

Final round summary
Variant of [95e-23-R18-MUSIM-RAN4] Version 0.0.3
RAN

3GPP TSG-RAN Meeting #95e RP-22xxxx

Electronic Meeting, 17 – 23 March 2022

Agenda item: 9.3.2.3

Source: RAN4 Vice-Chair (Intel)

Title: Moderator’s summary for discussion [95e-23-R18-MUSIM-RAN4]

Document for: Discussion and decision

1 Introduction

This document is the summary of the email discussion [95e-23-R18-MUSIM-RAN4] on RRM requirements for Rel-17 MUSIM features in Rel-18. Based on the discussions the recommendations will be provided.

The following documents are covered in this email thread.

Table 1:

Tdoc	Title	Source
RP-220598	Discussion on RRM requirements for Rel-17 MUSIM features in Rel-18	vivo
RP-220599	Revised WID: Dual Transmission/Reception (Tx/Rx) Multi-SIM for NR	vivo

2 Initial round

2.1 Open issues

Issue #1: RRM requirements for Rel-17 MUSIM features

The background of prior discussions on MUSIM RRM requirements is provided [RP-220598] and specifically

the following conclusions were reached in RAN #94e and pre-RAN #95e email discussion [RP-220598]:

– In RP-213622 [1] in RAN#94 meeting

- *Proposal 2: Postpone all the discussion on RRM requirements related to MUSIM gaps to Rel-18. Whether this aspect will be covered under the R18 MUSIM WI or another RAN4 WI can be discussed as part of the Rel-18 RAN4 package.*

- *Conclusion: proposals 1/2/3/4 are endorsed*

– In Rel-18 RAN4 package discussion pre-RAN#95 meeting, as summarized in RP-220021 [2]

- *Proposal #5: Further discuss inclusion of objectives on RRM requirements for Rel-17 MUSIM features in the scope of Rel-18 MUSIM WI in RAN #95e.*

In RP-220598 it is proposed to specify RRM requirements for Rel-17 MUSIM features and new gaps in the scope Rel-18 MUSIM WI.

Proposal #1: Specify RRM requirements for Rel-17 MUSIM features and new gaps in Rel-18 MUSIM WI.

Companies are encouraged to share views on Proposal #1 and following questions

1. Whether to specify RRM requirements for Rel-17 MUSIM features and new gaps in Rel-18?
2. Whether the work can performed under the scope of Rel-18 MUSIM WI?

Feedback Form 1: Comments on Proposal #1: Specify RRM requirements for Rel-17 MUSIM features and new gaps in Rel-18 MUSIM WI.

1 – Ericsson LM We are fine with Proposal # 1 subject to available TUs. The scope should cover necessary requirements.
2 – Charter Communications We are fine with Proposal #1.
3 – Guangdong OPPO Mobile Telecom. We are fine to specify RRM requirements for Rel-17 MUSIM features. Whether to introduce new gaps may need some discussion. The work can performed under the scope of Rel-18 MUSIM WI.
4 – MediaTek Inc. We are fine with the intention.

5 – vivo Mobile Communication Co.

Yes, we support it as we propose it.

6 – ZTE Corporation

We are also fine with Proposal # 1 under the Rel-18 MUSIM WID, whether we need new gaps in Rel-18, this should be part of discussion in work item phase.

7 – Intel

We agree with the proposals.

RAN4 has consensus on specifying RRM requirements for Rel-17 MUSIM features and new gaps in Rel-18. The work can be performed under the scope of the Rel-18 MUSIM work item and we support revising the existing WID to capture RRM scope.

8 – Samsung Electronics Co.

We agree with proposal 1

9 – China Telecom Corporation Ltd.

We support Proposal 1.

10 – Nokia Corporation

Proposal #1 is agreeable to us

11 – China Mobile Com. Corporation

[Answer to Q1]:

We support to specify RRM requirements for Rel-17 MUSIM features in Rel-18. Due to limited timeline Rel-17, RRM requirements for MUSIM are not specified. It is necessary to specify the requirements in order to guarantee the performance.

For new gaps, in Rel-17, we already introduce 29 gap patterns for MUSIM. We are not sure whether we need to introduce additional gaps. But we are open to discussion and would like to hear the justification on the necessity of introducing new gap patterns for MUSIM in Rel-18.

[Answer to Q2]:

No strong view, the key point is to specify the RRM requirements for MUSIM in Rel-18. Whether it is covered by Rel-18 MUSIM WI or other WI, both are OK for us.

12 – Huawei Technologies France

Proposal 1 is not very clear due to the use of “R17 MUSIM features and new gaps”. According to the previous discussion and the objectives proposed in Issue#2, the RRM requirements should be only specified for Rel-17 MUSIM gaps, and it has nothing to do with other Rel-17 MUSIM features (e.g. paging collision) or other new gaps introduced in other Rel-17WIs. Therefore, we suggest to update Proposal 1 as *Specify RRM requirements for Rel-17 MUSIM features and new gaps in Rel-18 MUSIM WI.*

13 – QUALCOMM JAPAN LLC.

We support addressing the RRM requirements related to tune-away gaps defined in release-17 MUSIM feature. We agree with Huawei it is not entirely clear what "new gaps" in the proposed text is.

14 – DENSO CORPORATION

We support working RRM requirements under the Rel-18 MUSIM WI. We also agree with Huawei and Qualcomm what "new gaps" in Rel-18 WI means.

Issue #2: Rel-18 MUSIM WID update in RP-220599

The Revised Rel-18 MUSIM WID is provided in RP-220599. The following candidate objectives on the definition of MUSIM RRM requirements are proposed:

– Core part

- *RRM requirement for MUSIM Enhancements in network A [RAN4, RAN2]*
 - *Specify solutions for collision handling between MUSIM gap and R16 legacy measurement gap/MUSIM gap/SMTC (e.g., the priority rules defined in R17) [RAN4, RAN2]*
 - *Identify potential impacts on L1 measurements (including RLM/BFD) and L3 measurements and specify corresponding requirements, if necessary, when MUSIM gap(s) are in the presence, for the following scenarios [RAN4]*
 - *Only MUSIM gap(s) are in the presence*
 - *MUSIM gap(s) and legacy measurement gap are in the presence*
 - *Specify scheduling restriction for MUSIM gaps [RAN4] Specify applicability of requirements for MUSIM, if necessary [RAN4]*

– Performance part

- *Specify necessary test cases for MUSIM gap [RAN4]*

Companies are encouraged to provide views on the proposed WID update in RP-220599 including

1. Objectives
2. Justification
3. Expected Output and Time scale
4. Other aspects

Feedback Form 2: Comments on Revised WID RP-220599

1 – Ericsson LM

Objectives are mostly OK. But we have following comments:

1) Requirements for measurements in Network B in RRC idle/inactive should be included. For example following bullet can be added:

- RRM requirement for MUSIM Enhancements for measurements in NW B in RRC idle/inactive

2) The first sub-bullet is bit confusing. Why collision is limited to R16 gaps? It is R18 WI so all gaps up to R17 should be considered for collision. What about collision with existing procedures? What does it mean collision between MUSIM gap and MUSIM gap? Perhaps it can be modified as follows:

- *Specify solutions for collision handling between MUSIM gap and ~~R16~~ legacy measurement procedures/legacy measurement gaps/~~MUSIM gap~~/SMTC (e.g., the priority rules defined in R17) [RAN4, RAN2]*

2 – Guangdong OPPO Mobile Telecom.

Generally we can agree with the objectives.

1) For the 1st sub-bullet, we share the same view with Ericsson to consider all Rel-17 gaps rather than limiting to Rel-16 gaps. Besides, it is better to add collision between MUSIM gap and L1 RS regarding "impacts on L1 measurements" in the second sub-bullet.

