**3GPP TSG-RAN WG2 Meeting #116 bis-e R2-220xxxx**

E-Conference, 1st – 12th Nov. 2021

**Agenda item: 8.3.1**

**Source: vivo**

**Title:**  **[Post116bis-e][202][MUSIM] Open issues for MUSIM**

**WID: LTE\_NR\_MUSIM-Core**

**Document for: Discussion and Decision**

# Introduction

This is to kick start open issues on MUSIM WI:

* [Post116bis-e][202][MUSIM] Open issues for MUSIM (vivo)

Scope: Collect remaining critical open issues (needed to close the WI) for the MUSIM WI

      Intended outcome: Report (for information)

      Deadline:  Short

Please provide your comment by 1/28/2022 08:00 UTC. Thank you.

# Discussion

As per chairman guidelines, this discussion shall propose the pre-discussions for next meeting.

* **Each open issue** should be associated with **suggested treatment/handling**.
  1. **Company input into Pre117-e-offline (i.e. no company tdocs)**
  2. Company tdocs invited.
  3. CR rapporteur handled issue (CR rapporteur will propose resolution as input to next meeting).
  4. Other, e.g. immature area, reference to dependency, unclear status etc.

Rapporteur has provided suggested treatment for each OI with colored index.

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 | yangxiaodong5g@vivo.com |
| Ericsson | lian.araujo@ericsson.com |
| Intel | Sudeep.k.palat@intel.com |
| Samsung | sy0123.jung@samsung.com |
| ZTE | li.wenting@zte.com.cn |
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## Switching procedure without leaving RRC\_CONNECTED

Open issues for switching procedure without leaving RRC\_CONNECTED

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| **OI Index** | **Open issue** | **comment** |
| **1-1(D**ependency**)** | Supported gap patterns for MUSIM based on RAN4 RAN4 feedback  RAN2#116bis-e agreement:   * 1: From RAN2 perspective, at least the following MGL/MGRP values are applicable for MUSIM periodic gap:   MGL: 1.5ms, 3ms, 3.5ms, 4ms, 5.5ms, 6ms, 10ms, 20ms  MGRP: 20ms, 40ms, 80ms, 160ms, 320ms, 640ms, 1280ms, 2560ms.   * Can add additional MGL/MGRP if RAN4 indicates other values are needed * 2: From RAN2 perspective, at least the following MGL values are applicable for MUSIM aperiodic gap.   MGL: 1.5ms, 3ms, 3.5ms, 4ms, 5.5ms, 6ms, 10ms, 20ms   * Can add additional MGL/MGRP if RAN4 indicates other values are needed | Wait for RAN4 LS feedback on additional value |
| **1-2(D**ependency**)** | FFS if signalling supports more periodic and aperiodic gaps for MUSIM  RAN2#116bis-e agreement:   * 3: keep three gaps agreement (i.e., 2 periodic gaps and 1 aperiodic gap) for now. Ask to RAN4 to clarify if one additional periodic gap can be possible without sacrificing NW A performance (exact LS wording for the question can be discussed offline). | Wait for RAN4 LS feedback on the number of aperiodic gaps. |
| **1-3(Pre117-e-offline)** | Gap configuration (e.g AddModReleaseList, gap id, gap modification)  RAN2#116bis-e agreement:   * Stage-3 details for gap configuration (e.g AddModReleaseList, gap id, gap modification) are postponed for now (pending the general MG discussion). Can consider P8/P9 as starting point from MUSIM perspective.   *Proposal 8: [17/20] Adopt the list with ToAddModList/ToReleaseList in RRCReconfiguration for the scheduling gap configuration*  *Proposal 9: [15/19] Introduce gap ID in RRCReconfiguration message for MUSIM to identify each configured gap, and support modification or release of gaps via gap ID.* |  |
| **1-4** (tdocs invited) | How UE indicates release of gap pattern.  RAN2#116bis-e agreement:   * FFS on UAI details (alt1 or alt2). Companies are requested to provide corresponding Stage-3 CRs to next meeting.   - Alt 1: If the UEAssistanceInformation does not include a field for aperiodic or periodic gap preference, it indicates no preference for the corresponding field for aperiodic or periodic gap.  - Alt 2: Each MUSIM gap configured by network A is associated with an index, UE can indicate which MUSIM gap should be released by including the corresponding MUSIM gap index into UEAssistanceInformation Message. |  |
| **1-5(Pre117-e-offline)** | FFS what is the maximum value of the prohibit timer for MUSIM UAI without leaving RRC\_CONNECTED state |  |
| **1-6**(tdocs invited) from Nokia | FFS indication from UE in UAI on the criticality or need for the gap location to be maintained at the same position as requested. | RAN4 discussions indicates that if MG overlpas with MUSIM requested gap, UE should do NTWK-A operation on the MG-Gap not MUSIM operation. This will result in UE not monitoring PO in this stage leading to paging collision. |
| **1.7(other) from Nokia** | FFS UE behaviour until it received Network configuration related to gaps after requesting for gaps. | Whether UE can start using the requested gaps until receiving network configuration or need to wait until network configuration is not clear. In case if network command is not provided can UE continue to use the requested gaps ? |
| **1-8(other) from Sharp** | FFS UE behaviour during the gap duration that requested to be released in the UAI message | When UE request to release a gap pattern in a UAI message, whether it can be scheduled during the gap duration after snding the UAI message but before receving the response message? |

