**3GPP TSG-RAN WG2 Meeting #128 R2-24XXXXX**

**Orlando, USA, Nov 18th – 22th, 2024**

**Source: ZTE Corporation**

**Title: [AT128][402][POS] Spatial relation info source for positioning in RRC\_INACTIVE (ZTE)**

**Agenda item: 6.3.1**

**Document for: Discussion and Decision**

# Introduction

This document is to trigger the following email discussion:

* [AT128][402][POS] Spatial relation info source for positioning in RRC\_INACTIVE (ZTE)

 Scope: Polish the RRC and MAC CRs in R2-2409565 and R2-2409607 and their shadows, and discuss to converge on what level of changes to the MAC spec are acceptable.

 Intended outcome: Agreeable CRs (with CB) in R2-2410985 / R2-2410986 / R2-2410987 / R2-2410988

 Deadline: Wednesday 2024-11-20 1600 EST

The related CR is referenced as below:

[R2-2409565](file:///C%3A%5C%5CUsers%5C%5Cmtk16923%5C%5CDocuments%5C%5C3GPP%20Meetings%5C%5C202411%20-%20RAN2_128%2C%20Orlando%5C%5CExtracts%5C%5CR2-2409565%20Correction%20on%20spatial%20relation%20info%20in%20SP%20SRS%20activation%20deactivation%20MAC%20CE%20%28R17%29.docx%22%20%5Co%20%22C%3AUsersmtk16923Documents3GPP%20Meetings202411%20-%20RAN2_128%2C%20OrlandoExtractsR2-2409565%20Correction%20on%20spatial%20relation%20info%20in%20SP%20SRS%20activation%20deactivation%20MAC%20CE%20%28R17%29.docx) Correction on spatial relation info in SP SRS activation deactivation MAC CE (R17) ZTE Corporation, Ericsson CR Rel-17 38.321 17.10.0 1977 - F NR\_pos\_enh-Core

[R2-2409566](file:///C%3A%5C%5CUsers%5C%5Cmtk16923%5C%5CDocuments%5C%5C3GPP%20Meetings%5C%5C202411%20-%20RAN2_128%2C%20Orlando%5C%5CExtracts%5C%5CR2-2409566%20Correction%20on%20spatial%20relation%20info%20in%20SP%20SRS%20activation%20deactivation%20MAC%20CE%20%28R18%29.docx%22%20%5Co%20%22C%3AUsersmtk16923Documents3GPP%20Meetings202411%20-%20RAN2_128%2C%20OrlandoExtractsR2-2409566%20Correction%20on%20spatial%20relation%20info%20in%20SP%20SRS%20activation%20deactivation%20MAC%20CE%20%28R18%29.docx) Correction on spatial relation info in SP SRS activation deactivation MAC CE (R18) ZTE Corporation, Ericsson CR Rel-18 38.321 18.3.0 1978 - A NR\_pos\_enh-Core

[R2-2409607](file:///C%3A%5C%5CUsers%5C%5Cmtk16923%5C%5CDocuments%5C%5C3GPP%20Meetings%5C%5C202411%20-%20RAN2_128%2C%20Orlando%5C%5CExtracts%5C%5CR2-2409607%20Correction%20on%20spatial%20relation%20info%20in%20SRS%20configuration%20%28R17%29.docx%22%20%5Co%20%22C%3AUsersmtk16923Documents3GPP%20Meetings202411%20-%20RAN2_128%2C%20OrlandoExtractsR2-2409607%20Correction%20on%20spatial%20relation%20info%20in%20SRS%20configuration%20%28R17%29.docx) Correction on spatial relation info in SRS configuration (R17) ZTE Corporation, Ericsson CR Rel-17 38.331 17.10.0 5101 - F NR\_pos\_enh-Core

[R2-2409608](file:///C%3A%5C%5CUsers%5C%5Cmtk16923%5C%5CDocuments%5C%5C3GPP%20Meetings%5C%5C202411%20-%20RAN2_128%2C%20Orlando%5C%5CExtracts%5C%5CR2-2409608%20Correction%20on%20spatial%20relation%20info%20in%20SRS%20configuration%20%28R18%29.docx%22%20%5Co%20%22C%3AUsersmtk16923Documents3GPP%20Meetings202411%20-%20RAN2_128%2C%20OrlandoExtractsR2-2409608%20Correction%20on%20spatial%20relation%20info%20in%20SRS%20configuration%20%28R18%29.docx) Correction on spatial relation info in SRS configuration (R18) ZTE Corporation, Ericsson CR Rel-18 38.331 18.3.0 5102 - A NR\_pos\_enh-Core

# Discussion

## Background

RAN1 has replied with the LS R2-2409508 indicating that CSI-RS and SRS configured in RRC\_CONNECTED should not be used as spatial relation RS for SRS transmission in RRC\_INACTIVE:

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| RAN1 thanks RAN2 for the LS on CSI-RS/SRS for spatial relation in RRC\_INACTIVE, with regard to RAN2’s following questions, RAN1 provides the corresponding answers.**Q1: When activating semi-persistent SRS for positioning in RRC\_INACTIVE, whether NZP-CSI-RS and SRS can be used as source for spatial relation indication in the MAC CE?**[RAN1 reply] SRS configured by the *SRS-PosResource* for RRC\_INACTIVE can be used as source, but NZP CSI-RS and SRS configured by the *SRS-Resource* cannot be used as source for spatial relation indication in MAC CE for activating semi-persistent SRS for positioning in RRC\_INACTIVE state.**Q2: When activating semi-persistent SRS for positioning in RRC\_INACTIVE, whether** **NZP-CSI-RS and SRS which are configured in RRC\_CONNECTED can be used as source for spatial relation indication in the MAC CE?**[RAN1 reply] NZP-CSI-RS and SRS configured by the *SRS-PosResource* or *SRS-Resource* in RRC\_CONNECTED cannot be used as source for spatial relation indication in the MAC CE for activating semi-persistent SRS for positioning in RRC\_INACTIVE.**Q3: Whether the above answers are applicable for SP-SRS without validity area activation in RRC\_INACTIVE, SP-SRS with validity area activation in RRC\_INACTIVE and aggregated SP-SRS activation in RRC\_INACTIVE?**[RAN1 reply] The above answers can be applicable for SP-SRS without validity area activation in RRC\_INACTIVE, SP-SRS with validity area activation in RRC\_INACTIVE and aggregated SP-SRS activation in RRC\_INACTIVE. |

The RRC CR and MAC CR are provided to address this constriction.

## RRC CR

According to online comments and offline discussion with some companies, the RRC CR is updated as below:

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| ***spatialRelationInfoPos***Configuration of the spatial relation between a reference RS and the target SRS. Reference RS can be SSB/CSI-RS/SRS/DL-PRS (see TS 38.214 [19], clause 6.2.1).If the IE *srs-ResourceId-Ext* is present, the IE *srs-ResourceId* in *spatialRelationInfoPos* represents the index from 0 to 63. Otherwise the IE *srs-ResourceId* in *spatialRelationInfoPos* represents the index from 0 to 31. If the SRS is transmitted in RRC\_INACTIVE, *srs-ResourceId,* *csi-RS-IndexServing* or *srs-PosResourceId* that configured in RRC\_CONNECTED are not contained in this field. |

**Question 1: Do companies agree with the above polishing of the RRC CR? (If you have better wording, please provide it in Comments)**

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| Companies | Agree/disagree | Comments |
| Huawei, HiSilicon |  | Without change, it is already not supported to indicate SRS ID, CSI\_RS ID or posSRS ID configured in RRC\_CONNECED in RRC\_INACTIVE. I would consider it as redundant to add it to the field description. If companies insist, it is fine with us to have the change. |
| CATT | Agree in principle but | The gNB provides SRS-Config for RRC\_CONNECTED, and SRS-Config for RRC\_INACTIVE separately. However it seems it’s gNB’s behavior that gNB should not provide the *srs-ResourceId,* *csi-RS-IndexServing* or *srs-PosResourceId* that configured in RRC\_CONNECTED in SRS-Config for RRC\_INACTIVE according to RAN1’s LS. So a Note would be better to clarify the limitation spotted by RAN1.Otherwise the limitation cannot be specified in spec. |
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## MAC CR

During online discussion, one company do not agree with the current MAC CR. Therefore, Rapporteur provides the following options:

Option 1: Take the original CR with the following word polishing (i.e., in a formative way):

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| - SRS resource ID: When F1 is set to 0, the field indicates an index for SRS resource *SRS-ResourceId* as defined in TS 38.331 [5]; When F1 is set to 1, the field indicates an index for Positioning SRS resource *SRS-PosResourceId* as defined in TS 38.331 [5]. When the MAC CE is used for SP SRS activation in RRC\_INACTIVE, this field can only indicate an index for Positioning SRS resource *SRS-PosResourceId* configured in RRC\_INACTIVE. The length of the field is 5 bits representing the index from 0 to 31; |

Option 2: Add a note under the MAC CE to address the restriction (i.e., in an informative way):

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| Note: When the MAC CE is used for activation of SP-SRS in RRC\_INACTIVE, the SRS configured in RRC\_CONNECTED and the CSI-RS cannot be configured as spatial relation source RS by this MAC CE. |

**Question 2: If companies agree to have MAC CR, which option of the MAC CR do companies agree to?**

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| Companies  | Option1/Option2/Both are ok | Comments |
| Huawei, HiSilicon |  | The spatialRelationInfoPOS is configured as follows:Within the IE, CSI-RS as the source is configured by NZP-CSI-RS-ResourceId, but within suspendConfig with RRCRelease message, there is no CSI-RS configuration and there is no *NZP-CSi-RS-ResourceId*. Hence, it is already impossible to configure CSI-RS for semi-persistent SRS in RRC\_INACTIVE. Then, coming to the MAC spec, since, it is not possible to configure CSI-RS, it is not possible to indicate CS-RS as the source for spatial relation. The change is redundant as well. |
| CATT | Option2 | The behaviors of gNB can be clarified by a Note. |
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# Conclusion

TBD