2) The 3rd sub-bullet is not clear for us, since scheduling restrictions are usually considered for measurements without gaps.

3 – Charter Communications

We are fine with the objectives as well Ericsson's suggestion, but erasing collision between MUSIM gap and MUSIM gap. Two gaps for two different MUSIM purpose may happen at the same time and thus need to have a specified solution, e.g. a priority rule.

4 – MediaTek Inc.

Some comments

<1> For 1st sub-bullet, it should be clarified that the handling of gap collision is design by RAN4 (NOT RAN2). RAN2 only provides necessary signaling (if needed). We don't want two WGs to discuss the same problem. So, either to clarify this with a NOTE or RAN2 could be removed from the objective.

<2> On the wording of 1st sub-bullet,

- We don't understand why SMTC is listed (SMTC is not a gap, there is no collision between gap and SMTC).
- We don't understand what is collusion between MUSIM gap and measurement "procedure" (the one from Ericsson's comment). We prefer NOT mention measurement procedure.

- We think collision within MUSIM gaps is possible as we could have two periodic MUSIM gap configured in R17

Overall, we suggested

- Specify solutions for **gap** collision handling **within MUSIM gaps and** between MUSIM gap and R16 legacy measurement gaps /MUSIM gap/SMTC (e.g., the priority rules defined in R17) [RAN4, RAN2]

<3> For 3rd sub-bullet, scheduling restrictions is not needed while there is gap. So, we prefer to delete it.

- ~~Specify scheduling restriction for MUSIM gaps [RAN4]~~

<4> For 4th sub-bullet, it is not clear what does "applicability" mean here. The MUSIM gap is per UE gap used for MUSIM purpose. The applicability seems quite clear now and we not sure what kind of additional job is needed. We prefer to delete it.

- ~~Specify applicability of requirements for MUSIM, if necessary [RAN4]~~

<5> On additional objective from Ericsson "RRM requirement for MUSIM Enhancements for measurements in NW B in RRC idle/inactive", we prefer to limit the scope on gap collision in NW A. The RRM requirement in NW B (consider MUSIM scenario) could be quite complicate and it may consume too much TU.

5 – ZTE Corporation

For Rel-16 measurement gaps, we think that it should be further clarified, why it's limited to Rel-16 legacy measurement gap.

6 – Intel

In general, we agree with the proposed scope. We have the below detailed modification proposals.

Core part

- *RRM requirement for MUSIM Enhancements ~~in network A~~ [RAN4, RAN2]*
 - o *Identify and specify if needed, solutions for collision handling between MUSIM gap and R16 legacy measurement gap/MUSIM gap/SMTC (e.g., the priority rules defined in R17) [RAN4, RAN2]*
 - o *Identify ~~potential~~ impacts on L1 measurements (including RLM/BFD and L1-RSRP reporting) and L3 measurements and specify corresponding requirements, if necessary, when MUSIM gap(s) are in the presence, for the following scenarios [RAN4]*
 - *Only MUSIM gap(s) are in the presence*
 - *MUSIM gap(s) and legacy measurement gap are in the presence*
 - o *Specify scheduling restriction for MUSIM gaps, if necessary [RAN4]*
 - o *Specify applicability of requirements for MUSIM, if necessary [RAN4]*

Performance part

- *Specify necessary test cases for MUSIM RRM requirementsgap-[RAN4]*

7 – Nokia Corporation

We are fine updating the RAN2 led WI to include work related to definition of UE requirements when UE is configured MUSIM. UE requirements should be reflected in WID. We assume that the work addresses UE requirements for both Rel-17 MUSIM and Rel-18 MUSIM work? This is not clear from the current wording and needs to be clarified. Additionally, the work also need to account the Rel-17 measurement gaps enhancements or why is Rel-16 assumed as baseline?

Hence, we propose some changes to the WID (changes are underlined):

Define UE RRM requirement for MUSIM Enhancements in network A [RAN4, RAN2]

- Specify solutions for collision handling between MUSIM gap and R17 legacy measurement gap/-MUSIM gap/SMTC (e.g., the priority rules defined in R17) [RAN4, RAN2]
 - Identify potential impacts on L1 measurements, RLM/BFD and L3 measurements and specify corresponding UE requirements, if necessary, when MUSIM gap(s) are configured, for the following scenarios [RAN4]
- Only MUSIM gap(s) are configured
 - MUSIM gap(s) and legacy measurement gap are configured
 - Identify and if needed specify scheduling restriction for MUSIM gaps [RAN4]
 - Specify applicability of requirements for MUSIM, if necessary [RAN4]

8 – China Mobile Com. Corporation

In general, we are ok with the proposals. One minor comment on the 1st sub-bullet is that why only Rel-16 legacy measurement gap are considered?

9 – vivo Mobile Communication Co.

1 we are ok to include the network B, however it should be separated bullet.

2 for bullet one, We agree that RAN2 can only focus on signalling parts. one note can be added to clarify it.

3 The intention to list SMTC here is for the scenario where a MUSIM gap and SMTC are overlapping at the time domain. The measurements relevant to SMTC, e.g., intra-frequency measurements, RLM/BFD etc., could be impacted by MUSIM gaps

We are ok with the suggestion wording with slightly update as below, i.e., wording “collision within MUSIM” will cover “collision between MUSIM gap and MUSIM gap.”

Specify solutions for gap collision handling within MUSIM gaps and between MUSIM gap and R16 legacy measurement gaps /MUSIM gap/SMTC (e.g., the priority rules defined in R17) [RAN4, RAN2]

4 To clarify the collision is not limited to R16 gaps and consists of 3 parts, collision between MUSIM gaps, collision between MUSIM gap and legacy R16 gaps and overlapping of the MUSIM gap and SMTC.

We think the measurement procedure is quite broad and the exactly meaning is not clear.

10 – QUALCOMM JAPAN LLC.

1. The following text should be clarified: ”e.g., the priority rules defined in R17”. It is probably about leveraging the priority rules defined within release-17 Measurement Gap enhancements.

2. It is not clear what the following objective is really about: ”Specify scheduling restriction for MUSIM gaps [RAN4]”.

11 – Huawei Technologies France

We are in general fine with the suggested objectives, but we have the following comments:

1. For the main objective, as we commented for Issue#1, we suggest to clarify the wording in order to avoid ambiguity in the scope.

RRM requirement for Rel-17 MUSIM gapsEnhancements in network A [RAN4, RAN2]

2. For the first objective, considering the limited TU budget we suggest to not include the gap collision. Gap collision can be avoid by network configuration as all gaps are controlled by network. Even if there is gap collision in certain corner case, it can leave to UE implementation. In addition, this bullet also involves RAN2 in. For MUSIM, RAN2 TU is very limited. If we agree to add the new objective in WID, the time for those key issues in RAN2 will surely be squeezed.

3. For the third objective, we understand scheduling restriction applies for measurement outside MG, so it is unclear to us what is meant by “scheduling restriction for MUSIM gaps”. Could proponents please explain a bit?

4. For the fourth objective, we have already agreed the applicability of Rel-17 MUSIM gaps in the Rel-17 spec, so it is unclear to us what is meant by “applicability of requirements for MUSIM”. Could proponents please explain a bit?

On the comments from Ericsson above, we do not support to define RRM requirements for NW B. The reason is that what gaps to request and how to use the gaps for NW B are up to UE implementation, so it could be quite difficult to define UE RRM requirements considering MUSIM gaps are used for multiple operations in NW B. To us, what is more important is to guarantee the RRM performance for NW A when MUSIM gaps are configured.

12 – DENSO CORPORATION

On the first sub-bullet, I share the same view as MediaTek that we’re wondering why RAN2 needs to be involved with this objective. On the third sub-bullet, we have the same question as Qualcomm on the need of specifying scheduling restriction.

