**3GPP TSG-RAN WG2 Meeting #118-eR2-22xxxxx**

**Online, 9th – 20th May 2022**

**Agenda item:** 6.3.1

**Source:** vivo

**[AT118-e][230][MUSIM] NR RRC corrections for MUSIM (vivo)**

**Document for:** Discussion and Agreement

# 1 Introduction

This is to report the following email discussion:

* [AT118-e][230][MUSIM] NR RRC corrections for MUSIM (vivo)

Scope: Discuss NR RRC corrections for MUSIM and include corrections based on online decisions.

Intended outcome: Agreeable CR in R2-2206169.

Deadline: Deadline 5

* **Comment deadline:** Tuesday W2, 0400 UTC (for collecting views)
* **Rapporteur proposals:** Wednesday W2, 0800 UTC (proposed resolution of issues)
* **Document deadline:** Wednesday W2, 1600 UTC (report or agreed CRs)

This email discussion focuses on the following proposals:

R[2-2205312](file:///E:\\3GPP文档\\会议文稿\\2022\\RAN2%20118\\R2-2205312.zip) [H083] Corrections to NR RRC for MUSIM Huawei, HiSilicon draftCR Rel-17 38.331 17.0.0 LTE\_NR\_MUSIM-Core

R[2-2205763](file:///E:\\3GPP文档\\会议文稿\\2022\\RAN2%20118\\R2-2205763.zip) [S676] Further discussion on handling of musim-GapConfig in RRC\_INACTIVE Samsung Electronics Co., Ltd discussion Rel-17 LTE\_NR\_MUSIM-Core

R[2-2205765](file:///E:\\3GPP文档\\会议文稿\\2022\\RAN2%20118\\R2-2205765.zip) [S676] Correction on handling of musim-GapConfig in RRC\_INACTIVE\_Opt 1 Samsung Electronics Co., Ltd CR Rel-17 38.331 17.0.0 3115 - F LTE\_NR\_MUSIM-Core

R[2-2205767](file:///E:\\3GPP文档\\会议文稿\\2022\\RAN2%20118\\R2-2205767.zip) [S676] Correction on handling of musim-GapConfig in RRC\_INACTIVE\_Opt 2 Samsung Electronics Co., Ltd CR Rel-17 38.331 17.0.0 3116 - F LTE\_NR\_MUSIM-Core

R2-2205772 [S677] Correction on the IE MUSIM-GapConfig in ASN.1 Samsung Electronics Co., Ltd discussion Rel-17 38.331 LTE\_NR\_MUSIM-Core

R2-2205501 [L020] Correction for AS-based leaving when RAN paging in MUSIM LG Electronics Finland discussion Rel-17 LTE\_NR\_MUSIM-Core

R2-2205729 Further clarification on the waiting timer for leaving connected state [Z294][O802] ZTE Corporation, Sanechips discussion Rel-17 LTE\_NR\_MUSIM-Core

R2-2205757 Behaviour of wait timer Ericsson discussion

# 2 Contact Information

To make it easier to find the correct contact delegate in each company for potential follow-up questions, the rapporteur encourages the delegates who provide input to provide their contact information in this table:

|  |  |
| --- | --- |
| Company | Contact: Name (E-mail) |
| vivo | Wenjuan Pu (wenjuan.pu@vivo.com) |
| Nokia | amaanat.ali@nokia.com |
| Lenovo | Wulh5@Lenovo.com |
| Huawei/HiSilicon | rama.kumar@huawei.com |
| ZTE | Li.wenting@zte.com.cn |
| Sharp | Fangying.xiao@cn.sharp-world.com |
| Ericsson | Lian (lian.araujo@ericsson.com) |
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| Qualcomm | oozturk@qti.qualcomm.com |
| MediaTek | chun-fan.tsai@mediatek.com |
| Intel | Sudeep.k.palat@intel.com |
| LGE | Hongsuk Kim (hassium.kim@lge.com) |
| OPPO | Jiangsheng Fan(fanjiangsheng@oppo.com) |

# 3 Discussion

* [H083] R[2-2205312](file:///E:\\3GPP文档\\会议文稿\\2022\\RAN2%20118\\R2-2205312.zip)

RIL “NW either accepts or rejects aperiodic gap and there is only one aperiodic gap. Hence "MUSIM-GapInfo-r17" is not needed.”, so R2-2205312 proposes:

|  |
| --- |
| ***MUSIM-GapConfig*** The IE *MUSIM-GapConfig* specifies the MUSIM gap configuration and controls setup/release of MUSIM gaps.  *MUSIM-GapConfig* information element  -- TAG-MUSIM-GAPCONFIG-START    MUSIM-GapConfig-r17 ::= SEQUENCE {  musim-GapToReleaseList-r17 SEQUENCE (SIZE (1..2)) OF MUSIM-GapID-r17 OPTIONAL,  musim-GapToAddModList-r17 SEQUENCE (SIZE (1..2)) OF MUSIM-GapInfo-r17 OPTIONAL,  musim-AperiodicGap-r17 ENUMERATED {setup} OPTIONAL, -- Need N  ...  }  MUSIM-GapInfo-r17 ::= SEQUENCE {  musim-GapID-r17 MUSIM-GapID-r17 OPTIONAL, -- Cond periodic  musim-Starting-SFN-AndSubframe-r17 MUSIM-Starting-SFN-AndSubframe-r17 OPTIONAL, -- Cond aperiodic  musim-GapLength-r17 ENUMERATED {ms3, ms4, ms6, ms10, ms20} OPTIONAL,  musim-GapRepetitionAndOffset-r17 CHOICE {  ms20-r17 INTEGER (0..19),  ms40-r17 INTEGER (0..39),  ms80-r17 INTEGER (0..79),  ms160-r17 INTEGER (0..159),  ms320-r17 INTEGER (0..319),  ms640-r17 INTEGER (0..639),  ms1280-r17 INTEGER (0..1279),  ms2560-r17 INTEGER (0..2559),  ms5120-r17 INTEGER (0..5119),  ...  } OPTIONAL -- Cond periodic  }  MUSIM-Starting-SFN-AndSubframe-r17 ::= SEQUENCE {  starting-SFN-r17 INTEGER (0..1023),  startingSubframe-r17 INTEGER (0..9)  }    -- TAG-MUSIM-GAPCONFIG-STOP  -- ASN1STOP |