Companies are invited to provide your views on the open issues listed above for early identification:

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| **Company’s name** | **Comments, if any** |
| Nokia | We have added 1.6 and 1.7 as additional open issues to be concluded for gap configuration. Eventhough it is marked as low priority whether the periodic gaps to be disabled for mobility /RLF operations is not concluded. We propose to include them also in the list of open issues. |
| vivo | About the 1-6, we think it can be hanlded in Pre117-e-offline.  About the 1-7, we think the UE should start the gap using after configuration. We should not change the specification for no network configuration case. We also think it can be hanlded in Pre117-e-offline. |
| Sharp | We have added 1-8 which was raised in [R2-2201215](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_116bis-e/Docs/R2-2201215.zip) and the e-mail disucssionR2-2201706. We propose to include it in the list of open issues. |
| Ericsson | 1-3 seems to be part of the main gap discussion, so it seems it should rather be marked as depended on that than for discussion within this WI?  1-6 seems to intend to revert RAN4 discussion, so it should rather be done via TDoc contribution instead of an open issue?  Similarly, 1-7 and 1-8 seem to challenge the current agreements we have. We explicitly agreed that the network configures the MUSIM gaps, which also implies that it is the one responsible to release them. Therefore, we do not think those are open issues. |
| Intel | We think 1-7 and 1-8 are not open issues that need addressing. The default behvaiour is the UE has to obey network configuration. Anything further can be considered later, time permitting. |
| Samsung | 1-6: Fine to discuss but we think it is more like optimization issue.  1-7, 1-8: We share same view as Ericsson/Intel. |
| ZTE | We share the similar view as Samsung |

## Switching procedure with leaving RRC\_CONNECTED

Open issues for switching procedure for leaving RRC\_CONNECTED

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| **OI Index** | **Open issue** | **comment** |
| **2-1(Pre117-e-offline)** | FFS whether the configuration of “configured time” is mandatory when network configures UE to report the preference of leaving RRC\_CONNECTED state | The configuration of “configured time” could be optional. If it’s present, consider UE itself to be configured to provide MUSIM assistance information for leaving RRC\_CONNECTED. |
| **2-2(Pre117-e-offline)** | The value range of the waiting timer for leaving RRC Connection state.  Email[5] proposed that the value range of the waiting timer for leaving RRC Connection state could be defined as {10ms, 20ms, 40ms, 60ms, 80ms, 100ms}. |  |
| **2-3(Pre117-e-offline)** | The preferred RRC state indicator for switching notification with leaving RRC Connected state:  Alt1: RRC\_IDLE or RRC\_INACTIVE  Alt2: RRC\_IDLE, RRC\_INACTIVE, outOfConnected |  |
| **2-4 (Pre117-e-offline)** | Reconfiguration (including HO) and RLF during the wait time.  Email[5] suggested to deprioritize this discussion:   * Proposal 7: [To discuss] While the wait timer for switching notification to leave RRC connected state is running, the UE may not detect RLF or initiate connection re-establishment procedure. No SPEC change is needed. * Proposal 8: [To discuss] While the wait timer for switching notification to leave RRC connected state is running, the UE may not trigger CHO and may not perform handover command. No SPEC change is needed. * Proposal 9: [To discuss] RAN2 does not specify additional UE behavior on receiving reconfiguration of wait timer while wait timer is running. The current running CR is enough. |  |
| **2-5 (other) Sharp** | FFS UE behaviour when request of leaving RRC Connected is triggred for MUSIM or Power saving, but there is an on going procedure for Power sacing or MUSIM. | What is the UE behaviour when request leaving of RRC connection has been initiated for MUSIM but requesting of leaving RRC Connection for power saving is triggered?  What is the UE behaviour when request leaving of RRC connection has been initiated for power saving but requesting of leaving RRC Connection for MUSIM is triggered? |
| **2-6** | Whether busy indication is supported by network or not should be indicated to UE? | After UE B receives paging from network B, the UE B would like to reject the paging and transmit busy indication to network B. However, the UE B is not aware of whether the serving cell supports busy indication or not. Therefore, the network B needs to indicate UE whether busy indication is supported or not via system information. |