13 – Ericsson LM

To HW:

In our view at least requirements for NW B for **UE in RRC idle/inactive in NW B** should be defined. The reason is that NW A configures the UE with gaps for idle/inactive mode operation in NW B. Then the UE must also meet corresponding requirements in idle/inactive states. Otherwise there is no point configuring the gaps if the performance cannot be guaranteed.

2.2 Summary from Initial Round

Issue #1: RRM requirements for Rel-17 MUSIM features

- 14 companies provided comments
- Majority of companies supported Proposal 1 (Ericsson, Charter, OPPO, MediaTek, vivo, Intel, Samsung, China Telecom, Nokia)
- Several companies mentioned that “new gaps” shall be excluded or discussed in WI stage (OPPO, ZTE, CMCC, Qualcomm, CMCC, DENSO)

Based on companies inputs moderator would like to suggest an updated proposal and not include new gaps.

Updated proposal #1: Specify RRM requirements for Rel-17 MUSIM gaps in Rel-18 MUSIM WI

Issue #2: Rel-18 MUSIM WID update in RP-220599

13 companies provided comments.

Justification

- No comments received in the initial round
- The current Revised WID does not contain justification part for new RAN4 objectives and moderator recommends rapporteur and companies to provide comments during the intermediate round

Expected Output and Time scale

- No comments received in the initial round
- Moderator recommends adding TS 38.133 performance part as affected specification. The target completion date needs further discussion.

Other aspects

- No comments received in the initial round

- Moderator recommends adding RAN4 as the secondary responsible WG
- Moderator recommends discussing required TUs in the intermediate round.

Objectives

– General aspects

- Main objective

- Several companies proposed revision of the general objective and taking into account inputs moderator recommend to keep it generic as "Define RRM requirement for MUSIM gaps"

- Applicable release of MUSIM

- Nokia commented that "We assume that the work addresses UE requirements for both Rel-17 MUSIM and Rel-18 MUSIM work? This is not clear from the current wording and needs to be clarified."
 - Moderator: Moderator understanding is that discussion is limited to requirements for Rel-17 MUSIM features. Additional requirements for Rel-18 can be considered additionally (WID includes a note for Rel-18 objectives as "The work item shall identify whether the WI will have RAN3 or RAN4 impacts by RAN#99"). Therefore, recommend to clarify that current objectives are related to the MUSIM features defined in Rel-17 WI and add a note "Note: requirements are applicable to MUSIM gaps defined in in Rel-17 MUSIM WI (LTE_NR_MUSIM)"

- Scenarios (Network A/B)

- Several companies proposed to consider measurements in Network B in RRC idle/inactive
- Moderator recommends to discuss whether Network B scenarios shall be considered in the intermediate round and adjust the objectives as follows
 - *The following MUSIM measurement scenarios are considered*
 - ◊ *Measurements in Network A*
 - ◊ *[Measurements in Network B in RRC idle/inactive]*

– Gap collision handling

- Majority of companies are fine to define gap collision solutions, while one company proposed to deprioritize it. Taking into account comments moderator recommend to proceed with this objective and further discuss candidate scenarios prioritization to potentially limit the workload.
- RAN2 involvement
 - Several companies commented that no or minimum RAN2 involvement is needed, and that duplicated work between RAN4/RAN2 shall be avoided.

- Moderator recommends to add a note that "Note: RAN2 work can be triggered by RAN4 LS, if needed" to address the comments
- Gap collision scenarios:
 - Companies have diverse views on possible collision handling scenarios and based on the comments moderator identified the following cases
 - Case 1: Collisions between MUSIM gap and legacy measurement gap => this case is supported by majority of companies
 - Case 2: [Collisions between MUSIM gap and SMTC] => several companies raised concern on this use case and further discussion is needed
 - Case 3: [Collisions between different MUSIM gaps]
 - Several companies commented on applicable release for legacy measurement gaps and moderator recommends removing "Rel-16" from the text. Therefore, all existing measurement gaps can be considered.
 - One company proposed to clarify that "the priority rules defined in R17" are the rules defined in Rel-17 MG Enhancements WI. Moderator thinks that example may cause confusion and recommend to keep discussion on solution up to RAN4 discussion and remove the text.
- Impacts on L1/L3 measurements
 - Several editorial corrections proposed by Nokia, Intel
- Scheduling restrictions
 - OPPO, MediaTek: proposed to remove scheduling restrictions objective
 - Intel proposed to "Specify scheduling restriction for MUSIM gaps, if necessary [RAN4]"
 - Nokia proposed to "Identify and if needed specify scheduling restriction for MUSIM gaps [RAN4]"
 - Several companies asked for further clarifications on the objective
 - Moderator recommends to keep objective in [] and discuss in the intermediate round
- Requirements applicability
 - Intel, Nokia proposed to modify objective as "Specify applicability of requirements for MUSIM, if necessary [RAN4]"
 - MediaTek proposed to remove the objective
 - Several companies asked for further clarifications on the objective

- Moderator recommends to keep objective in [] and discuss in the intermediate round
- Performance part objectives
- Intel proposed to adjust the objective as ”Specify necessary test cases for MUSIM RRM requirements gap”.
 - Moderator recommend to adjust objective accordingly

The updated objectives based on the initial round are provided below:

Core part

- Define RRM requirements for MUSIM ~~gap enhancements in network A~~ [RAN4, RAN2]
- The following MUSIM gap requirements are considered
 - Measurements in Network A
 - [Measurements in Network B in RRC idle/inactive]
 - Identify and specify, if needed, solutions for MUSIM gap collision handling between MUSIM gap and R16 legacy measurement gap/MUSIM gap/SMTC (e.g., the priority rules defined in R17) for the following cases [RAN4, RAN2]
 - Case 1: Collisions between MUSIM gap and legacy measurement gap
 - Case 2: [Collisions between MUSIM gap and SMTC]
 - Case 3: [Collisions between different MUSIM gaps]
 - Note: RAN2 work can be triggered by RAN4 LS, if needed
 - Identify potential impacts on L1 measurements, RLM/BFD (including RLM/BFD) and L3 measurements and specify corresponding UE requirements, if necessary, when MUSIM gap(s) are in the presence ~~configured~~, for the following scenarios [RAN4]
 - Only MUSIM gap(s) are configured in the presence
 - MUSIM gap(s) and legacy measurement gap are configured in the presence
 - [Specify scheduling restriction for MUSIM gaps, if necessary] [RAN4]
 - [Identify and, if needed, specify scheduling restriction for MUSIM gaps] [RAN4]
 - Note: requirements are applicable to MUSIM gaps defined in Rel-17 MUSIM WI (LTE_NR_MUSIM)

Performance part

- Specify necessary test cases for MUSIM RRM requirements gap [RAN4]

3 Intermediate round

3.1 Open issues

3.1.1 RRM requirements for Rel-17 MUSIM features

Based on companies inputs moderator would like to suggest an updated proposal and not include new gaps.

Updated proposal #1: Specify RRM requirements for Rel-17 MUSIM gaps in Rel-18 MUSIM WI

Feedback Form 3: Comments on Updated Proposal #1

1 – QUALCOMM JAPAN LLC. Support the proposal.
2 – Apple GmbH We support the updated proposal 1.
3 – MediaTek Inc. Update P1 is okay
4 – ZTE Corporation Fine with the proposal.
5 – Samsung Electronics Co. We are fine with moderator proposal
6 – Huawei Technologies France We support Updated proposal #1.
7 – Ericsson LM We also support the updated proposal # 1
8 – vivo Mobile Communication Co. We support this proposal.
9 – China Mobile Com. Corporation We are OK with updated proposal #1.
10 – Intel We support this proposal.

11 – DENSO CORPORATION

Support

3.1.2 Work objectives

Updated objectives after the initial round are provided below (clean version):

– Core part

- *Define RRM requirements for MUSIM gaps [RAN4, RAN2]*
 - *The following MUSIM gap requirements are considered*
 - *Measurements in Network A*
 - *[Measurements in Network B in RRC idle/inactive]*
 - *Identify and specify, if needed, solutions for MUSIM gap collision handling for the following cases [RAN4, RAN2]*
 - *Case 1: Collisions between MUSIM gap and legacy measurement gap*
 - *Case 2: [Collisions between MUSIM gap and SMTC]*
 - *Case 3: [Collisions between different MUSIM gaps]*
 - *Note: RAN2 work can be triggered by RAN4 LS, if needed*
 - *Identify impacts on L1 measurements, RLM/BFD and L3 measurements and specify corresponding UE requirements, if necessary, when MUSIM gap(s) are configured, for the following scenarios [RAN4]*
 - *Only MUSIM gap(s) are configured*
 - *MUSIM gap(s) and legacy measurement gap are configured*
 - *[Specify scheduling restriction for MUSIM gaps, if necessary] [RAN4]*
 - *[Identify and, if needed, specify scheduling restriction for MUSIM gaps] [RAN4]*
 - *Note: requirements are applicable to MUSIM gaps defined in Rel-17 MUSIM WI (LTE_NR_MUSIM)*

– Performance part

- *Specify necessary test cases for MUSIM gap RRM requirements [RAN4]*

Companies are encouraged to provide comments on the updated objectives and provide comments on the following aspects.

1. MUSIM scenarios (Network A/B)

- Whether "Network B in RRC idle/inactive" requirements shall be introduced in Rel-18?

2. MUSIM gap collision handling

- MUSIM gap collision scenarios: Whether Case 2 and/or 3 shall be considered?
- RAN2 involvement: Whether RAN2 work can be triggered by RAN4 LS?
- Other comments

3. Impacts on L1/L3 measurements

4. Scheduling restrictions

- Whether objective shall be kept/removed or adjusted?

5. Requirements applicability

- Whether objective shall be kept/removed or adjusted?

6. Performance part objectives

7. Other comments

Feedback Form 4: Comments on updated WI objectives

1 – QUALCOMM JAPAN LLC.

1. Yes.
2. Case 2: No / Case 3:Yes / RAN2 involvement: Yes.
3. Fine with the updated text.
4. Should be removed. It is not clear what RAN4 requirement this is referring to.
5. OK to discuss requirements for release-18 MUSIM enhancements later.
6. Fine with the text.

2 – QUALCOMM JAPAN LLC.

(Please disregard our input #1 above)

1. Yes.
2. Case 2: **Yes** / Case 3:Yes / RAN2 involvement: Yes.
3. Fine with the updated text.
4. Should be removed. It is not clear what RAN4 requirement this is referring to.
5. OK to discuss requirements for release-18 MUSIM enhancements later.
6. Fine with the text.

3 – Apple GmbH

1. Yes.
2. Case 2 and 3 shall be considered. RAN2 work can be triggered by RAN4 LS.
3. OK.
4. Further justification is needed. Since MUSIM operation is supposed to be done within gap, we assume there is no data scheduling. besides, what's difference between the following two sub-bullets:
 - *[Specify scheduling restriction for MUSIM gaps, if necessary] [RAN4]*
 - *[Identify and, if needed, specify scheduling restriction for MUSIM gaps] [RAN4]*
5. A note may be needed to allow further check on whether RRM requirement for R18 enhancement is necessary.
6. Fine.
7. is it correct understanding that "legacy gap" here means all gaps introduced from R15 to R17? It is better to clarify this in the WID, e.g. add a note.

4 – ZTE Corporation

1. Yes.
2. Yes for case 2 and 3 and RAN2 involvement could be triggered by LS.
3. Okay.
4. Further justification is needed on what's scheduling restriction of MUSIM gaps?
5. More clarify on applicability of requirements? Any enhancement for MUSIM gap in Rel-18?
7. the same concerns as Apple mentioned, whether legacy gap means all gaps introduced from R15 to R17.

5 – Huawei Technologies France

1. No. While we understand the motivation to specify requirements for NW B, as we commented in the initial round, how to utilize the MUSIM gaps would be up to UE implementation, and it could be quite difficult to define UE RRM requirements considering MUSIM gaps are used for multiple operations in NW B (e.g., paging reception, RRM measurement and serving cell measurement in NW B). Considering the potential standardization efforts in RAN4, we suggest to keep reasonable scope for this RAN4 objective by focusing on defining requirements for NW A.
2. **Case 2:** Yes, **Case 3:** No. It is unclear to us why UE would request two or more MUSIM gaps colliding with each other, if one is assumed to be used. **RAN2 involvement:** we suggest to remove RAN2 as the impacted WG as we expect most of the work will be done in RAN4, and the note (RAN2 work can be triggered by RAN4 LS, if needed) is sufficient to trigger RAN2 work if needed.
3. OK.
4. Suggest to remove scheduling restriction bullet.
5. There seems to be no clarification from the proponents on the "Requirements applicability" in the initial round. Based on Moderator's summary for initial round, possible requirements for Rel-18 MUSIM enhancements has already been addressed by an existing note. Thus, we suggest to remove this bullet. In any case, defining applicability for the requirements is business as usual in RAN4.
6. OK.

6 – MediaTek Inc.

1. No, the proposal is NOT acceptable to us. NW B does not know whether MUSIM gap is configured or not in NW A, and how could the requirement is defined based on this? Also, there is already IDLE/INACTIVE mode requirement currently, are we talking about define some **relaxation** of RRM requirement in Network B?

2.

Case 2 - After further checking, we are fine to have R4 to discuss whether collision between MUSIM gap and SMTC will impact intra-frequency measurement requirement.

Case 3 - Maybe not. NW A does not know the different purpose of two paradoxical MUSIM gap. Collision or not seems not impact NW A requirement.

R2 Note is fine

3. OK

4. The "*scheduling restriction*" objective should be **removed**. As commented, *scheduling restriction* is not used while there is gap. We don't need this objective.

5. The "*applicability*" objective should be **removed**. There is no clarification on what kind of "*applicability*" need to be discussed. Isn't it already clear that MUSIM gap is applied for MUSIM activities ?

6. We want to clarify this is for network A as "*Specify necessary test cases for MUSIM gap RRM requirements in Network A [RAN4]*"

7. For the 1st sub bullet, it should be clarified that it is for RAN4 only as "*The following MUSIM gap requirements are considered [RAN4]*"

7 – Intel Corporation (UK) Ltd

Moderator: I realized there is a typo in the objectives above for "Requirements applicability". The correct one should be

- [*Specify applicability of requirements~~scheduling restriction~~ for MUSIM gaps, if necessary*] [RAN4]

8 – China Mobile Com. Corporation

1. Answer to Q1: we are fine to include it.

2. Answer to Q2:

for case 2 and cases 3, we are fine to include them.

For RAN2 involvement, we are OK to include the note.

3. Answer to Q3: we are fine with it.

4. Answer to Q4: scheduling restriction is considered for the measurement without MG, but for MUSIM, the measurement is performed in MUSIM gaps, we are not sure why scheduling restriction is needed.

9 – Nokia Corporation

1) We can support defining UE minimum requirement for network B when MUSIM gaps are configured

2) We do not think RAN4 would need to consider case #3 initially (collision between different MUSIM gaps). Case #2 should be included. If needed it should be possible to trigger RAN2 work with LS.

3) Updated text proposal is agreeable to us.

