| **1** | **Yes** | **No** | **Based on MGRP** |
| **2** | **Yes** | **/** | **/** |
| **3** | **No** | **/** | **/** |
| **4** | **No** | **No** | **Based on MGRP** |

Proposal 3: When MUSIM gaps colliding with Type-2 measurement gaps, the following collision processing shall be considered:

**Table 3 The collision processing for MUSIM gaps colliding with Type-2 measurement gaps**

|  |  |  |  |
| --- | --- | --- | --- |
| **Case** | **MUSIM gap priority** | **Type-2 measurement gap priority** | **Collision processing** |
| **1** | **Yes** | **Yes** | **Based on priority** |
| **2** | **Yes** | **No, special case** | **Based on MGRP** |
| **3** | **No** | **Yes** | **Based on priority** |
| **4** | **No** | **No, special case** | **Based on MGRP** |

* Recommended WF
	+ TBA

### Sub-topic 1-2

*Sub-topic description*

*Open issues and candidate options before meeting:*

**Issue 1-2: is the CR in R4-2506775 agreeable？**

* Proposals
	+ Option 1: Yes
	+ Option 2: no
* Recommended WF
	+ TBA