**3GPP TSG-RAN WG2 Meeting #117-e draft R2-2203664**

**Online, February 21 – March 3, 2022**

**Agenda item: 8.3.3**

**Source: Samsung**

**Title: Report of [AT117-e][232][MUSIM] Remaining details of MUSIM network switching (Samsung)**

**Document for: Discussion & Decision**

# 1 Introduction

This document is intended to address remaining MUSIM network switching open issues as per the following email discussion guidelines:

* [AT117-e][232][MUSIM] Remaining details of MUSIM network switching (Samsung)

      Scope: Discuss MUSIM network switching based on [R2-2202240](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_117-e/Docs/R2-2202240.zip). Discuss the value ranges of MUSIM UAI prohibit timer and musim-LeaveWithoutResponseTimer. Can also discuss other remaining critical open issues for MUSIM NW switching.

      Intended outcome: Discussion report in [R2-2203664](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_117-e/Docs/R2-2203664.zip).

      Deadline: Deadline 4 (Monday W2, 1200 UTC for comments)

# 2 Contact information

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| --- | --- |
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# 3 Discussion

### 3.1 Clarification on initiation of UAI procedure for RRC\_CONNECTED

In [1], the following proposal is made:

**Proposal 1: Clarify in the specification that the UE is allowed to report its preferred RRC state to network for MUSIM purpose once since it was configured to provide MUSIM assistance information for leaving RRC\_CONNECTED.**

According to [2], the UE is allowed to initiate transmission of the UAI message multiple times whenever the UE needs to leave RRC\_CONNECTED if configured i.e. UAI procedure may be initiated again due to other UAI features

1> if configured to provide MUSIM assistance information for leaving RRC\_CONNECTED:

2> if the UE needs to leave RRC\_CONNECTED state:

3> initiate transmission of the UEAssistanceInformation message in accordance with 5.7.4.3 to provide MUSIM assistance information;

3> start the timer T3xx, if configured, with the timer value set to the *musim-LeaveWithoutResponseTimer*;

Thus, the main intent of Proposal 1 is to clarify whether UE can re-transmit UAI messages including *musim-PreferredRRC-State* while the MUSIM leave without response timer is running. Note that the TP is provided for your reference reflecting this meeting agreement (e.g. make the MUSIM leave without response timer mandatory):

1> if configured to provide MUSIM assistance information for leaving RRC\_CONNECTED and timer T3xx is not running:

2> if the UE needs to leave RRC\_CONNECTED state:

3> start the timer T3xx with the timer value set to the *musim-LeaveWithoutResponseTimer*;

3> initiate transmission of the UEAssistanceInformation message in accordance with 5.7.4.3 to provide MUSIM assistance information for leaving RRC\_CONNECTED;

**Q1: Do you agree the UE is allowed to report its preferred RRC state to network for MUSIM purpose once since it was configured to provide MUSIM assistance information for leaving RRC\_CONNECTED?**

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| --- | --- | --- |
| Company | Agree/disagree | Comments (if any) |
|  |  |  |

Summary:

### 3.2 Condition of stopping the MUSIM leave without response timer

In [1], the following proposal with the corresponding TP is provided:

**Proposal 2: UE stops the configured wait timer (e.g. *musim-LeaveWithoutResponseTimer*), if running if *musim-LeaveAssistanceConfig* is set to release.**

1> if the received *otherConfig* includes the *musim-LeaveAssistanceConfig:*

2> if *musim-LeaveAssistanceConfig* is set to *setup*:

3> consider itself to be configured to provide MUSIM assistance information for leaving RRC\_CONNECTED in accordance with 5.7.4:

2> else:

3> consider itself not to be configured to provide MUSIM assistance information for leaving RRC\_CONNECTED in accordance with 5.7.4 and stop the timer T3xx, if running:

**Q2: Do you agree the UE stops the MUSIM leave without response timer, if running if *musim-LeaveAssistanceConfig* is set to *release*?**

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| Company | Agree/disagree | Comments (if any) |
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Summary:

### 3.3 Value ranges of MUSIM UAI prohibit timer and musim-LeaveWithoutResponseTimer

RAN2 made the following agreements on the value ranges of MUSIM related timers

Timer value ranges (discussion postponed in 1st week Monday session)

* 3: The prohibit timer range is {0s, 0.5s, 1s, 2s, 3s, 4s, 5s, 6s, 7s, 8s, 9s, 10s}. We aim to add some smaller values (e.g. <0.5s, FFS which) during this meeting.
* Discuss the above FFS via offline [232]
* 5: The value range of musim-LeaveWithoutResponseTimer for leaving RRC Connection state is defined as {10ms, 20ms, 40ms, 60ms, 80ms, 100ms, spare2, spare1}. FFS if we define values for the spares (can be discussed during this meeting)
* Discuss the above FFS via offline [232]

Regarding the value range of musim-LeaveWithoutResponseTimer, up to 2 more values can be added without additional signalling overhead. It may be beneficial to define two spare values to be used if needed in the future.

**Q3: Do you agree to define two spare values in musim-LeaveWithoutResponseTimer?**

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| Company | Agree/disagree | Comments (if any) |
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Based on summarized companies's views [3], it is observed that only two companies mentioned smaller values on the prohibit timer range (i.e. 0.4s and less than 0.32s). Considering up to 4 more values can be added, it is not sufficiently clear which exact values are to be added. The rapporteur thinks that the simplest approach might add 0.1s, 0.2s, 0.3s, 0.4s or add two exact values (0.125s, 0.25s) while defining two spare values.

**Q4: Do you have any suggestions/preferences on what smaller values (e.g. <0.5s) to be added for the prohibit timer range?**

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| --- | --- | --- |
| Company | Values of the prohibit timer (e.g. 0.4s…) | Comments (if any) |
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Summary:

### 3.4 FFS how to handle aperiodic gap configurations

RAN2 made the following agreements on scheduling gap configuration.

* 1: Introduce gap ID in RRCReconfiguration message for MUSIM to identify each configured periodic gap, and support modification or release of configured gaps via gap ID. And adopt the list with ToAddModList/ToReleaseList in RRCReconfiguration for the scheduling gap configuration. FFS how to handle aperiodic gap configurations.

- Samsung agrees with intent of P1 but would like to clarify whether NW can change any parameters different from UE preference. Chair clarifies this is handled separately.

- Intel thinks the gap ID was intended for release request but is fine with it.

- ZTE wonders if this also applies for aperiodic gap? vivo clarifies this was for periodic gaps only.

- Apple wonders if this means we will have only two gaps configured?

- Samsung thinks we agreed earlier (RAN2#115e) that aperiodic gaps can be released by network.

During online discussion some companies raised the question whether both periodic and aperiodic gap configuration need to use common ToAddModList/ToReleaseList in RRCReconfiguration message. The rapporteur understands that one of main reasons on use of ToAddModList/ToReleaseList is to release the list elements from the list efficiently via the identities (e.g. gap ID). Thus, rapporteur would like to discuss first whether network is NOT allowed to explicitly release configured aperiodic gap (since it is one-shot configuration).

**Q5: Which of the following options do you agree for release of aperiodic gap configuration?**

* **Option 1: Network is allowed to release configured aperiodic gap**
* **Option 2: Network is NOT allowed to release configured aperiodic gap i.e. aperiodic gap is released implicitly after the gap period is over**

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| --- | --- | --- |
| Company | Option 1/ Option 2 | Comments (if any) |
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If we go for Option 2, then it seems straightforward to introduce separate field or IE for aperiodic gap configuration. Otherwise, there seems no critical issue to use the common design for both periodic and aperiodic gap configuration i.e. ToAddModList/ToReleaseList.

**Q6: Which of the following options do you prefer for handling of aperiodic gap configuration in RRCReconfiguration message from ASN.1 perspective?**

* **Option 1: Use the common list with ToAddModList/ToReleaseList for periodic and aperiodic gap configuration**
* **Option 2: Introduce separate field or IE for aperiodic gap configuration**
* **Option 3: Others**

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| Company | Preferred option | Comments (if any) |
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Summary:

### 3.5 Remaining open issues in [Pre117-e][230]

The main intent of this section is to conclude some of remanining open issues (might impact specification) in [3] as much as possible in order not to further discuss them in future meetings.

#### 3.5.1 Whether busy indication is supported by network or not should be indicated to UE via broadcast signalling

In [3], it was discussed whether network needs to indicate UE whether busy indication is supported or not via broadcast signalling.

**Q7: Do you agree to introduce an indication in system information to indicate whether busy indication is supported or not?**

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| Company | Agree/disagree | Comments (if any) |
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#### 3.5.2 FFS UE behavior on the interaction between power saving and MUSIM

In [3], it was discussed when the request of leaving RRC\_CONNECTED procedure for MUSIM should (not) be initiated depending on the on-going leaving RRC\_CONNECTED procedure for power saving and vice versa.

**Q8: Do you agree that RAN2 does not specify any UE behavior on the interaction between power saving and MUSIM for leaving RRC connection i.e. no specification impact?**

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| Company | Agree/disagree | Comments (if any) |
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#### 3.5.3 FFS indication from UE in UAI on the criticality or need for the gap location to be maintained at the same position as requested

In [3], it was discussed on the need of additional indication (e.g.gap priority flag) in the MUSIM-GapInfo IE to address MUSIM gap configuration conflict with measurement gaps.

**Q9: Do you agree to introduce gap priority in the MUSIM-GapInfo IE?**

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| Company | Agree/disagree | Comments (if any) |
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Summary:

### 3.6 Others

For any **critical** other issues not covered above, please feel free to indicate them into the following table.

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| --- | --- | --- |
| Company | Discussion points | Comments |
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# 4 Conclusion

TBD

# 5 Reference

[1] R2-2202240, Finalizing NW switching with leaving from RRC\_CONNECTED, Samsung

[2] R2-2202962, Capture RAN2 agreements on RRC for MUSIM, vivo(Rapportuer)

[3] R2-2203635, [Pre117-e][230][MUSIM] Summary of Stage-3 details of MUSIM (vivo)