RAN2 have agreement that network should provide UE with the request MUSIM gap, but we also agreed in R2#116bis:

* **4: In the gap assistance information, UE provides gap repetition period and offset for periodic gaps, and (optionally) provides start SFN and subframe for the aperiodic gap.**

Based on above R2#116bis agreement, UE optionally provides start SFN and subframe for the aperiodic gap. However, “musim-Starting-SFN-AndSubframe-r17” field is mandatory present in case of MUSIM aperiodic gap configuration. That means network have to provide UE with this musim-Starting-SFN-AndSubframe-r17. Current CR ASN.1 version is fully aligned with above agreement.

But, if we use ENUMERATED {setup} it is not clear how it would work in case UE does not provide start SFN and subframe for the aperiodic gap in UAI. So, Rapporteur thinks if we agree to above change by R2-2205312, something may need to be further considered. This issue is also raised by R[2-2205322](file:///E:\\3GPP文档\\会议文稿\\2022\\RAN2%20118\\R2-2205322.zip). R[2-2205322](file:///E:\\3GPP文档\\会议文稿\\2022\\RAN2%20118\\R2-2205322.zip) proposed that for the aperiodic Gap configuration, the musim-Starting-SFN-AndSubframe and musim-GapLength shall be mandatory present, but not configure the aperiodic gap implicitly by indicating accept the aperiodic gap request or not. This is currently aligned with CR.

**Q1: Do companies agree with the proposed change by R2-2205312?**

|  |  |  |
| --- | --- | --- |
| Company | Agree as is; Agree with changes; Disagree | Detailed Comments |
| vivo | Disagree | The proposed change does not work if UE does not provide start SFN and subframe for the aperiodic gap. |
| Nokia | Disagree | Better to modify the gap-info for periodic and aperiodic separately. In the same-way periodic gaps also can have setup or release. This change will require NW to use the gap preference value for Aperiodic gap. Changes needed in the other places as well. |
| Lenovo | Disagree | Agree with the analysis from Rapp. |
| Huawei/HiSilicon | Agree | Though it was agreed in RAN2-116bis that UE optionally provides start SFN and subframe of the aperiodic gap, how can the NW decide the proper aperiodic gap configuration for the UE considering the fact that it does not have any information about the other NW’s RACH configuration for on-demand SI? So we think that UE should always provide start SFN and subframe and as RAN2-117e agreed, NW either accepts or does not configure any aperiodic gap. |
| ZTE | Disagree | Same view as vivo. |
| Sharp | Disagree | Agree with the analysis from Rapporteur. |
| Ericsson | Disagree | As stated by the rapporteur, it is not clear how it would work if the UE does not provide start SFN and subframe for the aperiodic gap in UAI. This would require additional work. We think that the current CR ASN.1 is fine and does not require to be changed. |
| Samsung | Disagree | Proposed change does not work when no start SFN and subframe for aperiodic gap are provided by UE. |
| Apple | Disagree | The proposed change does not work when no start SFN and subframe for aperiodic gap are provided by UE. |
| Qualcomm | Disagree | Agree with Vivo |
| MediaTek | See comment | We need to clarify first the meaning of absent on started SFN in UAI for ap aperiodic gap.  Option 1 – This is not allowed. The UE always provide this  Option 2 – This is allowed. IF the UE does not provide the started SFN, it implies that the UE want to start the aperiodic gap immediately?  However, in either option, it seems possible to use current ASN.1. So we also slight prefer to not change it. |
| Intel | Neutral | We see some benefit in the proposal. If the UE did not provide the start SFN, it can initiate the aperiodic gap immediately on reception of the configuration.  However, as others pointed out, the current ASN.1 also works without significant issues. |
| LGE | Disagree | Agree with the analysis from Rapp. |
| OPPO | Disagree | The proposed change does not work. |

**Conclusion:**

There is no enough support to agree with the proposed change by R2-2205312.

**Proposal 1: The proposed change by R2-2205312 is not agreed**

* [S676] R[2-2205763](file:///E:\\3GPP文档\\会议文稿\\2022\\RAN2%20118\\R2-2205763.zip)

RIL “UE should not restore musim-GapConfig from the UE Inactive AS context, if stored during RRC connection resume.”,and R2-2205763 made the following observations:

*Observation 1: There is no agreement on how to handle musim-GapConfig from the UE Inactive AS context, if stored during RRC connection resume, which results in no procedure text update in TS 38.331 v17.0.0.*

*Observation 2: According to the procedure text in TS 38.331 v17.0.0, the UE restores the musim-GapConfig from the stored UE Inactive AS context, if stored while performing the actions as specified in 5.3.13.3.*

And further proposes two options to address the above comments. Option 1 is performed upon initiation of the RRC resume procedure, while option 2 is performed when setting the contents of RRCResumeRequest or RRCResumeRequest1 message.

