**3GPP TSG RAN WG1 #101 R1-200xxxx**

**e-Meeting, May 25th– June 5th, 2020**

Agenda Item: 7.2.6.3

Source: Moderator (Apple)

Title: Feature Lead Summary on L1-SINR and SCell BFR email thread #3

Document for: Discussion/Decision

# Introduction

In this contribution, we provide a summary of issues on L1-SINR and SCell BFR email thread #3

# SRS beam after BFR

Reason for change

After the SCell BFR response have been received by UE for the step 2 MAC-CE, it has been agreed that all CORESET and PUCCH beams in the failed SCell will be reset to the new beam reported in step 2 MAC-CE. It would be also beneficial to reset the beams for SRS resources with the usages of ‘codebook’ and ‘non-codebook’ and hence the beams for PUSCH to quickly recover the UL data transmission as well.

Summary of changes

For SRS for CB and nCB usages with spatial relation configured, after 28 symbols from receiving response to step 2 MAC-CE, UE applies the new beam indicated in step 2 MAC-CE for SRS on the failed SCell if a new beam is identified.

Consequences if not approved

UE has to keep previous beam after receiving response to MAC CE.

***TP for 38.213***

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| 38.213->6 Link recovery procedures[…]A UE can be provided, by *schedulingRequestIDForBFR*, 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 at least one MAC CE providing one index for at least one corresponding SCell with radio link quality worse than Qout,LR, an index $q\_{new}$ 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 a corresponding SCell. 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 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 $q\_{new}$ 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-CE- transmits SRS resource with higher layer parameter usage in SRS-ResourceSet set to 'codebook' and 'nonCodebook' using a same spatial domain filter as the one corresponding to $q\_{new}$ 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 7.3.1 with $q\_{d}=q\_{new}$, and $l=0$, if - the UE is provided *spatialRelationInfo* for the SRS resourcewhere 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. […] |

**Companies view and comments**

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| Company | View |
| Apple | Agree with this in principle, but the condition “if the UE is provided *spatialRelationInfo* for the SRS resource” should be removed. |
| Ericsson | Agree with Apple: the TP is fine in principle, but the condition on *spatialRelationInfo* is unnecessary, the UE would apply the defaults in any case. |
| Sony | Agree in principle.  |
| Nokia/NSB | Agree in principle. |
| ZTE | Support in principle.* Firstly, we share the same views with Apple and Ericsson that the condition “if the UE is provided *spatialRelationInfo* for the SRS resource” should be removed.
* Also, the PUSCH path-loss RS should be updated, e.g., “transmits DCI format 0\_1 scheduled PUSCH using a power determined as described in Clause 7.1.1 with j=2, q\_d =q\_new , and l=0,”
* Besides, we wonder how to handle the accumulative value for SRS/PUSCH/PUCCH closed loop before SCell-BFR completion? A big mismatch can be observed
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| CATT | Do not support. Spatial relation filter for SRS may be DL RS or UL RS. If it is UL RS, there is no immediate comparison between the beam quality for the existing spatial relation info and qnew (if used for UL), and it’s an overkill to mandate NW to overwrite SRS beam. If it is DL RS, likewise there is no immediate comparison between its quality and qnew when used for UL transmission. In our view what beam to use for PUCCH should be left to NW implementation, based on existing specification. As given in “reasons for change”, this is an optimization, not essential to Rel.16. |
| Qualcomm | Support. Removing the condition for spatial relation is fine. Agree that PUSCH PC parameters need to be reset as well. To CATT, agree that it is an optimization on top of beam update for PDCCH/PDSCH/PUCCH. My understanding is that optimization can still be discussed in R16, since for many discussed proposals even without them system will not break. The bar is not as high as R15.  |
| OPPO | SupportAgree with Apple that the condition “the UE is provided *spatialRelationInfo* for the SRS resource” shall be removed. |
| LG | Not supportive on this proposal because this proposal have not been adopted for PCell/PSCell BFR which is more important than SCell BFR, and we don’t prefer misaligned implementation for PCell BFR and SCell BFR. Another concern is that this feature would create a new UE behavior/implementation that the Tx beam for periodic SRS or activated semi-persistent SRS would needs to be changed across different transmission occasions without any explicit signaling to change the spatial relation of SRS from gNB. |
| vivo | Support in principle, the wording may need to be polished.Furthermore, the condition may not need to be removed as PUCCH beam update has same conditions. the UE is provided *spatialRelationInfo* for the SRS resource |
| DOCOMO | When default spatial relation is applied for the SRS resource, TP is not needed, because it follows to TCI state of PDCCH, which is automatically updated to q\_new by current spec.We are open to discuss the TP, but, we have concern to remove the condition of the UE is provided *spatialRelationInfo* for the SRS resource. If this is removed, the default spatial relation of SRS is overwritten to q\_new. Then, how gNB to update this spatial relation later? It requires RRC re-configuration to update the “overwritten” default spatial relation. This has bad effect to the operation of default spatial relation.Hence, this discussion should be limited in case UE does not apply the default spatial relation (i.e. if UE is configured spatial relation), same as PUCCH, and same as original TP.  |
| Samsung | Same view as a few other companies that although the TP is fine, the condition on *spatialRelationInfo* is unnecessary |
| Lenovo/Motorola Mobility | Agree in principle. |
| Huawei, HiSilicon | Not support. Similar concern as CATT/LG/DOCOMO. |