3GPP TSG-RAN WG2 #119 electronic R2-220xxxx

Electronic Meeting, Aug 17th – 29th, 2022

Agenda Item: 5.1.3.1.2

Source: Ericsson

Title: Summary of offline [232][MUSIM] Potential clarifications to MUSIM (Ericsson)

Document for: Discussion, Decision

# 1 Introduction

This contribution summarizes the following discussion:

* [AT119-e][232][MUSIM] Potential clarifications to MUSIM (Ericsson)

      Scope: Discuss the corrections for MUSIM marked for this discussion.

 Intended outcome: Report in in R2-2208768.

 Deadline: Deadline 1 (report)

Companies are invited to fill in contact details.

|  |  |
| --- | --- |
| **Company** | **Contact details** |
| Qualcomm | Ozcan Ozturk, oozturk@qti.qualcomm.com |
| ASUSTeK | Roger\_Guo@asus.com |
| ZTE | Li.wenting@zte.com.cn |
| MediaTek | Felix Tsai, chun-fan.tsai@mediatek.com |
| OPPO | Jiangsheng Fan, fanjiangsheng@oppo.com |
| Apple | Sethuraman Gurumoorthy, sethu@apple.com |
| Intel | Sudeep.k.palat@intel.com |
| Spreadtrum | Qufang.huang@unisoc.com |
| vivo | wenjuan.pu@vivo.com |
| NEC | wangda@labs.nec.cn |
| Sharp | Fangying.xiao@cn.sharp-world.com |
| Samsung | Aby.abraham@samsung.com |
| Nokia | Srinivasan.selvaganapathy@nokia.com |
| Ericsson | lian.araujo@ericsson.com |
| Huawei, HiSilicon | Yiru Kuang, kuangyiru@huawei.com |

# 2 Discussion

The paper in [1] contains the following proposal:

**Proposal: Define the field musim-GapLength as Mandatory IE.**

Since the CR related to this proposal is discussed in e-mail discussion 231, there is no need to repeat the discussion here, hence, the paper above will not be treated on this discussion.

The paper in [2] contains the following proposal:

**Proposal: Update the procedure text such that how to perform the MUSIM gap configuration procedure is specified in a new clause. The draft TP in Annex can be considered as baseline.**

**Q1 Do companies agree with the proposal above? Please also provide comments, if any, to the draft TP in [2].**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Comments** |
| Qualcomm | Yes | No strong preference since it is editorial |
| ASUSTeK | Yes | We are fine with the TP. |
| ZTE | Yes |  |
| MediaTek | Yes |  |
| OPPO | Yes |  |
| Apple | Yes |  |
| Intel | Yes |  |
| Spreadtrum | Yes |  |
| vivo | Yes |  |
| NEC | Yes |  |
| Sharp | Yes |  |
| Samsung | Yes (Proponent) | Note that similar issue is curretly discussed in offline [231] i.e. Q6. We believe that if the TP is agreeable then the proposed changes in Q6 are not needed.  |
| Nokia | Yes |  |
| Ericsson | Yes |  |
| Huawei, HiSilicon | Yes |  |

Since [3] was revied into [4], only [4] will be treated in this document.

The latter paper contains the following proposals:

**Proposal 1: RAN2 to confirm that MUSIM assistance information and signaling procedure for switching notifications are only carried out as MCG Configuration change for Rel-17.**

**Proposal 2: The gap configurations signalled from Master cell-group is used by UE to switch from NTWK-A completely including MCG and SCG operations for Rel-17.**

**Proposal 3: Cell-Group specific MUSIM Gap configuration and leave notification should be considered in Rel-18 WID.**

**Proposal 4: Uplink transmission for SPS and CG are allowed during MUSIM Gap based on network control.**

**Proposal 5: UE may indicate the support for uplink transmission during MUSIM Gap as optional capability**

**Proposal 6: RAN2 to consider inclusion of absence time or preferred return time to minimise the user plane data interruption and packet loss due to release of RRC connection for MUSIM switching for short absence.**