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| --- |
| **Option 1 in R[2-2205765](file:///E:\\3GPP文档\\会议文稿\\2022\\RAN2%20118\\R2-2205765.zip):**  ============SKIP============  1> stop timer T346f, if running;  1> stop timer T346i, if running;  1> release *referenceTimePreferenceReporting* from the UE Inactive AS context, if stored;  1> release *sl-AssistanceConfigNR* from the UE Inactive AS context, if stored;  1> release *musim-GapAssistanceConfig* from the UE Inactive AS context, if stored and stop timer T346h, if running;  1> release *musim-GapConfig* from the UE Inactive AS context, if stored;  1> release *musim-LeaveAssistanceConfig* from the UE Inactive AS context, if stored;  1> if the UE is connected with a L2 U2N Relay UE via PC5-RRC connection (i.e. the UE is a L2 U2N Remote UE):  2> apply the specified configuration of SL-RLC0 used for the delivery of RRC message over SRB0 as specified in 9.1.1.4;  ============SKIP============ |

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| --- |
| **Option 2 in R[2-2205767](file:///E:\\3GPP文档\\会议文稿\\2022\\RAN2%20118\\R2-2205767.zip):**  ============SKIP============  2> select *RRCResumeRequest1* as the message to use;  2> set the *resumeIdentity* to the stored *fullI-RNTI* value;  1> else:  2> select *RRCResumeRequest* as the message to use;  2> set the *resumeIdentity* to the stored *shortI-RNTI* value;  1> restore the RRC configuration, RoHC state, the stored QoS flow to DRB mapping rules and the KgNB and KRRCint keys from the stored UE Inactive AS context except for the following:  - masterCellGroup;  - mrdc-SecondaryCellGroup, if stored;  - pdcp-Config; and  - musim-GapConfig, if stored;  1> set the *resumeMAC-I* to the 16 least significant bits of the MAC-I calculated:  2> over the ASN.1 encoded as per clause 8 (i.e., a multiple of 8 bits) *VarResumeMAC-Input*;  2> with the KRRCint key in the UE Inactive AS Context and the previously configured integrity protection algorithm; and  2> with all input bits for COUNT, BEARER and DIRECTION set to binary ones;  ============SKIP============ |

**Q2: Do you agree with the observations made by R2-2205763?**

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| --- | --- | --- |
| Company | Agree; Disagree | Detailed Comments |
| vivo | Agree | Regarding “Observation 1: There is no agreement on how to handle musim-GapConfig from the UE Inactive AS context, if stored during RRC connection resume, which results in no procedure text update in TS 38.331 v17.0.0.”, the potential problem may be that,   1. musim-GapConfig cannot be present in RRCResume message in TS 38.331 v17.0.0, then the musim-GapConfig can only be updated in next reconfiguration. 2. UE releases *musim-GapAssistanceConfig* from the UE Inactive AS context when initiating RRC resume procedure, then UE cannot update its MUSIM gap preference. |
| Nokia | Agree, but | We would prefer according to our paper for the UE to retain this information in RRC\_INACTIVE so that the unnecessary release and requirement to send UAI once again and delay is not there. We think the change is simple so should be acceptable to companies. |
| Lenovo | Agree | *musim-GapConfig should be handled in resume procedure.* |
| Huawei/HiSilicon | Agree |  |
| ZTE | Agree |  |
| Sharp | Agree |  |
| Ericsson | Agree | We agree that the UE should not restore the musim-GapConfig at resume, but based on the current text in spec, it is actually restored. So, some updated in the text is needed. |
| Samsung | Agree (Proponent) |  |
| Apple | Agree |  |
| Qualcomm | Agree |  |
| MediaTek | Agree |  |
| Intel | Agree |  |
| LGE | Agree |  |
| OPPO | Agree |  |
|  |  |  |

**Q3: If the ANS to Q2 is Yes, which alternative do you prefer?**

* **Change option 1**
* **Change option 2**
* **Change option 3**

|  |  |  |
| --- | --- | --- |
| Company | Option | Detailed Comments |
| vivo | Option 3 | musim-GapConfig cannot be present in RRCResume message in TS 38.331 v17.0.0, the musim-GapConfig can only be updated in next reconfiguration.  **Option 3**: to support *musim-GapConfig* and *musim-GapAssistanceConfig* in RRCResume message.  Then, the handling of *musim-GapConfig* in RRC Resume procedure could be same as measGapConfig.  In this option3, it’s better to restore *musim-GapAssistanceConfig and musim-GapConfig.* i.e. UE does not release these configurations from the UE Inactive AS context when initiating RRC resume procedure.  If majority prefer not to restore musim-GapConfig from the UE Inactive AS context, we think option-1 is clearer than option-2. |
| Nokia | Option 3 | We think we have same understanding as Vivo marked in GREEN. We would prefer according to our paper for the UE to retain this information in RRC\_INACTIVE so that the unnecessary release and requirement to send UAI once again and delay is not there. We think the change is simple so should be acceptable to companies. |
| Lenovo | Option 1 | All three options can work. We prefer to option1 since the new cell to resume may not support *musim-GapAssistanceConfig* or have the different timer for gap request. In addition, *musim-GapAssistanceConfig cannot be released at the stage of initiation of resume procedure in option3, which is not aligned with the legacy logic. Namely, all configurations included in otherconfig are released upon initiation of resume procedure.* |
| Huawei/HiSilicon | Option 1 | Option 1 is simple and aligning with other UAI related configuration. We think Option 3 proposed by Vivo is an optimisation and there is no need to consider at this stage. |
| ZTE | Option 1 | We agree with option 1 which is simple and aligned with legacy procedure |
| Sharp | Option 1 |  |
| Ericsson | Opt.1 | It is preferable that the musim-GapConfig is released as soon as the UE initiates the resume procedure. |
| Samsung | Option 1 or Option 2  (Proponent) | At this late stage, we should not pursue any optimization. We don’t have strong view between Option 1 and Option 2. |
| Apple | Option 1 | Option 1 is simple and aligned with other UAI otherConfig handling |
| Qualcomm | Option 3 or 1 | We are fine to keep the gap config during Inactive. If this is not agreed, slight preference for Option to release. |
| MediaTek | Option 1 | We prefer the simplest solution at this stage. |
| Intel | Option 1 or 3 (in that order) | With option 3, even if the configuration is restored, there is no guarantee that it is still relevant as Resume can be in a different cell. In either option then, the “gap” (either restored or released) may not be the correct one and will need to be updated in a subsequent message. So it is not certain 3 is necessarily better than 1. |
| LGE | Option 1 | Option 1 is simple and aligned with the legacy procedure |
| OPPO | Option 1 |  |