4) We are fine to include this part (as updated by moderator above 'applicability of requirements...').

5) Work can start with Rel-17 defined MUSM gaps. However, we assume this is part of Rel-18 RAN2 MUSIM and wonder why any possible new RAN2 which needs UE RRM requirements would not be included in the Rel-18 WI? Hence, we do not see why the work should exclude defining RRM requirements for Rel-18 (once RAN2 has agreed on Rel-18 specifics and if time permits) and would note that is one objective for RAN2 work already (as the WI states: "*The work item shall identify whether the WI will have RAN3 or RAN4 impacts by RAN#99 [RAN2].*").

6) Text is agreeable to us.

10 – Intel

1. Yes. To clarify the UE needs to be disciplined in terms of time finishing operations in network B. Specifying the requirements for measurements on network B guarantees the validation of correct UE behaviour so that the performance on network A is fair.

2. We are open on case 2 and 3

3. Support.

4. support removal

5. support removal

6. Fine with the text.

11 – vivo Mobile Communication Co.

1 We are ok to remove it in R18.

2 Support to consider case 2 and case 3 @Huawei Since MUSIM can at least support 2 periodic gap patterns and one aperiodic gap pattern, the intention of case 3 is to handle collision among these gaps, for example when 2 periodic gap patterns are configured and there is collision between them. @MTK, Yes, NW A may not know the different purpose of two parodical MUSIM gap. However we think NW A requirements could be different with/without gap collisions.

Note for RAN2 involle is ok.

3 support

4. Ok with removal

5. OK with removal

6. Fine with the text.

12 – Ericsson LM

1. Yes. We don't agree with the arguments from HW and MTK. The requirements in idle/inactive state in NW B (with MUSIM gaps configured) will be quite similar (though not identical) to measurement requirements in RRC connected state with gaps and with long DRX. Furthermore, without such requirements, there will be no motivation for NW A to provide the MUSIM gaps in idle/inactive state.

2. Yes

3. Yes

4. Should be removed.

5. The objective is not very clear. It is better to remove. RAN4 may have to define that some legacy requirements apply for MUSIM. But this is normal work in RAN4. We are fine to add a general note e.g. Other requirements are not precluded.

6. Yes

13 – DENSO CORPORATION

1. Yes. Agree with Intel and Ericsson that such a requirement is required to guarantee the fair performance between two NWS.

2. Yes for both cases and RAN2 involvement if needed

3. Yes

4. Support to remove

5. Support to remove

6. Yes

3.1.3 Revised WID and TU allocation

The revised WID draft is available in Inbox:

https://www.3gpp.org/ftp/tsg_ran/TSG_RAN/TSGR_95e/Inbox/Drafts/%5B95e-23-R18-MUSIM-RAN4%5D/draft%20RP-22xxxx%20Revised%20WID%20R18%20MUSIM%20v1%20-%20moderator.doc

Moderator made editorial changes in the WI title, justification part, Expected Output and Time scale and WI leadership sections.

Companies are encouraged to provide comments on the **draft Revised WID**:

1. **Justification** (rapporteur company and delegates are asked to provide suggestions on corresponding Justification text for RAN4 part)
2. Proposed changes in **”Expected Output and Time scale”**
3. Proposed changes in **”Work item leadership”**
4. Other comments

Feedback Form 5: Comments on Revised WID draft

1 – Huawei Technologies France

On changes in **”Expected Output and Time scale”**, the Target completion for core part related to 38133 is RAN#101, which is Sept. 2023 (same as other RAN1/2 specs). On the other hand, we understand Rel-18 core completion is targeted at RAN#102, which is Dec. 2023. It would be good if Rapporteur or Moderator can help to confirm if the core part completion for this WI is targeted at RAN#101.

2 – Nokia Corporation

It would be good to indicate that this RAN4 work in the WI is for the Rel-17 MUSIM gaps - e.g. as follows (and we do know this was in the NOTE already, but it's better to make it clear in the objective already):

Define RRM requirements for Rel-17 MUSIM gaps [RAN4, RAN2]

3 – vivo Mobile Communication Co.

Justification

In NR Rel-17 specification, gap patterns particularly for MUSIM purpose were introduced. However, corresponding RRM requirements are not specified due to lack of RAN4 TUs for Rel-17 MUSIM WI. Without corresponding RRM requirements, implementing Rel-17 MUSIM feature in practical deployment may not guarantee minimized impact on network A and there could be interoperability issues. In order to guarantee network performance, particular for network A, it is desirable to define RRM requirements for MUSIM WI in Rel-18 standards for both the core requirements and corresponding performance parts.

4 – Ericsson LM

It is fine to clarify that this is related to R17 MUSIM feature. In terms of target date we suggest to keep core WI target date to RAN#102 and performance to RAN#104 for all MUSIM work. Of course RAN4 should start with R17 MUSIM gap.

Companies are encouraged to provide views on **RAN4 work timelines and expected TU allocation**

1. Core part start/end and number of RAN4 TUs per meeting
2. Perf part start/end and number of RAN4 TUs per meeting

Note: based on discussion in the initial round it is moderator understanding that RAN2 TUs are not required.

Feedback Form 6: Comments on RAN4 work timelines and TU allocation

1 – Huawei Technologies France

We suggest 0.5 TU per meeting for the core part, and 0.5 TU per meeting for the performance part after core part completion.

2 – MediaTek Inc.

We assume that 0.5 TU for 7 meeting is enough (total 3.5 TU). Please note that there is no much leftover R18 TU in R4 so that we should NOT increase the scope of the work.

3 – Intel

We support 0.5 TU per meeting Core and Perf.

4 – Nokia Corporation

Likely 1 TU/meeting is needed as the gap discussions always require time.

5 – vivo Mobile Communication Co.

we are ok with 0.5 TU per meeting for performance part and also 0.5 TU for after core part completion.

6 – Ericsson LM

Agree 0.5 TU per meeting is appropriate

3.2 Summary from Intermediate Round

3.2.1 MUSIM features

11 companies provided comments and supported updated Proposal #1. No further discussions is needed in the final round.

3.2.2 Work objectives

13 companies provided comments on identified open issues.

– MUSIM scenarios (Network A/B)

- Requirements for Network B scenario in RRC idle/inactive state
 - Support: Qualcomm, Apple, ZTE, CMCC, Nokia, Intel, Ericsson, DENSO (8)
 - Do not support: Huawei, MediaTek, vivo (3)
- Majority of companies support defining requirements for idle/inactive state in Network B. Moderator recommends including it in the scope under an assumption that RAN4 will further discuss the details of scenario and target requirements.

– MUSIM gap collision handling

- Case 2: Collisions between MUSIM gap and SMTC
 - All companies are fine to include Case 2. Moderator recommends keeping this Case.
- Case 3: Collisions between different MUSIM gaps
 - Majority of companies are fine to include the scenarios. Two companies do not support this case and one company proposed to not to consider it in the initial stage.
 - Moderator recommends keeping this Case. The general objective says that “Identify and specify, if needed, ...” and therefore it can be left up to RAN4 discussion whether to consider such requirements.