**Q2 Do companies agree with the proposals above? In the Yes/No column, please state whether you agree/disagree with each of the proposals above.**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Comments** |
| Qualcomm | No | None of these are essential corrections. P3 can be discussedin Rel-18 WI directly. We do not want to introduce any new signaling or UE behavior for MUSIM unless something is critcally broken, which is not the case here. If SN sends a MUSIM gap applicable to SCG configuration only (e.g. for FR1 MN and FR2 SN case) via SRB3, then it has no impact on MCG and also UE implementation. Such decision can be left to NW implementation. Our RAN2 agreement was not to introduce any additional signaling for DC so better leave at that. Rel-18 can of course introduce optimizations if there is support. |
| ASUSTeK | Agree: 1, 2, 3, 6Disagree: 4, 5 | NW could prevent the collisions between SPS/CG and MUSIM Gap. |
| ZTE | No | Similar view as Qualcomm |
| MeidaTek | P1/P2 could discusseDisagree: P3 to P6 | P1/P2, prefer to discuss based on solid TP.P3 to P6 is clearly further optimization and should not be discussed in correction phase. |
| OPPO | See comments | For P1, P1 can be handled by UE implementation, if majority wants, we can follow.For P2, only per UE gap is introduced, so no doubt to cover both MCG and SCG operation, as for the limitation for MCG signaling, this can also be handled by UE implementation.For the rest proposals, it’s totally optimization for R17, not essential from our side. |
| Apple | See comments | P1, P2 : We have some sympathy for the proposal, but at the same time, it is already kind of handled by UE implementations. P3 to P6 are optimizations, and is not critically important at this stage of R17. |
| Intel | See comments | Agree to P1. We are also OK to P2 but it should be confirmed (may be also with RAN3) as it was not discussed previously. Network coordination will be required for P2.Disagree with the rest of the proposals. |
| Spreadtrum | Agree P3Disagree: 1,2,4,5,6 | Agree with QualcommThese correction is not essential, but some enhancements in Rel-18 are benefit to improve the capacity. |
| vivo | See comments | Agree with MediaTek. For P1 and P2, UE does not know the NW implementation, i.e., per UE MUSIM gap or only SCG gap, then unexpected UE behaviour may happen. So, we are ok to have P1 and P2 to avoid unexpected UE implementation.  |
| NEC | Agree with 1, 2 | P3 can be discussed in Rel-18. P4&5, no need to add anything in the spec for early return indication.P6, too late to consider such enhancement in Rel-17.  |
| Sharp | No | P1&P2 can rely on UE implementation. P3 is already under the scope of Rel-18 so we do not need such an agreement. P4-6 are not essential issues. |
| Samsung  | No | * P1: Agree, but we think that it is already clarified in TS 38.331 i.e. see the below field description.

|  |
| --- |
| *RRCReconfiguration-IEs* field descriptions |
| ***otherConfig***Contains configuration related to other configurations. When configured for the SCG, only fields *drx-PreferenceConfig, maxBW-PreferenceConfig, maxBW-PreferenceConfigFR2-2, maxCC-PreferenceConfig, maxMIMO-LayerPreferenceConfig*, *maxMIMO-LayerPreferenceConfigFR2-2*, *minSchedulingOffsetPreferenceConfig, minSchedulingOffsetPreferenceConfigExt, btNameList, wlanNameList, sensorNameList* and *obtainCommonLocation* can be included. |

* P2: As RAN2 agreed NOT to enhance current INM signalling, SCG has no idea on MUSIM gap configuration configured by MCG. Thus, there is no specification impact how MUSIM gaps are affected by SCG operations and we do not see any necessity to confirm P2.
* P3: We do not need to discuss it at all.
* P4 – P6: Disagree as it's optimization.
 |
| Nokia | Agree | Proponent : **On the clarification of MUSIM operation for DC**In our understanding for Rel-17 the MUSIM assistance information and configuration is common for both cell-group. So it is better to clarify that NW can configure it as part of MCG or SCG configuration not both. Otherwise, if this parameter is included in the configuration two times the UE behaviour will be unspecified. We also dont see need for this signalling procedure via SCG. We expect MUSIM gap related configuration happens immediately after RRC signalling via MCG.**For MAC changes to allow other uplink operations :**In last RAN2 meeting, only RACH behaviour was concluded. It is good to clarify the UE behaviour for other uplink transmissions also for MUSIM Gap.For additionl information in Leave-IndicationThe aperiodic gaps defined in Rel-17 is very short to allow any short signalling or SDT like procedure in other network to complete. If UE indicate this to NTWK-A, network A can reduce the data interruption for this scenario. |
| Ericsson | P1: AgreeP2: Disagree.P3: Disagree.P4-P5: DisagreeP6: Disagree | P2: Ran2 agreed to not specify MN-SN coordination for MR-DC in Rel-17 MUSIM, hence we cannot say it includes SCG since SN may not be aware of it. We understand we will leave this unspecified.P3: This should be discussed in RAN plenary.P4-P6: The propsals can be considered as enhancements and, at this stage, should not be considered in Rel.17. They can be discussed in Rel.18. |
| Huawei, HiSilicon | No | For P1 P2, we had agreement “MUSIM with MR-DC is not explicitly supported in Rel-17“, so further DC details are not needed.For P3 to P6, further optimizations, not essential. |