**Conclusion:**

All companies agree to handling musim-GapConfig from the UE Inactive AS context, if stored during RRC connection resume.

12 companies support **option 1** for handling musim-GapConfig from the UE Inactive AS context, if stored during RRC connection resume.

1 company supports **option 2** for handling musim-GapConfig from the UE Inactive AS context, if stored during RRC connection resume.

4 companies support **option 3** for handling musim-GapConfig from the UE Inactive AS context, if stored during RRC connection resume

**Proposal 2: For handling *musim-GapConfig* from the UE Inactive AS context, if stored during RRC connection resume agree to support CR update option 1 as in R[2-2205765](file:///E:\\3GPP文档\\会议文稿\\2022\\RAN2%20118\\R2-2205765.zip).**

* [S677] R[2-2205772](file:///E:\\3GPP文档\\会议文稿\\2022\\RAN2%20118\\R2-2205772.zip)

RIL “There seems no need to define duplicated/same fields in the IE MUSIM-GapPrefInfo-r17 and in the IE MUSIM-GapInfo-r17, unless network is allowed to change any parameters different from requested MUSIM gap pattern(s).”

Based on At RAN2#117-e meeting, the following agreement was made:

* 1: Network should always provide at least one of the requested gap pattern or no gaps. Network providing an alternative gap pattern instead of the one requested by the UE is not supported in this release.

R[2-2205772](file:///E:\\3GPP文档\\会议文稿\\2022\\RAN2%20118\\R2-2205772.zip) observed that:” **Network is NOT allowed to change any parameters different from requested MUSIM gap pattern(s) i.e. network only decides whether to configure each MUSIM gap pattern requested by the UE.** ”

So **R2-2205772** proposes to re-define the IE *MUSIM-GapInfo-r17* as follows:

|  |
| --- |
| MUSIM-GapInfo-r17 ::= SEQUENCE {  musim-GapID-r17 MUSIM-GapId-r17 OPTIONAL, -- Cond periodic  musim-Gap-r17 MUSIM-Gap-PrefInfo-r17  } |

Alternatively, contribution **R[2-2205759](file:///E:\\3GPP文档\\会议文稿\\2022\\RAN2%20118\\R2-2205759.zip)** also proposes a similar definition of the IE MUSIM-GapInfo-r17 which will avoid duplicating IE MUSIM-GapInfo-r17 definition which is already captured in the current version of the CR, as follows:

|  |
| --- |
| ============SKIP============  ***MUSIM-GapConfig* information element**  -- ASN1START  -- TAG-MUSIM-GAPCONFIG-START    MUSIM-GapConfig-r17 ::= SEQUENCE {  musim-GapToReleaseList-r17 SEQUENCE (SIZE (1..2)) OF MUSIM-GapID-r17 OPTIONAL,  musim-GapToAddModList-r17 SEQUENCE (SIZE (1..2)) OF MUSIM-Gap-r17 OPTIONAL,  musim-AperiodicGap-r17 MUSIM-Gap-r17 OPTIONAL, -- Need N  ...  }    MUSIM-Gap-r17 ::= SEQUENCE {  musim-GapID-r17 MUSIM-GapID-r17 OPTIONAL,  musim-GapInfo-r17 MUSIM-GapInfo-r17}      -- TAG-MUSIM-GAPCONFIG-STOP  -- ASN1STOP  ============SKIP============ |

**Q4: To avoid duplicate definition of the IE *MUSIM-GapInfo-r17* , on top of what is already captured in the CR based on R[2-2205759](file:///E:\\3GPP文档\\会议文稿\\2022\\RAN2%20118\\R2-2205759.zip), do you think any additional clarification is needed?**