- RAN2 involvement
 - Majority of companies support that RAN2 work can be triggered by RAN4 LS. Several companies proposed to remove RAN2 as a responsible WG.
 - Moderator thinks that there is no harm to keep RAN2 as responsible WG, since majority of companies think that some RAN2 work will be required. Meantime, no RAN2 TUs shall be requested and RAN2 work can be triggered by LS.

undefined

– **Impacts on L1/L3 measurements**

- All companies are fine with the latest objective.

undefined

– **Scheduling restrictions**

- Majority of companies proposed to remove objective and several companies asked for further justification on objective. Moderator recommends removing the objective.

undefined

– **Requirements applicability**

- There is no common understanding on the objectives. Majority of companies are fine to remove it and think that discussion on requirements applicability is a typical task, which will anyway be discussed.
- One company proposed to add a note that “Other requirements are not precluded.” Moderator recommend to include it.

undefined

– **Performance part objectives**

- Majority of companies are fine with proposed objectives.
- One company proposed to clarify that these are requirements “in Network A”. Moderator thinks that the test cases are limited to the scenarios considered in Core part objectives and no further clarifications are needed. So, no further changes are needed.

undefined

– **Other comments**

- Legacy gap meaning
 - Several companies asked to clarify that “legacy gap” here means all gaps introduced from R15 to R17. Moderator recommends adding corresponding clarifications.

- One company proposed that “For the 1st sub bullet, it should be clarified that it is for RAN4 only as ”The following MUSIM gap requirements are considered [RAN4]” Moderator thinks that the objective is generic and aims to describe the scenarios, so no WG applicability needs to be specified.
- One company proposed to clarify that “this RAN4 work in the WI is for the Rel-17 MUSIM gaps” (under issue 3.1.3). Moderator has already added a note that “requirements are applicable to MUSIM gaps defined in Rel-17 MUSIM WI (LTE_NR_MUSIM)”, but it is ok to add a general clarification to the first-level bullet as well.

The following updated objectives are proposed based on the intermediate round discussion:

– Core part

- Define RRM requirements for Rel-17 MUSIM gaps [RAN4, RAN2]
 - The following MUSIM gap requirements are considered
 - Measurements in Network A
 - {Measurements in Network B in RRC idle/inactive}
 - Identify and specify, if needed, solutions for MUSIM gap collision handling for the following cases [RAN4, RAN2]
 - Case 1: Collisions between MUSIM gap and legacy measurement gap (i.e. Rel-15 to Rel-17 measurement gaps)
 - Case 2: {Collisions between MUSIM gap and SMTC}
 - Case 3: {Collisions between different MUSIM gaps}
 - Note: RAN2 work can be triggered by RAN4 LS, if needed
 - Identify impacts on L1 measurements, RLM/BFD and L3 measurements and specify corresponding UE requirements, if necessary, when MUSIM gap(s) are configured, for the following scenarios [RAN4]
 - Only MUSIM gap(s) are configured
 - MUSIM gap(s) and legacy measurement gap are configured
 - ~~{Identify and, if needed, specify scheduling restriction for MUSIM gaps} [RAN4]~~
 - ~~{Specify applicability of requirements for MUSIM gaps, if necessary} [RAN4]~~
 - Note 1: Other requirements are not precluded
 - Note 2: requirements are applicable to MUSIM gaps defined in Rel-17 MUSIM WI (LTE_NR_MUSIM)

– Performance part

- Specify necessary test cases for MUSIM gap RRM requirements [RAN4]

3.2.3 Revised WID and TU allocation

Justification

- The following justification was proposed by rapporteur company
 - *In NR Rel-17 specification, gap patterns particularly for MUSIM purpose were introduced. However, corresponding RRM requirements are not specified due to lack of RAN4 TUs for Rel-17 MUSIM WI. Without corresponding RRM requirements, implementing Rel-17 MUSIM feature in practical deployment may not guarantee minimized impact on network A and there could be interoperability issues. In order to guarantee network performance, particular for network A, it is desirable to define RRM requirements for MUSIM WI in Rel-18 standards for both the core requirements and corresponding performance parts.*
- Based on the intermediate round discussion moderator recommends removing reference to Network A and adjust the justification as follows:
 - *In NR Rel-17 specification, gap patterns particularly for MUSIM purpose were introduced. However, corresponding RRM requirements are not specified due to lack of RAN4 TUs for Rel-17 MUSIM WI. Without corresponding RRM requirements, implementing Rel-17 MUSIM feature in practical deployment may not guarantee minimized impact on network A and there could be interoperability issues. In order to guarantee network performance, ~~particular for network A~~, it is desirable to define RRM requirements for MUSIM WI in Rel-18 standards for both the core requirements and corresponding performance parts.*

RAN4 work timelines and expected TU allocation

- Start/End time
 - One company proposed to set Core part completion date as RAN#102 (Dec 2023) and Perf part completion by RAN #104 (June 2024).
 - One company proposed to further clarify whether completion date is Sep 2023 or Dec 2023 for other WGs. In moderator understanding there seem to be some contradiction between the WID and endorsed Rel-18 TU spreadsheet and further clarifications from rapporteur are encouraged.
 - One company proposed to limit the work by 7 meetings.
 - Moderator's understanding is that companies do not have very strong preferences. Similar to other WIs the work can continue till Q4 2023 and companies can share further views in the final round whether this is an acceptable WF.
- TU allocation
 - Majority of companies propose to have “0.5 TU per meeting for the core part, and 0.5 TU per meeting for the performance part”. One company proposed to have 1 TU per meeting.
 - From moderator perspective 0.5 TU per meeting is a reasonable estimate for Core part, while Perf part is not typically discussion-heavy and a smaller TU allocation can be considered (e.g. 0.25 TUs per meeting)

Based on the discussion moderator recommends the following plan

- RAN4 Core part start/completion: Q3 2022 – Q4 2023 (RAN #102)
- RAN4 Perf part start/completion: Q4 2024 – Q2 2023 (RAN #104)
- RAN4 TU allocation: 0.5 TUs perf for Core part; 0.25 TUs for Perf part;

Topics	TUs/Quarter																										
	2Q'2022		3Q'2022		4Q'2022				1Q'2023		2Q'2023				3Q'2023		4Q'2023				1Q'2024		2Q'2024				
	RAN4#103	RAN4#104	RAN4#104a	RAN4#105	RAN4#106	RAN4#106b	RAN4#107	RAN4#108	RAN4#108b	RAN4#109	RAN4#110	RAN4#110b	RAN4#111	RF	RD	RF	RD	RF	RD	RF	RD	RF	RD	RF	RD	RF	RD
Multiple SIM (MUSIM) Enhancements (Core)	24,5	20,5	24,5	20,5	24,5	20,5	24,5	20,5	24,5	20,5	24,5	20,5	24,5	20,5	24,5	20,5	24,5	20,5	24,5	20,5	24,5	20,5	24,5	20,5	24,5	20,5	
Multiple SIM (MUSIM) Enhancements (Perf)			0,5		0,5		0,5		0,5		0,5		0,5		0,5		0,5		0,5		0,25		0,25		0,25		0,25

Figure 1:

4 Final round

4.1 Open issues

4.1.1 Work item objectives

Updated objectives after the intermediate round are provided below (clean version):

- Core part
 - Define RRM requirements for Rel-17 MUSIM gaps [RAN4, RAN2]
 - The following MUSIM gap requirements are considered
 - Measurements in Network A
 - Measurements in Network B in RRC idle/inactive
 - Identify and specify, if needed, solutions for MUSIM gap collision handling for the following cases [RAN4, RAN2]
 - Case 1: Collisions between MUSIM gap and legacy measurement gap (i.e. Rel-15 to Rel-17 measurement gaps)
 - Case 2: Collisions between MUSIM gap and SMTC
 - Case 3: Collisions between different MUSIM gaps
 - Note: RAN2 work can be triggered by RAN4 LS, if needed
 - Identify impacts on L1 measurements, RLM/BFD and L3 measurements and specify corresponding UE requirements, if necessary, when MUSIM gap(s) are configured, for the following scenarios [RAN4]

- Only MUSIM gap(s) are configured
 - MUSIM gap(s) and legacy measurement gap are configured
 - Note 1: Other requirements are not precluded
 - Note 2: requirements are applicable to MUSIM gaps defined in Rel-17 MUSIM WI (LTE_NR_MUSIM)
- Performance part
- Specify necessary test cases for MUSIM gap RRM requirements [RAN4]

From moderator perspective the objectives are stable. Companies are encouraged to double check and comment if there are any critical issues with the latest version.

Feedback Form 7: Comments on updated RAN4 work objectives

<p>1 – vivo Mobile Communication Co.</p> <p>We are fine with the objectives. Thanks.</p>
<p>2 – Huawei Technologies France</p> <p>We have one comment on the RAN2 involvement in the second sub-bullet. In our understanding, the assumption is that the main work will be done in RAN4, and RAN2 work will only be triggered by RAN4 LS, if needed. Therefore, we suggest to update the note to explicitly reflect this.</p> <p>Note: RAN2 work can be triggered by RAN4 LS only, if needed</p>
<p>3 – China Mobile Com. Corporation</p> <p>We are OK with the updated objectives.</p>
<p>4 – MediaTek Inc.</p> <p><1> On 1st bullet, we are NOT ready to accept including NW B requirement. Our concern during Intermediate round is not resolved. How and why NW B could define requirement based on NW A configuration ? Is NW B requirement also changed due to DRX configuration in NW A ? Is the NW B requirement changed according to the RRC state (IDLE or CONNECTED) of NW A? If we want to go that way, it will bring lots of open discussion in R4. We don't think it is a good direction.</p> <p>The motivation to have this objective seems imply that there is no requirement in NW B at all. But it is NOT true. There is already IDLE/INACTIVE mode requirement currently (which is not changed due to other SIM's configuration). We don't find justification to define NW B requirement and disagree to add this additional objective.</p> <p>Suggested change below.</p> <p>The following MUSIM gap requirements are considered [RAN4]</p> <ul style="list-style-type: none"> - Measurements in Network A

- ~~Measurements in Network B in RRC idle/inactive~~

<2> We do not understand why we need NOTE 1 – “*Other requirements* are not precluded”. The term *other requirements* is not clear and can include lots of thing. We think NOTE 1 should be deleted.

<3> We support HW’s comment to revise the R2 NOTE

Note: RAN2 work can be triggered by RAN4 LS **only**, if needed

5 – Intel Corporation (UK) Ltd

Moderator:

- To Huawei/MediaTek: on “Note: RAN2 work can be triggered by RAN4 LS **only**, if needed” I agree that this is a good clarification and can be added
- To MediaTek: on Removing Note 1 - let’s wait for more comments from other companies and proponents
- To MediaTek: on Network B - there was a clear majority of companies proposing to define requirements for this case. Also, each objective clearly says that RAN4 shall identify and specify **if needed** certain requirements. I suggest to add further clarifications to address MediaTek comments:

- o *The following MUSIM gap requirements are considered*

- *Measurements in Network A*
- *Measurements in Network B in RRC idle/inactive.*
- *Note: it is up to RAN4 decision whether to define requirements for Network B.*

6 – QUALCOMM JAPAN LLC.

We are fine with the suggested objectives in general.

- We are fine to remove NOTE 1. It is probably wise not to invite all sorts of proposals in RAN4. If anything, RAN can decide, e.g. by input from RAN4, if additional requirements are needed, and update the WID.
- Requirements for NW-B idle/inactive mode. We think it is worthwhile to look into this. The final outcome may well be that the existing idle/inactive mode requirements can be reused.

7 – ZTE Corporation

Regarding the proposals for network B assumptions, we are fine with Intel’s updates.

8 – Ericsson LM

We support core part objectives provided by moderator.

We cannot accept removal of objective/sub-bullet on measurements in NW B in RRC idle/inactive. RAN4 has not worked on any MUSIM requirements so it cannot be speculated which requirements apply.

Intel update is also fine for us.

4.1.2 Revised WID and TU allocation

Based on the intermediate round moderator recommends the following RAN4 time plan

- RAN4 Core part start/completion: Q3 2022 – Q4 2023 (RAN #102)
- RAN4 Perf part start/completion: Q4 2024 – Q2 2023 (RAN #104)
- RAN4 TU allocation

Note: once decided the WID and TU request table need to be updated accordingly.

Topics	TUs/Quarter																						
	2Q'2022		3Q'2022		4Q'2022				1Q'2023				2Q'2023		3Q'2023		4Q'2023		1Q'2024		2Q'2024		
	RAN4#103	RAN4#104	RAN4#104a	RAN4#104b	RAN4#105	RAN4#106	RAN4#106a	RAN4#106b	RAN4#107	RAN4#108	RAN4#108a	RAN4#108b	RAN4#109	RAN4#110	RAN4#110a	RAN4#111							
	RF	RD	RF	RD	RF	RD	RF	RD	RF	RD	RF	RD	RF	RD	RF	RD	RF	RD	RF	RD	RF	RD	
Multiple SIM (MUSIM) Enhancements (Core)	24,5	20,5	24,5	20,5	24,5	20,5	24,5	20,5	24,5	20,5	24,5	20,5	24,5	20,5	24,5	20,5	24,5	20,5	24,5	20,5	24,5	20,5	
Multiple SIM (MUSIM) Enhancements (Perf)			0,5		0,5		0,5		0,5		0,5		0,5		0,5		0,25		0,25		0,25		0,25

Figure 2: RAN4 Rel-18 MUSIM TU allocation

Companies are encouraged to share views on RAN4 work plan above.

Feedback Form 8: RAN4 work plan (start/end meetings, TU allocation)

1 – Intel Corporation (UK) Ltd

Moderator: Based on further check of Q3'2022 RAN4 RD TUs and RAN4 Chair inputs it is recommended to have **0.25 TUs for Q3'2022**. The remaining plan remains unchanged.

2 – Charter Communications

We support the proposed TU request

3 – vivo Mobile Communication Co.

We fine with Moderator’s suggestion. Thanks.

4 – Huawei Technologies France

We are fine with Moderator’s suggestion.

<p>5 – vivo Mobile Communication Co.</p> <p>updated comments, Please ignore the previous one.</p> <p>Now the updated WID includes both network A and network B, however the original TU request is only for network A case.</p> <p>We would like to apply more TUs for core part if possible.</p>
<p>6 – MediaTek Inc.</p> <p>We are okay with proposed TU</p>
<p>7 – Intel</p> <p>We support the TU allocation.</p>
<p>8 – Intel Corporation (UK) Ltd</p> <p>Moderator: To vivo - from RAN4 VC perspective I think it is ok to keep the current TU allocation and the critical part is the amount of meetings, where the discussion can happen. The amount of meetings is sufficient to ensure successful work completion. Further increase of the TU allocation would substantially reduce the amount of reserved TUs in RAN4, which can be used for urgent tasks otherwise.</p>
<p>9 – Nokia Corporation</p> <p>TU allocation seems reasonable and we can support although 0.25 TU for performance seems low</p>
<p>10 – ZTE Corporation</p> <p>we also support 0.25TU considering the TU in Q3,2022</p>
<p>11 – Ericsson LM</p> <p>Fine with moderator proposal</p>

The **revised draft WID** including updates for objectives and justification part is available in Inbox:
https://www.3gpp.org/ftp/tsg_ran/TSG_RAN/TSGR_95e/Inbox/Drafts/%5B95e-23-R18-MUSIM-RAN4%5D/draft%20RP-22xxxx%20Revised%20WID%20R18%20MUSIM%20v2%20-%20moderator.doc

Companies are encouraged to check the latest version and provide comments on the **draft Revised WID**.

Note: After the final round the Revised WID is planned to be submitted for approval.

Feedback Form 9: Comments on Revised WID draft (v2)

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4.2 Summary from Final Round

4.2.1 Work item objectives

8 companies provided comments on identified open issues.