The CR in [5] intends to clarify that UE start or re-start of timer when UE assistance information triggering corresponds to MUSIM assistance information, upon receiving the field *reconfigurationwithsync*, is applicable only for MCG.

**Q3 Do companies agree with the intention of the CR above?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Comments** |
| Qualcomm | No | As in Q2, nothing is broken. No new functionality is needed. |
| ASUSTeK | Yes |  |
| MediaTek | Yes |  |
| OPPO | No | The proposed change may also impact R16 UE behaviour as the change is not only added for MUSIM operation. |
| Apple | No | This does not break any functionality.  |
| Intel | Yes | This is similar to the other discussion points that MUSIM gap configuration and assistance information is only related to MCG. |
| Spreadtrum | Yes |  |
| vivo | Yes |  |
| Samsung | No | Please see our comments about P1 in Q2. In short, intent is correct but we do not agree with the CR as current specification is already clear. |
| Nokia | Yes | Without this change, the timers are restarted for SCG mobility. |
| Ericsson | No | The issue will not happen since the conditions within the procedural text will only be triggered for the cell group that configure the corresponding UAI. In MUSIM case, only MCG configures it so the procedure will not be triggered when SCG configuration contains *reconfigurationwithsync*. |
| Huawei, HiSilicon | No | We had agreement “MUSIM with MR-DC is not explicitly supported in Rel-17“, so further DC details are not needed.And we agree with OPPO that the proposed change impacts other UAI procedures. |

The paper in [6] contains the following proposals:

**Proposal 1: The PTW related parameters shall be included in GAP configuration.**

**Proposal 2: Three new parameters shall be added in UAI for GAP configuration:**

* **Timer 1: the length of PTW**
* **Timer 2: the length of non-PTW**
* **The SFN and sub frame of the beginning of PTW**

**Q4 Do companies agree with the proposals above? In the Yes/No column, please state whether you agree/disagree with each of the proposals above.**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Comments** |
| Qualcomm | No | This is against the very basic principle of MUSIM WI that NW A does not coordinate or optimize the UE behavior on NW B. It is a very specific optimization and thus can not be considered in essential correction phase. |
| ASUSTeK | No | The UE may request periodic gap not only for paging monitoring but also for other purposes, e.g. SSB detection, measurement. MUSIM gap in non-PTW may not always be a waste. |
| ZTE | No |  |
| MediaTek | No | Looks like an optimization |
| OPPO | No | Seems like optimization, not essential for R17. |
| Apple | No | It is more of optimization and not critical for R17 |
| Intel | No | New optimisation. |
| Spreadtrum | With comments | Since this optimization is excluded in R17, it could be included in R18. |
| vivo | No | It’s an optimization, not essential for R17.  |
| NEC | No | Agree with Qualcomm |
| Sharp | No |  |
| Samsung | No |  |
| Nokia | No |  |
| Ericsson | No | At this stage, no new enhancement/feature should be introduced. These proposals could be discussed in Rel.18 |
| Huawei, HiSilicon | No | Agree with ASUSTeK. |

The paper in [7] contains the following proposal:

**Proposal: The UE shall release the MUSIM gap upon initiating the RRC re-establishment procedure if the UE is not configured with conditionalReconfiguration, and the UE releases the MUSIM gap upon selecting a suitable NR cell and the selected cell is not one of the candidate cells for conditional handover, instead of upon receiving the RRC re-establishment message from the gNB.**