Companies are invited to provide your views on the open issues listed above for early identification:

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| **Company’s name** | **Comments, if any** |
| Nokia | Wait timer interaction with RLF and Re-establishment procedures is not concluded.We propose to include this as additional open issue. |
| vivo | The issue from Nokia for the interaction with RLF and Re-establishment procedures during wait timer running has been covered by 2-4. |
| Sharp | We have add 2-5 which was raised in [R2-2201216](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_116bis-e/Docs/R2-2201215.zip). We propose to include it in the list of open issues. |
| Ericsson | We think 2-5 is a corner case rather than an open issue, so it could be discussed based on TDoc for next meeting rather than listed in the open issues. |
| Lenovo | We agree 2-4 should be listed as open issue. For 2-5, we think it is a corner case.  In addition, we add 2-6. |
| ZTE | For 2-2,we think we need to discuss when to start this timer at UE side (e.g. whether to start this timer after receiving RLC ACK or not) |

## Paging collision avoidance

Companies are invited to provide Open issues if any

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| **OI Index** | **Open issue** | **comment** |
| 3-1(Pre117-e-offline) | **RAN2 update 36.304 running CR to add the text as below:Upon receiving the indication to erase any IMSI Offset value from upper layers, the UE shall set the IMSI Offset value to 0.** | P3 In R2-2201705   * For P3 and P5, can discuss in open issue collection whether there is something to address. |
| 3-2(Pre117-e-offline) | **RAN2 do not introduce extra mechanisms for PO collision on SI change indication reception or ETWS/CMAS receptions.** | P5 In R2-2201705   * For P3 and P5, can discuss in open issue collection whether there is something to address. |
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Companies are invited to provide your views on the above open issues:

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| **Company’s name** | **Comments, if any** |
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## Paging with service indication

Companies are invited to provide Open issues if any

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| **OI Index** | **Open issue** | **comment** |
| 4-1(Pre117-e-offline) from vivo | 1. **Paging cause capability can be applied to MUSIM UEs and single USIM UEs. Send an LS to SA2 to indicate RAN2’s preference.** | In R2-2200804 |
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Companies are invited to provide your views on the above open issues:

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| **Company’s name** | **Comments, if any** |
| vivo | We add one more issue 4-1 for pre-offline discussion. |
| Ericsson | 4-1 is an optimization but not necessarily an open issue that we need to address to close this WI, hence we do not think it would need to be listed on the open issues. |
| Intel | 4-1 has to be discussed separately and not essential for the completion of the MUSIM WI. |
| Samsung | 4-1 seems out of R17 MUSIM WI scope. |

## UE capabilities and other aspects

Companies are invited to provide Open issues if any

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| **OI Index** | **Open issue** | **comment** |
| 5-1(tdocs invited) | Whether to indicate which MUSIM gap patterns are supported by UE (similar with UE capability supportedGapPattern in 38.306 ) based CR in RAN4 R4-2202760 | Endorsed CR in R4-2202760 |
| 5-2(Pre117-e-offline) | 1. **Clarify in TS 38.306 and TS 36.306 that paging cause feature is optional feature without UE radio access capability parameters.** | In R2-2200804 |
| 5-3 | Whether to store MUSIM assistance configuration (e.g. *musim-AssistanceConfig*) and MUSIM gap configuration (e.g. *musim-GapConfig)* in the UE Inactive AS context. If stored, when to release or any need to restore during RRC connection resume procedure. | See relevant discussions (e.g. P4-P6) in R2-2200210 |
| 5-4 | When to release MUSIM assistance configuration (e.g. *musim-AssistanceConfig*) and MUSIM gap configuration (e.g. *musim-GapConfig)* during RRC connection re-establishment procedure | See relevant discussions (e.g. P7-P8) in R2-2200210 |

Companies are invited to provide your views on the above open issues:

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| **Company’s name** | **Comments, if any** |
| vivo | We add one more issue 5-2 for pre-offline discussion. |
| Samsung | We suggest to add two more issues 5-3 and 5-4 for pre-offline discussion for the completion of R17 MUSIM completion. Our understanding is there are general issues not within in section 2.1 an 2.2 so added here. |

# Conclusions

TBD

# References

1. RAN2#116bis-e Chair Notes.
2. R2-2200800 Running NR RRC CR for MUSIM vivo draftCR Rel-17 38.331 16.7.0 LTE\_NR\_MUSIM-Core
3. R2-2200801 Remianing issue list vivo
4. R2-2201706 Summary of [AT116bis-e][231][MUSIM] MUSIM gap details (vivo)
5. R2-2201707 Summary of [AT116bis-e][232][MUSIM] MUSIM configured time for leaving RRC connection (MediaTek)