|  |  |  |
| --- | --- | --- |
| Company | Yes(please clarify)/No | Detailed Comments |
| vivo | Yes | One comment on the proposed COND presence “*periodic*” in the introduced common IE *MUSIM-GapInfo-r17*:  For “*periodic*”, the description should be “This field is mandatory present in case of requesting/configuring periodic MUSIM ~~periodic~~ gap ~~configuration~~. Otherwise, it is absent.” |
| Nokia | Yes, okay to clarify | No strong view, we don't think there is a need to worry about the concern that Samsung mentions about network giving something else to the UE than what UE requested.  Why not capture something like this in the field description?  that the network is NOT allowed to change any parameters different from requested MUSIM gap pattern(s) i.e. network only decides whether to accept or reject each MUSIM gap pattern requested by the UE. |
| Huawei/HiSilicon | No | We think the existing field descriptions in R2-2205759 are fine ad there is no need for any additional clarification. |
| ZTE | Yes | 1. We agree to harmonize the similar IEs for MUSIM UAI and gap configuration, But for the structure of “*MUSIM-GapConfig” , we see companies also suggest to separate the periodic and aperiodic definition. So whether to separate the periodic and aperiodic definition can be further discussed.* 2. *For the condition of aperiodic, it has been agreed that it’s optional present in the UAI*   musim-Starting-SFN-AndSubframe-r17 MUSIM-Starting-SFN-AndSubframe-r17 OPTIONAL, -- Cond aperiodic  This field is mandatory present in case of MUSIM aperiodic gap configuration and optional present in case of MUSIM aperiodic gap request. Otherwise, it is absent |
| Sharp | No | We think the current spec is clear. The MUSIM-GapInfo-r17 in UAI and in MUSIM-GapConfig is not exactly the same. As Rapporteur said in Q1, RAN2 have agreed that musim-Starting-SFN-AndSubframe is optional provided by UE but mandatory configured by network. |
| Ericsson | No | The current CR text is enough to avoid duplicate definition of the IE MUSIM-GapInfo-r17, and we also agree with first comment from Nokia that there is no concern on network providing alternative UE configuration for MUSIM gaps, the network does not know which other gaps the UE may support, so if it decides to configure the UE with MUSIM gaps, it can only rely on what the UE reported. |
| Samsung (Proponent) | Yes | We understand that there is nothing broken in the current specification. But the main intent here is to define global IE if it is used in several places, which is business as usual. We are fine with the Vivo's update and similar update may be applied for aperiodic case. |
| Apple | Yes | No strong view, but fine with clarification from Vivo |
| Qualcomm | Maybe | We should clearly specify that the NW will follow the UE request in the configuration (as per RAN2 agreement). This is essential for IODT. However, we do not necessarily need to do via this IE harmonization, which is more of an ASN.1 optimization. Capturing the NW behaviour in the field description or procedural text is simpler. Can accept this proposal if majority prefers it. |
| MediaTek | Maybe | We agree to capture the agreement as discussed in Q-C5 of #232. However, whether to have ASN.1 harmonization is another discussion (we are open for this). |
| Intel | Maybe | We are OK to clarify that network provides the gap – possibly in a field description. |
| LGE | No | Same view as Sharp |
| OPPO | No | The similar view with Ericsson. |

Conclusion:

To avoid duplicate definition of the IE MUSIM-GapInfo-r17 , on top of what is already captured in the CR based on R[2-2205759](file:///E:\\3GPP文档\\会议文稿\\2022\\RAN2%20118\\R2-2205759.zip):

* 5 companies clearly think there is a need to make some clarification in the field description of IE *MUSIM-GapInfo-r17*
* 5 companies also clearly think there is a NO need to make some clarification in the field description of IE *MUSIM-GapInfo-r17*
* 3 companies did not take a clear position

Thus Rapporteur proposes to keep the current description of the field description of IE *MUSIM-GapInfo-r17* for now and further updates can be considered during CR updates if needed.

**Proposal 3: To avoid duplicate definition of the IE MUSIM-GapInfo-r17, the current the field description of IE *MUSIM-GapInfo-r17* in the CR is baseline**

* [L020] R[2-2205501](file:///E:\\3GPP文档\\会议文稿\\2022\\RAN2%20118\\R2-2205501.zip)

RIL “When UE in RRC INACTIVE receives RAN paging, the UE should first check whether the UE leaves the RRC connection of the other SIM for R17 MUSIM operation instead of just initiating the RRC resume procedure”

Based on following RAN2 agreements:

* 1: RAN2 will not work in Rel-17 for the case that Dual-RX/Single-TX UE or Single-RX/Single-TX UE stays in RRC\_CONNECTED mode in NW A while performing reception and transmission in NW B (in RRC\_ CONNECTED or during RRC setup/resume period).
* For NR/5GS scenario, both NAS-based and RRC-based solution are supported for UE network switching with leaving connected state.
* There is no need to define the interaction between RRC-level connection release procedure and NAS-level connection release procedure.
* When both NAS-level Connection Release and RRC-level connection release are supported by the UE and are configured by the NW, it is up to the UE implementation to determine which one to use.

R[2-2205501](file:///E:\\3GPP文档\\会议文稿\\2022\\RAN2%20118\\R2-2205501.zip) observe that when receiving a RAN paging message, there are some cases that the UE immediately initiates the RRC Resume procedure:

|  |
| --- |
| ============SKIP============ **5.3.2.3 Reception of the *Paging* *message* by the UE** Upon receiving the *Paging* message, the UE shall:  ============SKIP============  1> if in RRC\_INACTIVE, for each of the *PagingRecord*, if any, included in the *Paging* message:  2> if the *ue-Identity* included in the *PagingRecord* matches the UE's stored *fullI-RNTI*:  3> if the UE is configured by upper layers with Access Identity 1:  4> initiate the RRC connection resumption procedure according to 5.3.13 with *resumeCause* set to *mps-PriorityAccess*;  3> else if the UE is configured by upper layers with Access Identity 2:  4> initiate the RRC connection resumption procedure according to 5.3.13 with *resumeCause* set to *mcs-PriorityAccess*;  3> else if the UE is configured by upper layers with one or more Access Identities equal to 11-15:  4> initiate the RRC connection resumption procedure according to 5.3.13 with *resumeCause* set to *highPriorityAccess*;  3> else:  4> initiate the RRC connection resumption procedure according to 5.3.13 with *resumeCause* set to *mt-Access*;  ============SKIP============ |

Thus R2-2205501 proposes that RAN2 discuss whether the spec change for TS 38.331 is needed to capture the UE behaviour of the decision to leave RRC\_CONNECTED for MUSIM operation upon reception of RAN paging.

**Q5: Do you agree to change spec to capture the UE behaviour of the decision to leave RRC\_CONNECTED for MUSIM operation upon reception of RAN paging?**

|  |  |  |
| --- | --- | --- |
| Company | Agree; Disagree | Detailed Comments |
| vivo | Disagree | The decision to leave RRC\_CONNECTED of the other SIM for R17 MUSIM operation instead of just initiating the RRC resume procedure should be up to UE implementation.  As at present, TS38.331 does not need to specify the UE behaviour of the other SIM on other networks. |
| Nokia | Disagree | Agree with Vivo’s observation, this would imply we need to write something about processing of other SIM operation in the context of the current SIM. We need to discuss this a bit carefully. |
| Lenovo | Disagree | Agree with up to UE implementation. |
| Huawei/HiSilicon | Disagree | It’s up to UE implementation and does not need to be specified. |
| ZTE | Disagree | Agree with Vivo |
| Sharp | Disagree |  |
| Ericsson | Disagree | Same view as Vivo. |
| Samsung | Disagree | This should not be specified, and is left to UE implementation |
| Apple | Disagree | This should be upto UE implemenation |
| Qualcomm | Disagree | This is out of the scope of 3GPP specifications. |
| MediaTek | Disagree |  |
| Intel | Disagree | Same view as others. |
| LGE | Agree | As the proponent, the current text needs to be updated because it seems to just allow RRC connections to two SIMs at the same time.  But majority want not to have this, we are fine. |
| OPPO | Disagree | 3GPP will not specify the UE behaviour on other USIM. |

R2-2205501 proposes a potential spec change as follows:

|  |
| --- |
| ============SKIP============  1> if in RRC\_INACTIVE, for each of the *PagingRecord*, if any, included in the *Paging* message:  2> if the *ue-Identity* included in the *PagingRecord* matches the UE's stored *fullI-RNTI*:  3> if the UE is configured by upper layers with Access Identity 1:  4> initiate the RRC connection resumption procedure according to 5.3.13 with *resumeCause* set to *mps-PriorityAccess*;  3> else if the UE is configured by upper layers with Access Identity 2:  4> initiate the RRC connection resumption procedure according to 5.3.13 with *resumeCause* set to *mcs-PriorityAccess*;  3> else if the UE is configured by upper layers with one or more Access Identities equal to 11-15:  4> initiate the RRC connection resumption procedure according to 5.3.13 with *resumeCause* set to *highPriorityAccess*;  3> else:  4> initiate the RRC connection resumption procedure according to 5.3.13 with *resumeCause* set to *mt-Access*;  NOTE: The UE should initiate the RRC connection resumption procedure after leaving RRC\_CONNECTED state of the other network if the UE capable of providing MUSIM assistance information determines to leave RRC\_CONNECTED state for MUSIM operation.  2> else if the *ue-Identity* included in the *PagingRecord* matches the UE identity allocated by upper layers:  3> if upper layers indicate the support of paging cause:  4> forward the *ue-Identity* to upper layers and *accessType* (if present) to the upper layers;  3> perform the actions upon going to RRC\_IDLE as specified in 5.3.11 with release cause 'other';  1> if the UE is acting as a L2 U2N Relay UE, for each of the *PagingRecord*, if any, included in the *Paging* message:  2> if the *ue-Identity* included in the *PagingRecord* in the *Paging* message matches the UE identity in *sl-PagingIdentity-RemoteUE* included in *sl-PagingInfo-RemoteUE*:  3> inititate the Uu Message transfer in sidelink as specified in 5.8.9.9;  1> for each *TMGI* included in *pagingGroupList*, if any, included in the *Paging* message:  2> if the UE has joined an MBS session indicated by the *TMGI* included in the *pagingGroupList*:  3> forward the *TMGI* to the upper layers;  1> if in RRC\_INACTIVE and the UE has joined one or more MBS session(s) indicated by the *TMGI* included in the *pagingGroupList*;and  ============SKIP============ |

**Q6: If the ANS to Q5 is Yes, to you agree the proposed change as above in R2-2205501?**

|  |  |  |
| --- | --- | --- |
| Company | Agree as is; Agree with changes; Disagree | Detailed Comments |
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**Conclusion:**

Majority of companies do not agree to change spec to capture the UE behaviour of the decision to leave RRC\_CONNECTED for MUSIM operation upon reception of RAN paging.

**Proposal 4: No change to specification to capture the UE behaviour of the decision to leave RRC\_CONNECTED for MUSIM operation upon reception of RAN paging**

* [Z294][O802]R[2-2205729](file:///E:\\3GPP文档\\会议文稿\\2022\\RAN2%20118\\R2-2205729.zip)

**[RIL]**: O802 **[Description]**: T3xx is stopped upon receiving RRCRelease, not upon entering idle state.

**[Proposed Change]:** Upon receiving *RRCRelease*, or upon receiving *musim-LeaveAssistanceConfig* set to *release*.

**[RIL]**: Z294 **[Description]**: The corresponding timer shall also be stopped when the *musim-LeaveAssistanceConfig* was released.

**[Proposed Change]:** 2>release *musim-LeaveAssistanceConfig*, if configured and stop timer T3xx, if running;

As it has been agreed that when the NW release the musim-LeaveAssistanceConfig, UE stops the timer (even if running), so R[2-2205729](file:///E:\\3GPP文档\\会议文稿\\2022\\RAN2%20118\\R2-2205729.zip) think when the UE release the musim-LeaveAssistanceConfig, the corresponding timer shall also be stopped.

**Q7: Do you agree that when the UE release the musim-LeaveAssistanceConfig, the corresponding timer shall also be stopped as proposed in R2-2205729?**

|  |  |  |
| --- | --- | --- |
| Company | Agree; Disagree | Detailed Comments |
| vivo | Disagree | In our understanding, the UE releases the musim-LeaveAssistanceConfig when re-establishment is triggered. According to the below agreements, this case can be left up to UE implementation.  In RAN2#117e agreement:   * RAN2 will not specify any new behaviour if the wait timer for switching notification to leave RRC connected state is running, and UE detects RLF, triggers re-establishment, receives HO command or triggers CHO. No specification changes are needed. * 9: RAN2 does not specify additional UE behavior on receiving reconfiguration of wait timer while wait timer is running. UE starts/stops/restarts the timer as per legacy procedures for UAI transmission, which means that at least in some cases this is left up to UE implementation.   So, the below change in the latest NR RRC CR should be reverted:  2> release *musim-LeaveAssistanceConfig*, if configured and stop timer T346g, if running; |
| Nokia | Somewhat | Our question is that the release of configuration is based on network signalling case not of re-establishment? So the behavior proposed by the RIL should be fine. We did not catch Vivo’s comment fully :( |
| Lenovo | Agree | If UE releases *musim-LeaveAssistanceConfig, UE shall stop timer T346g if running, which align with RRC specification logic.* We don’t understand why not to stop timer even musim-LeaveAssistanceConfig is released. We disagree the comment from vivo. |
| Huawei/HiSilicon | Please see comments | 1. For the case that NW releases musim-LeaveAssistanceConfig, the UE stops the timer according to RAN2’s agreement 2. For the case that UE autonomously releases the musim-LeaveAssistanceConfig (e.g. when UE initiates the re-establishment procedure) the timer won’t be stopped as per RAN2-117e’s agreement that RAN2 will not specify any new behaviour if the wait timer is running and UE triggers re-establishment.   So for the “UE releases musim-LeaveAssistanceConfig” in the question, we need to consider the above 2 different cases. If the question is addressing case 2, our answer is “Disagree” |
| ZTE | Agree (proponent) | Share the same view with Lenovo that the basic RRC specification logic is that if the related Assistance config has been released, the timer shall also be stopped.  To Huawei and Vivo’s comments, we think the current agreement say “that RAN2 will not specify any new behaviour ”, our understanding is that “stopping timer when the corresponding assistance config was released” is a legacy behavior (instead of new one). |
| Sharp |  | Agree with Huawei. |
| Ericsson | Agree | Agree with ZTE. This just follows legacy behavior. It would also create inconsistency to have a timer running when the corresponding configuration was actually released. |
| Samsung | Agree | Agree with others to follow legacy behavior. |
| Apple | Agree | In our view this is legacy behavior to stop T346x when the corresponding config is released. We do not see a reason to deviate from that. |
| Qualcomm | See comments | If we stop the timer during re-establishment, then we are forcing the UE to wait for MUSIM re-configuration and send a new release request. That is a possible implementation. If the UE wants to switch to the other USIM immediately, it will not perform re-establishment. So, stopping the timer as proposed is probably ok. But we can also leave some freedom to the UE on this, e.g. if the UE can prefer to do re-establishment while the timer is running and wait for a response, especially if the remaining timer time is long. Overall, there is not a compelling reason to change the current spec. |
| MediaTek | Disagree | Same view as HW.  Besides, we understand the question is on case 2 mentioned by HW, which is already agreed that no SPEC change on this. |
| Intel | Agree | As mentioned by some companies, the timer should be stopped when the corresponding configuration is released. But no new UE behaviour is needed for this case. |
| LGE | Agree | Agree to stop timer when release. This is the legacy behaviour. |
| OPPO | Disagree | As mentioned by QC, we’d like to leave this to UE implementation, i.e. leave some freedom to the UE on this. |

**Conclusion:**

7 companies clearly agree that when the UE release the musim-LeaveAssistanceConfig, the corresponding timer shall also be stopped.

3 companies clearly disagree that when the UE release the musim-LeaveAssistanceConfig, the corresponding timer shall also be stopped.

1 company is fine that when the UE release the *musim-LeaveAssistanceConfig*, the corresponding timer shall also be stopped.

1 company wants it to be left to UE implementation. The company thinks that If the UE wants to switch to the other USIM immediately, it will not perform re-establishment. So, stopping the timer as proposed is probably ok. But we can also leave some freedom to the UE on this, e.g. if the UE can prefer to do re-establishment while the timer is running and wait for a response, especially if the remaining timer time is long. Overall, there is not a compelling reason to change the current spec.

And the position can be considered as a disagreement

1 company did not make a clear statement. But seems sceptical to agree.

As there is no clear concensus, Rapporteur proposes to leave it to UE implementation.

**Proposal 5: When the UE release the musim-LeaveAssistanceConfig, whether the corresponding timer shall also be stopped is left to UE implementation.**

**Q8: if the ANS to Q7 is NO, do you agree that the UE shall stop the timer when the UE enter into the IDLE state for some abnormal cases e.g. the T311 expiry as proposed in R2-2205729?**

|  |  |  |
| --- | --- | --- |
| Company | Agree; Disagree | Detailed Comments |
| vivo | Agree, but | Agree that UE shall stop the timer when the UE enter into the IDLE state.  The actions upon going to RRC\_IDLE as specified in 5.3.11 has specified that “1> stop all timers that are running except T302, T320, T325, T330, T331 and T400;”  Therefore, there should be no further change regarding this. |
| Huawei/HiSilicon | Please see comments | Agree with Vivo, no spec change is needed. |
| ZTE | Agree (proponent) | Agree with Vivo. (It would affect the status of RIL [O084], If Q7 is yes, then the [O084] shall also be agreed for that there is no case that the Txx is still running when the UE has enter into the Idle state.) |
| Sharp | Agree but | No spec change is needed |
| Qualcomm | Yes | Agree with Vivo |
| MediaTek | Agree | Agree with Vivo |
| Intel | Agree |  |
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* R[2-2205757](file:///E:\\3GPP文档\\会议文稿\\2022\\RAN2%20118\\R2-2205757.zip)

The field description of *musim-LeaveWithoutResponseTimer* is captured in [1] as follows:

|  |
| --- |
| ============SKIP============  ***musim-LeaveWithoutResponseTimer***  Indicates the timer for to leave RRC\_CONNECTED without network response. When T3xx expires, UE autonomously leaves RRC\_CONNECTED state and enters RRC\_IDLE for MUSIM purpose.  ============SKIP============ |

In [2], a simplification to this field was proposed:

|  |
| --- |
| ============SKIP============  ***musim-LeaveWithoutResponseTimer***  Indicates the timer for the UE to enter RRC\_IDLE for MUSIM purpose as defined in clause 5.3.8.x.  ============SKIP============ |

However, R[2-2205757](file:///E:\\3GPP文档\\会议文稿\\2022\\RAN2%20118\\R2-2205757.zip) express concern that the proper behavior for the UE upon the wait timer expiration is captured in clause 5.3.8.X:

|  |
| --- |
| ============SKIP============ **5.3.8.X T3xx expiry** The UE shall:  1> if T3xx expires:  2> perform the actions upon going to RRC\_IDLE as specified in 5.3.11, with release cause 'other'.  ============SKIP============ |

R2-2205757 further observe that The field description of musim-LeaveWithoutResponseTimer is not consistent with the related procedural section. Thus, proposes that the field description of musim-LeaveWithoutResponseTimer should simplified to refer to clause 5.3.8.X.

**Q9: Do you agree with the simplified field description of *musim-LeaveWithoutResponseTimer* to refer to clause 5.3.8.X. as in R2-2205757?**

|  |  |  |
| --- | --- | --- |
| Company | Agree as is; Agree with changes; Disagree | Detailed Comments |
| vivo | Agree with changes |  |
| Nokia | Yes, but | The proposal is to simplify but it does not indicate that the timer is used only if no network response is received. So maybe we need to discuss if the simplification removes some functionality inadvertently? |
| Lenovo | agree |  |
| Huawei/HiSilicon | Please see comments | We think the current description is clear but no strong view. |
| ZTE | Agree |  |
| Sharp |  | Slightly prefer current spec. |
| Ericsson | Agree | To account for Nokia’s comment we can just add “Indicates the timer for the UE to enter RRC\_IDLE without network response for MUSIM purpose as defined in clause 5.3.8.x.” |
| Samsung | Agree | Fine with Ericsson's update. |
| Apple | Agree | Fine with Ericsson’s update. |
| Qualcomm | Agree | Simplification and also Ericsson suggestion are both fine. |
| MediaTek | See comment | We think current description is okay but also fine to have this change. |
| Intel | See comment | The current description looks OK to us on that point.  If a modification is made, then we think it is more useful to clarify the purpose of the timer is when UE should continue to stay in CONNECTED and not go to IDLE when the timer is running.  “Indicates the time when UE is not allowed to leave RRC\_CONNECTED without network response.” |
| LGE | Agree | Simplification is fine. |
| OPPO | Agree | Fine with Ericsson's update |

Majority of companies agree with the simplified field description of musim-LeaveWithoutResponseTimer to refer to clause 5.3.8.X. as in R2-2205757.

**Proposal 6: agree with the simplified field description of musim-LeaveWithoutResponseTimer to refer to clause 5.3.8.6. as in R2-2205757**

# 4 Conclusion

The email discussion concludes with:

**Proposal 1: The proposed change by R2-2205312 is not agreed**

**Proposal 2: For handling *musim-GapConfig* from the UE Inactive AS context, if stored during RRC connection resume agree to support CR update option 1 as in R[2-2205765](file:///E:\\3GPP文档\\会议文稿\\2022\\RAN2%20118\\R2-2205765.zip).**

**Proposal 3: To avoid duplicate definition of the IE MUSIM-GapInfo-r17, the current the field description of IE *MUSIM-GapInfo-r17* in the CR is baseline**

**Proposal 4: No change to specification to capture the UE behaviour of the decision to leave RRC\_CONNECTED for MUSIM operation upon reception of RAN paging**

**Proposal 5: When the UE release the musim-LeaveAssistanceConfig, whether the corresponding timer shall also be stopped is left to UE implementation.**

**Proposal 6: agree with the simplified field description of musim-LeaveWithoutResponseTimer to refer to clause 5.3.8.6. as in R2-2205757**

# 5 References

1. R2-2204207, Introduction of NR RRC support for MUSIM, Vivo, RAN2#117-e
2. R2-2203440, Corrections to the NR RRC CR for MUSIM (38.331), Ericsson, RAN2#117e