**Q5 Do companies agree with the proposal above?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Comments** |
| Qualcomm | No | The UE does release MUSIM gap configuation upon re-establishment initiation. We don’t need to optimize this for CHO recovery.  |
| ASUSTeK | Yes |  |
| ZTE | No | Agree with Qualcomm |
| MediaTek | No |  |
| OPPO | No | Seems like optimization |
| Apple | No |  |
| Intel | No | The proposal is to release the gap upon initiating the re-establishment procedure than after receiving the re-establishment message. As explained in the document, the consequence of not doing this is a possible delay to the re-establishment message if it happens to coincide with the UE gap. So we consider this as a small optimisation. Also doesn’t this issue occur for other gaps if the UE is configured with a new gap pattern that is not supported by the target gNB? |
| Spreadtrum | No | This is an optimization. |
| vivo | No | Agree with Qualcomm. |
| NEC | No | We prefer not to have this optimization. |
| Sharp | No |  |
| Samsung | No | Agree with Intel i.e. it's tiny optimization. We are also not convinced with the explanation about the issue in Figure 1 i.e. even for legacy measurement gap target gNB may not support part of gap pattern. Overall, we disagree with the proposal and we should stick to previous agreement.  |
| Nokia | No | If gaps are released at the time of cell selection itself, the UE may continue with other MUSIM operation during re-establishment and in this case also there is possibility of missing RRC-Reestablishment message. If it is maintained at NW at least for Intra-GNB cases the NW can decide on scheduling the RRC-Reestablishment at right place. |
| Ericsson | No | Agree with Samsung and Intel. |
| Huawei, HiSilicon | Yes (Proponent) | For re-establishment, the UE may select a new gNB which does not support the MUSIM gap configuration and transmits the RRC re-establishment request message to the new gNB. After that, the UE still keeps using the MUSIM gap, then the RRC re-establishment message may happen to be in the duration of the MUSIM gap. In this case, the UE cannot receive the RRC re-establishment message and the gNB needs to retransmit it after detecting that the UE has not successfully received this message, e.g. due to no HARQ ACK feedback. So the re-establishment procedure would be delayed. Thus, we provide above proposal to solve this issue. |

The paper in [8] contains the following proposals:

**Proposal 1: Upon initiation of re-establishment procedure, the UE stops timer T346g, if running.**

**Proposal 2: RAN2 to discuss whether to add the following NOTE in clause 5.3.7.2 as follows:**

**NOTE: It is up to UE implementation whether to initiate the procedure while T346g timer is running**.

**Q6 Do companies agree with the proposals above? In the Yes/No column, please state whether you agree/disagree with each of the proposals above.**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Comments** |
| Qualcomm | No | It wouldn’t make sense for a UE to initiate re-establishment and then leave NW connection due to T346g. So this can be left to the UE implementation. Even if a UE does this, nothing is broken as a UE can always abort re-establisment for other reasons. |
| ASUSTeK | Agree: 1Disagree: 2 | Our understanding on the previous agreement is that the UE would initiate the RRC re-establishment regardless of T346g. |
| ZTE | Agree with P1 |  |
| MediaTek | P1: DisagreeP2: No strong view | Similar view as QC, it makes no sense to trigger re-estabilishment while T346g is running.  |
| OPPO | No  | As mentioned by Qualcomm, we also think a good UE implementation will aviod this bad scenario. |
| Apple | No | Can be left to UE implementation |
| Intel | Agree 1P2: no strong view | While we agree with other company comments about P1 UE behaviour, we think this is a simple solution to avoid potential UE implementation problems and corresponding issues on network side. |
| Spreadtrum | No | Agree with Qualcomm. |
| vivo | Agree  | P1 and P2 show how the UE implementation can be supported by the specification.  |
| NEC | No | We prefer to stick to previous agreement and leave to UE implementation. |
| Sharp | No strong view |  |
| Samsung | Proponent (Prefer to agree with P1 and P2 together) | Many companies commented that it makes no sense to trigger re-establishment while T346g is running. However, as explained in [8], current procedure text is that the UE SHALL trigger re-establishment while T346g is running regardless of whether this scenario is rare or not. To avoid potential issues i.e. RRC state mismatch, we think that UE needs to stop the timer T346g if running if UE decides to trigger re-establishment. On the other hand, we share some sympathy with them that it would be good to leave it up to UE implementation whether to trigger re-establishment while T346g is running. It is the main intent of P2. We think P2 addresses companies' concerns. Having said that, as a compromise, we think P1/P2 can be agreed together.  |
| Nokia | No | Agree with QC |
| Ericsson | P1: YesP2: No strong view | P2 is not essential, so not strong view |
| Huawei, HiSilicon | P1: NoP2: No strong view | For P1, this can be left to UE implementation. |

# 3 Conclusion

- To be updated after discussion on section 2 -

# 4 References

1. R[2-2208032](file:///E%3A%5C3GPP%E6%96%87%E6%A1%A3%5C%E4%BC%9A%E8%AE%AE%E6%96%87%E7%A8%BF%5C2022%5CRAN2%20119%5CR2-2208032.zip) Discussion on gap length IE optionality Ericsson discussion, RAN2#119-e, Eletronic Meeting, Aug 17th – 29th, 2022
2. R[2-2208344](file:///E%3A%5C3GPP%E6%96%87%E6%A1%A3%5C%E4%BC%9A%E8%AE%AE%E6%96%87%E7%A8%BF%5C2022%5CRAN2%20119%5CR2-2208344.zip) Clarification on performing MUSIM gap configuration procedure Samsung Electronics Co., Ltd discussion Rel-17, RAN2#119-e, Eletronic Meeting, Aug 17th – 29th, 2022
3. R[2-2208035](file:///E%3A%5C3GPP%E6%96%87%E6%A1%A3%5C%E4%BC%9A%E8%AE%AE%E6%96%87%E7%A8%BF%5C2022%5CRAN2%20119%5CR2-2208035.zip) On Remaining Issues ofr MUSIM Switching Procedures Nokia, Nokia Shanghai Bell discussion Rel-18, RAN2#119-e, Eletronic Meeting, Aug 17th – 29th, 2022
4. R[2-2208683](file:///E%3A%5C3GPP%E6%96%87%E6%A1%A3%5C%E4%BC%9A%E8%AE%AE%E6%96%87%E7%A8%BF%5C2022%5CRAN2%20119%5CR2-2208683.zip) On Remaining Issues ofr MUSIM Switching Procedures Nokia, Nokia Shanghai Bell discussion Rel-17, RAN2#119-e, Eletronic Meeting, Aug 17th – 29th, 2022
5. R[2-2207994](file:///E%3A%5C3GPP%E6%96%87%E6%A1%A3%5C%E4%BC%9A%E8%AE%AE%E6%96%87%E7%A8%BF%5C2022%5CRAN2%20119%5CR2-2207994.zip) Clarification for MUSIM Assistance Information in DC for reconfiguration with Sync Nokia, Nokia Shanghai Bell CR Rel-17, RAN2#119-e, Eletronic Meeting, Aug 17th – 29th, 2022
6. R[2-2207670](file:///E%3A%5C3GPP%E6%96%87%E6%A1%A3%5C%E4%BC%9A%E8%AE%AE%E6%96%87%E7%A8%BF%5C2022%5CRAN2%20119%5CR2-2207670.zip) Support eDRX in Multi-SIM scenario Spreadtrum Communications discussion Rel-17, RAN2#119-e, Eletronic Meeting, Aug 17th – 29th, 2022
7. R[2-2207961](file:///E%3A%5C3GPP%E6%96%87%E6%A1%A3%5C%E4%BC%9A%E8%AE%AE%E6%96%87%E7%A8%BF%5C2022%5CRAN2%20119%5CR2-2207961.zip) Discussion on the MUSIM gap release during RRC reestablishment Huawei, HiSilicon discussion Rel-17, RAN2#119-e, Eletronic Meeting, Aug 17th – 29th, 2022
8. R[2-2208369](file:///E%3A%5C3GPP%E6%96%87%E6%A1%A3%5C%E4%BC%9A%E8%AE%AE%E6%96%87%E7%A8%BF%5C2022%5CRAN2%20119%5CR2-2208369.zip) Further discussion on re-establishment handling while T346g timer is running Samsung Electronics Co., Ltd discussion Rel-17, RAN2#119-e, Eletronic Meeting, Aug 17th – 29th, 2022