**3GPP TSG RAN WG1 Meeting #106bis-e R1-210xxxx**

**e-Meeting, October 11th-19th, 2021**

**Agenda Item: 8.13.2**

**Source: Moderator (Huawei)**

**Title: [Draft] Summary#1 of LS on triggering signaling of temporary RS**

**Document for: Discussion and Decision**

# Introduction

A LS to RAN2 is agreed as below,

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| Agreement* Provide the functionality to be fulfilled, as well as the status about the understanding on Alt 1 and Alt 2, which could be provided by examples (including respective possible RRC parameters, if agreed, required by Alt 1 and Alt 2) to facilitate RAN2’ understanding.
* Send LS to ask RAN2 to consider the following alternatives and finalize the MAC-CE or RRC signalling design, including parameters.
* RAN1 only needs to focus on RRC parameters examples, if needed.
* ~~List of RAN1 endorsed RRC parameters for this issue will not be sent to RAN2~~

Alt 1: Bitmap approach in MAC-CE * Every Z-bit block in the bitmap corresponds to a SCell, Z>=0
* A Z-bit block indicates the temporary RS [configuration index], and a value zero indicated by the bit block means no RS resource transmitted.
* The to-be-activated SCell is indicated via the C values in the legacy SCell activation/de-activation MAC CE or in the new MAC-CE

Alt 2: Reuse A-TRS triggering framework* A trigger state is indicated by the MAC-CE explicitly
* The association between a trigger state and temporary RS for one or multiple SCells is configured by RRC according Rel-16 A-TRS triggering framework
* FFS: The value zero of the MAC-CE indication means no temporary RS is triggered by the MAC-CE for all to-be-activated SCells
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# Discussions

## Draft Text for LS

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| **1. Overall Description:**Regarding the triggering signalling of temporary RS for SCell activation, RAN1 has reached the following agreements,

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| **Agreement**For efficient activation of SCells* Option 1a: MAC CE(s) contained in a single PDSCH to trigger both SCell activation and corresponding temporary RS(s)
	+ Details FFS including timeline design for receiving temporary RS

Note: Separate from the support of Option 1a, it is up to RAN4 whether or not to consider an activation time enhancement for Option 2 without requiring further RAN1 work* Option 2: A Rel-15/16 SCell activation MAC-CE to trigger SCell activation and a Rel-15/16 DCI to trigger corresponding Rel-15/16 A-TRS(s)

Send an LS to RAN4. The LS is endorsed in R1-2104110.Agreement To trigger temporary RS, * MAC-CE at least provides the following information:
	+ temporary RSs are to be triggered on X out of Y (Y≥X) to-be-activated SCells, respectively, while no temporary RS is to be triggered on the other to-be-activated SCells.
* The following information can be provided by RRC for temporary RS for each SCell
	+ The number of RS bursts and the gap length between the RS bursts (Opt 2.3.3)
	+ Triggering offset of temporary RS (Opt 2.3.4)
		- ~~Triggering offset can be provided, e.g., by reusing existing CSI-RS framework~~
	+ QCL information (Opt 2.3.5)
		- ~~Triggering QCL information can be provided, e.g., by reusing existing CSI-RS framework~~
	+ ~~A unique temporary RS configuration index~~
	+ FFS: the maximum number of temporary RS per cell/per UE

Note: Reusing A-TRS triggering framework is not precluded.* Information for 0, 1, or more temporary RS can be provided for each configured SCell

Agreement* Provide the functionality to be fulfilled, as well as the status about the understanding on Alt 1 and Alt 2, which could be provided by examples (including respective possible RRC parameters, if agreed, required by Alt 1 and Alt 2) to facilitate RAN2’ understanding.
* Send LS to ask RAN2 to consider the following alternatives and finalize the MAC-CE or RRC signalling design, including parameters.
* RAN1 only needs to focus on RRC parameters examples, if needed.
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Alt 1: Bitmap approach in MAC-CE * Every Z-bit block in the bitmap corresponds to a SCell, Z>=0
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* The to-be-activated SCell is indicated via the C values in the legacy SCell activation/de-activation MAC CE or in the new MAC-CE

Alt 2: Reuse A-TRS triggering framework* A trigger state is indicated by the MAC-CE explicitly
* The association between a trigger state and temporary RS for one or multiple SCells is configured by RRC according Rel-16 A-TRS triggering framework
* FFS: The value zero of the MAC-CE indication means no temporary RS is triggered by the MAC-CE for all to-be-activated SCells
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Both alternatives above, i.e. Alt 1 and Alt 2 are different in term of MAC-CE design and requires different RRC signalling. Because RAN1 has no consensus on which alternative can result in a better MAC-CE design, RAN1 did not further select one from them and thus respectfully requests RAN2 to consider the two alternatives and finalize the design of MAC-CE and RRC signalling.To facilitate the RAN2 discussion on RRC signalling required for either alternative, two sets of RRC parameters are provided, respectively, as attachment. Each set has contained necessary RRC information to enable the corresponding alternative. If RAN2 chooses any triggering signalling design different from the above two alternatives, they can be examples for reference. **2. Actions:****To:** RAN2**ACTION:** RAN1 respectfully requests RAN2 to consider the two alternatives above, i.e. Alt 1 and Alt 2, and finalize the design of MAC-CE and RRC signalling. |

Comments are welcome.

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| Ericsson | We propose below changes to the LS text. <begin>Both alternatives above, i.e. Alt 1 and Alt 2 are different in term of MAC-CE design and requires different RRC signalling. Because RAN1 has no consensus on which alternative can result in a better design, RAN1 did not further select one from them and thus respectfully requests RAN2 to consider the two alternatives and finalize the design of MAC-CE and RRC signalling.To facilitate the RAN2 discussion on RRC signalling required for either alternative, two example sets of RRC parameters are provided, respectively, as attachment. Per RAN1 agreement, it is up to RAN2 to finalize the RRC signalling design.<end>Then regarding RRC parameters, The spreadsheet does not clearly show Alt 2 from RAN1 agreement. The closest alternative seems to be Alt 2b, but it is mixed with Alt 1, Alt 2a in different places. Overall, it would be difficult for colleagues not involved in the discussion to follow the examples for the alternatives. Our preference is to provide separate tabs in the spreadsheet for Alt 1 and Alt 2. We have uploaded an example for Alt 2 in [Rel-17\_RRC\_SCellActivation\_v005-Alt2Ericsson.xls](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_106b-e/Inbox/drafts/8.13.2/RRC/Rel-17_RRC_SCellActivation_v005-Alt2Ericsson.xlsx). Please incorporate the example into the spreadsheet. We do not consider Alt 2a a sub-alternative of Alt 2 - so prefer to not include it in the same tab as Alt 2. |
| Nokia, NSB | OK to go with the original proposal as well as OK to go with the Ericsson edits. A slight preference on the Ericsson edits as they somewhat streamline the response, but don’t see any material difference in the two. |
| OPPO | Slightly prefer to Ericsson’s editing, because it removes the description that the attached RRC design can still be example in case RAN2 decides on a 3rd alternative. Then we may come up with a bigger question: the LS seems to deliver a tone that, given RAN1 cannot made the selection between the two alternatives, RAN1 is asking RAN2 to likely consider both [to be specified]. Is this intentional from RAN1? If not, our suggestion is to modify as following:<begin>Both alternatives above, i.e. Alt 1 and Alt 2 are different in term of MAC-CE design and requires different RRC signalling. Because RAN1 has no consensus on which alternative can result in a better signalling design, RAN1 did not further select one from them and thus respectfully requests RAN2 to make the selection decision, by considering the two alternatives as reference candidates, and to finalize the design of MAC-CE and RRC signalling.To facilitate the RAN2 discussion on RRC signalling required for either alternative, two example sets of RRC parameters are provided, respectively, as attachment. Per RAN1 agreement, it is up to RAN2 to finalize the RRC signalling design.<end>and the Action is better to be:<begin>**ACTION:** RAN1 respectfully requests RAN2 to consider the two alternatives above, i.e. Alt 1 and Alt 2, as reference candidates and to finalize the design of MAC-CE and RRC signalling<end>BTW, we suppose any agreed bullet saying “Send an LS to RAN4. The LS is endorsed in bla-bla” should not show up in LS.  |
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## Other Issues

Issues or comments that do not fit in any of the previous sections of this document can be provided in this section.

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# Conclusions

# References

1. R1-210xxxx xxxx, Huawei

# Appendix: