**3GPP TSG RAN WG1 Meeting #107-e R1-210xxxx**

**e-Meeting, November 11th – 19th, 2021**

**Source: Moderator (ZTE)**

**Title: Email Discussion Summary of [107-e-NR-eMIMO-01]**

**Agenda item: 7.2.6**

**Document for:** **Discussion/Decision**

# Introduction

During RAN1#107-e, the contribution was submitted to discuss and clarify the ambiguity issue for gNB response for SCell-BFR [1]. During the preparation phase, companies agreed to discuss this issue in RAN1#107-e meeting.

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| [107-e-NR-eMIMO-01] Email discussion on clarification for SCell BFR (R1-2110966) – Bo (ZTE)* Determine whether specification change is needed by Nov 12
* If there is consensus on the need for specification change, CR to be drafted by Nov 17
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This summary is trying to collect/summarize companies’ input and draw potential TP based on companies’ input.

# Discussion

## Background introduction

For SCell-BFR, the gNB response for BFR MAC-CE is based on a DCI format scheduling a PUSCH transmission with a same HARQ process number as for the transmission of the first PUSCH and having a toggled NDI field value.

* Because the HARQ process number of different serving cells are defined independently according to 38.321. As shown in Figure 1, the PUSCH 1 including the BFR MAC-CE on serving cell 1 and the PUSCH 2 on serving cell 2 can be associated with same HARQ process number but correspond to different HARQ procedures. Then, if only based on the same HARQ process number, the UE will consider PDCCH 2 as the gNB response of according to current specification. As a result, it will lead the misaligned beam pair between gNB and UE and the link can’t be recovered in the case that gNB doesn’t transmit PDCCH1 because it doesn’t receive PUSCH1.

Time

Frequency

PDCCH 1

serving Cell1, HARQ-process 1

PUSCH 1

PDCCH 2

serving cell2, HARQ-process 1

PUSCH 2

**Figure 1** Two PUSCHs of two cells associated with same HARQ process number

Therefore, in [1], it is clarified that gNB response for SCell-BFR is associated with a PUSCH with a same HARQ process number and a same serving cell as for the PUSCH including the BFR MAC-CE rather than just with a same HARQ process number. The candidate draft CR is provided as follows:

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| A UE can be provided, by *schedulingRequestID-BFR-SCell*, a configuration for PUCCH transmission with a link recovery request (LRR) as described in clause 9.2.4. The UE can transmit in a first PUSCH MAC CE providing index(es) for at least corresponding SCell(s) with radio link quality worse than Qout,LR, indication(s) of presence of $q\_{new}$ for corresponding SCell(s), and index(es) $q\_{new}$ for a periodic CSI-RS configuration or for a SS/PBCH block provided by higher layers, as described in [11, TS 38.321], if any, for corresponding SCell(s). After 28 symbols from a last symbol of a PDCCH reception with a DCI format scheduling a PUSCH transmission with a same HARQ process number and on a same serving cell as for the transmission of the first PUSCH and having a toggled NDI field value, the UE- monitors PDCCH in all CORESETs on the SCell(s) indicated by the MAC CE using the same antenna port quasi co-location parameters as the ones associated with the corresponding index(es) $q\_{new}$, if any- transmits PUCCH on a PUCCH-SCell using a same spatial domain filter as the one corresponding to $q\_{new}$, if any, for periodic CSI-RS or SS/PBCH block reception, as described in clause 9.2.2, and using a power determined as described in clause 7.2.1 with $q\_{u}=0$, $q\_{d}=q\_{new}$, and $l=0$, if - the UE is provided *PUCCH-SpatialRelationInfo* for the PUCCH,- a PUCCH with the LRR was either not transmitted or was transmitted on the PCell or the PSCell, and- the PUCCH-SCell is included in the SCell(s) indicated by the MAC-CEwhere the SCS configuration for the 28 symbols is the smallest of the SCS configurations of the active DL BWP for the PDCCH reception and of the active DL BWP(s) of the at least one SCell. |

## First-round: Whether the clarified description is agreeable, and spec change is needed

According to the input from contributions [1] and Chairman’s guidance, in the first round, we firstly identify companies’ views about whether the the following proposal for clarification as raised in [1] is correct, and whether the corresponding spec change is needed. If needed, we can have a second round for drafting the corresponding CR.

***Proposal (for clarification):*** *gNB response for SCell-BFR is defined as: a DCI format scheduling a PUSCH transmission with a same HARQ process number and* ***on a same serving cell*** *as for the transmission of PUSCH carrying BFR MAC-CE and having a toggled NDI field value.*

Please provide company’s view in the table below.

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| --- | --- | --- |
| **Company** | **Regarding the above proposal, agree or not?** | **Comment, e.g., if agreed, whether the specification change is needed? Any suggestions?** |
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# Summary

The following CR/conclusion is reached based on the companies’ input.

**XXX**

# Reference

[1] R1-2110966, Draft CR on gNB response for SCell-BFR, ZTE