- RAN2 involvement
 - Two companies proposed to add clarification that RAN2 work will only be triggered by RAN4 LS (i.e., “Note: RAN2 work can be triggered by RAN4 LS only, if needed”)“
- Note 1: Other requirements are not precluded’
 - Two companies proposed remove the note, since it leaves the scope of the work open. Moderator acknowledges the comments and recommends to remove the text.
- Network B requirements
 - One company proposed to remove the objectives related to Network B, while several companies confirmed the support. there was a clear majority of companies proposing to define requirements for this case.
 - Moderator thinks that current objectives clearly say that RAN4 shall identify and specify if needed certain requirement and recommend to add further clarifications to address MediaTek comments:
 - *The following MUSIM gap requirements are considered*
 - *Measurements in Network A*
 - *Measurements in Network B in RRC idle/inactive.*
 - *Note: it is up to RAN4 decision whether to define requirements for Network B.*

Updated objectives after the final round are provided below:

Proposal #2: Endorse the following RAN4 work objectives for RRM requirements for Rel-17 MUSIM gaps

- *Core part*
 - *Define RRM requirements for Rel-17 MUSIM gaps [RAN4, RAN2]*
 - *The following MUSIM gap requirements are considered*
 - *Measurements in Network A*
 - *Measurements in Network B in RRC idle/inactive*
 - *Note: it is up to RAN4 decision whether to define requirements for Network B.*
 - *Identify and specify, if needed, solutions for MUSIM gap collision handling for the following cases [RAN4, RAN2]*
 - *Case 1: Collisions between MUSIM gap and legacy measurement gap (i.e., Rel-15 to Rel-17 measurement gaps)*
 - *Case 2: Collisions between MUSIM gap and SMTC*

- *Case 3: Collisions between different MUSIM gaps*
- *Note: RAN2 work can be triggered by RAN4 LS only, if needed*
- *Identify impacts on L1 measurements, RLM/BFD and L3 measurements and specify corresponding UE requirements, if necessary, when MUSIM gap(s) are configured, for the following scenarios [RAN4]*
 - *Only MUSIM gap(s) are configured*
 - *MUSIM gap(s) and legacy measurement gap are configured*
- *Note-1: Other requirements are not precluded*
- *Note-2: requirements are applicable to MUSIM gaps defined in Rel-17 MUSIM WI (LTE_NR_MUSIM)*
- *Performance part*
 - *Specify necessary test cases for MUSIM gap RRM requirements [RAN4]*

4.2.2 Revised WID and TU allocation

TU allocation

Most companies supported moderator proposal on RAN4 TU allocation. One company proposed to increase TU allocation. Some companies commented that Perf part TU allocation can be increase. Moderator thinks it is ok to keep the current TU allocation and the critical part is the amount of meetings, where the discussion can happen. Also, Perf part discussions are typically not too intensive. The amount of meetings is sufficient to ensure successful work completion.

Also, moderator noticed a typo in the dates for Perf part and fixed in the updated proposal

Proposal #3: Endorse the following RAN4 work plan for RRM requirements for Rel-17 MUSIM gaps

- RAN4 Core part start/completion: from 3Q 2022 till 4Q 2023 (i.e., RAN #102)
- RAN4 Perf part start/completion: from 4Q 2023 till 2Q 2024 (i.e., RAN #104)
- RAN4 TU allocation

Revised WID

No comments were provided for revised WID. Moderator uploaded an updated version to the Inbox capturing updates for objectives sections and added supporting companies.

https://www.3gpp.org/ftp/tsg_ran/TSG_RAN/TSGR_95e/Inbox/Drafts/%5B95e-23-R18-MUSIM-RAN4%5D/draft%20RP-22xxxx%20Revised%20WID%20R18%20MUSIM%20v3%20-%20moderator.doc

Topics	TUs/Quarter																										
	2Q'2022		3Q'2022		4Q'2022				1Q'2023				2Q'2023		3Q'2023		4Q'2023				1Q'2024		2Q'2024				
	RAN4#103		RAN4#104		RAN4#104b		RAN4#105		RAN4#106		RAN4#106b		RAN4#107		RAN4#108		RAN4#108b		RAN4#109		RAN4#110		RAN4#110b		RAN4#111		
	RF	RD	RF	RD	RF	RD	RF	RD	RF	RD	RF	RD	RF	RD	RF	RD	RF	RD	RF	RD	RF	RD	RF	RD	RF	RD	RF
Multiple SIM (MUSIM) Enhancements (Core)	24,5	20,5	24,5	20,5	24,5	20,5	24,5	20,5	24,5	20,5	24,5	20,5	24,5	20,5	24,5	20,5	24,5	20,5	24,5	20,5	24,5	20,5	24,5	20,5	24,5	20,5	
Multiple SIM (MUSIM) Enhancements (Perf)			0,25		0,5		0,5		0,5		0,5		0,5		0,5		0,5		0,25		0,25		0,25		0,25		

Figure 3:

5 Conclusion

Based on the email discussion the following conclusions are recommended:

Proposal #1: Specify RRM requirements for Rel-17 MUSIM gaps in Rel-18 MUSIM WI

Proposal #2: Endorse the following RAN4 work objectives for RRM requirements for Rel-17 MUSIM gaps

– Core part

- Define RRM requirements for Rel-17 MUSIM gaps [RAN4, RAN2]
 - The following MUSIM gap requirements are considered
 - Measurements in Network A
 - Measurements in Network B in RRC idle/inactive
 - Note: it is up to RAN4 decision whether to define requirements for Network B.
 - Identify and specify, if needed, solutions for MUSIM gap collision handling for the following cases [RAN4, RAN2]
 - Case 1: Collisions between MUSIM gap and legacy measurement gap (i.e., Rel-15 to Rel-17 measurement gaps)
 - Case 2: Collisions between MUSIM gap and SMTC
 - Case 3: Collisions between different MUSIM gaps
 - Note: RAN2 work can be triggered by RAN4 LS only, if needed
 - Identify impacts on L1 measurements, RLM/BFD and L3 measurements and specify corresponding UE requirements, if necessary, when MUSIM gap(s) are configured, for the following scenarios [RAN4]
 - Only MUSIM gap(s) are configured
 - MUSIM gap(s) and legacy measurement gap are configured
 - Note: requirements are applicable to MUSIM gaps defined in Rel-17 MUSIM WI (LTE_NR_MUSIM)

– Performance part

- Specify necessary test cases for MUSIM gap RRM requirements [RAN4]

Proposal #3: Endorse the following RAN4 work plan for RRM requirements for Rel-17 MUSIM gaps

- RAN4 Core part start/completion: from 3Q 2022 till 4Q 2023 (i.e., RAN #102)
- RAN4 Perf part start/completion: from 4Q 2023 till 2Q 2024 (i.e., RAN #104)
- RAN4 TU allocation

Topics	TUs/Quarter																									
	2Q'2022		3Q'2022		4Q'2022				1Q'2023		2Q'2023				3Q'2023		4Q'2023				1Q'2024		2Q'2024			
	RAN4#103		RAN4#104		RAN4#104b		RAN4#105		RAN4#106		RAN4#106b		RAN4#107		RAN4#108		RAN4#108b		RAN4#109		RAN4#110		RAN4#110b		RAN4#111	
	RF	RD	RF	RD	RF	RD	RF	RD	RF	RD	RF	RD	RF	RD	RF	RD	RF	RD	RF	RD	RF	RD	RF	RD	RF	RD
Multiple SIM (MUSIM) Enhancements (Core)					0,25			0,5			0,5			0,5			0,5			0,25						
Multiple SIM (MUSIM) Enhancements (Perf)																				0,25		0,25		0,25		0,25

Figure 4: