3GPP TSG-RAN WG2 #124 R2-23xxxxx

**Chicago, USA, 13th – 17th November 2023**

Agenda Item: 7.2.1

Source: Ericsson

Title: [Post124][415][POS] Rel-18 Positioning 38.331 CR (Ericsson)

Document for: Discussion, Decision

# Introduction

This is to kick off the email discussion.

* [Post124][415][POS] Rel-18 Positioning 38.331 CR (Ericsson)

Scope: Finalise and check the Rel-18 positioning 38.331 CR (including taking into account parameter list updates).

Intended outcome: Agreed CR

Deadline: Short (for RP)

# 2 Discussion

## 2.1 Bandwidth Aggregation CR

Please provide your comments on the CR for BWA. The changes are track marked with “BandwidthAggregation”

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| Company Name | Comments |
| Huawei, HiSilicon | 1/ should consdier NUL and SUL in the candicate SRS configurations for linked SRS. Also need to consdier BWP configurations. Can consider to align with the SRS configurations that we introdue in R17 for RRC\_INACTIVE  SRS-PosResSetLinkedForAggBWInactiveList-r18 ::= SEQUENCE (SIZE(1..maxNrOfLinkedSRS-PosResourceSet-r18)) OF SRS-PosResourceSetLinkedForAggBW-r18  SRS-PosRRC-AggBW-InactiveConfigList-r18 ::= SEQUENCE (SIZE (2..3)) OF SRS-PosRRC-AggBW-InactiveConfig-r18  SRS-PosRRC-AggBW-InactiveConfig-r18 ::= SEQUENCE {  srs-PosConfig-r18 SRS-PosConfig-r17,  freqInfoAdditionalCcList-r18 ARFCN-ValueNR  } |
| ZTE | To HW, SUL carrier can not be used for SRS BW aggregation. |
| ZTE | For SRS BW aggregation in RRC INACTIVE:  SRS-PosResSetLinkedForAggBWInactiveList-r18 should be deleted since it is duplicated with srs-PosConfig-r18;  SRS-PosRRC-AggBW-InactiveConfigList-r18 should be in SRS-PosRRC-InactiveConfig and SRS-PosRRC-InactiveConfig-ValidityArea, according to R1’s parameter list;  SRS-PosRRC-AggBW-InactiveConfigList-r18 should contain offset to carrier, according to R1’s parameter list  SRS-PosResSetLinkedForAggBWInactiveList-r18 ::= SEQUENCE (SIZE(1..maxNrOfLinkedSRS-PosResourceSet-r18)) OF SRS-PosResourceSetLinkedForAggBW-r18  SRS-PosRRC-AggBW-InactiveConfigList-r18 ::= SEQUENCE (SIZE (2..3)) OF SRS-PosRRC-AggBW-InactiveConfig-r18  SRS-PosRRC-AggBW-InactiveConfig-r18 ::= SEQUENCE {  srs-PosConfig-r18 SRS-PosConfig-r17,  freqInfoAdditionalCcList-r18 ARFCN-ValueNR  } |
| ZTE | For RRC CONNECTED, BW aggregation of SRS should be configured under cell group?  RRCReconfiguration-v1800-IEs ::= SEQUENCE {  srs-PosResourceSetLinkedForAggBWList-r18 SetupRelease { SRS-PosResourceSetLinkedForAggBWList-r18 } OPTIONAL, -- Need M  nonCriticalExtension SEQUENCE {} OPTIONAL  } |
| ZTE | The RAN2 agreement says there should be same considerations to SRS BW, similar like PRS BW.  nrMaxNumPRS-BandWidthAggregation-r18 (Max number of linkage information) is 256. Equivalent number for SRS can be discussed in CR finalisation.  So suggest to add the FFS here, i.e., RAN2 to discuss how many linked combination of SRS sets is allowed, where each linked combination of SRS sets contains up to 3 SRS resource set.  SRS-PosResourceSetLinkedForAggBWList-r18 ::= SEQUENCE (SIZE(1..maxNrOfLinkedSRS-PosResourceSet-r18)) OF SRS-PosResourceSetLinkedForAggBW-r18 |

## 2.2 RedCap

Please provide your comments on the CR. The changes are marked with “Redcap”

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| Company Name | Comments |
| Huawei, HiSilicon | 1/ setupRelase needs to be added for need M  2/ need to consdier NUL and SUL  -- ASN1START  -- TAG- SRS-PosTx-Hopping-START  SRS-PosTx-Hopping-r18 ::= SEQUENCE {  srs-PosConfig-r18 SRS-PosConfig-r17,  bwp-18 BWP,  srs-PosUplinkTransmissionWindowConfig-r18 SRS-PosUplinkTransmissionWindowConfig-r18 OPTIONAL --Need M  }  SRS-PosUplinkTransmissionWindowConfig-r18 ::= SEQUENCE {  windowPeriodicityAndOffset-r18 CHOICE {  periodicityAndOffset-r18 SRS-PeriodicityAndOffset-r16,  periodicityAndOffset-Ext-r18 SRS-PeriodicityAndOffsetExt-r16  },  duration-r18 ENUMERATED {s1,s2,s4,s6},  ...  }  -- TAG-SRS-PosTx-Hopping-STOP  -- ASN1STOP |
| ZTE | In RRC\_INACTIVE, srs-PosTx-Hopping-r18 should be within SRS-PosRRC-InactiveConfig-r17, according to R1 parameter list |
| ZTE | semi-persistent-r18 SEQUENCE {  periodicityAndOffset-sp-r18 SRS-PeriodicityAndOffset-r16 OPTIONAL, -- Need R  periodicityAndOffset-sp-Ext-r18 SRS-PeriodicityAndOffsetExt-r16 OPTIONAL, -- Need R  ...  },  periodic-r18 SEQUENCE {  periodicityAndOffset-p-r18 SRS-PeriodicityAndOffset-r16 OPTIONAL, -- Need R  periodicityAndOffset-p-Ext-r18 SRS-PeriodicityAndOffsetExt-r16 OPTIONAL, -- Need R  Symbol offset should be added for SP and periodic SRS. |
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## 2.3 LPHAP

Please provide your comments on the CR. The changes before RAN2#124 are marked with NR\_pos\_enh2 and the changes after are track marked with RAN2#124\_LPHAP

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| Company Name | Comments |
| Huawei, HiSilicon | 1/ Not sure why the editor’s NOTE is still here  Editor’s Note: For preconfigured SRS, there is no need to start the *inactivePosSRS-ValidityAreaTAT* immediately. But for Periodic SRS the above clause would be needed. Agreement says: “Periodic SRSis supported to be configured with validity area. This agreement does not affect preconfigured SRS.” How to differentiate normal and preconfigured SRS. FFS How to start/stop the timer.  2/ Not sure what is the agreement for this change?  Upon receiving a positioning SRS configuration for RRC\_INACTIVE release request from lower layers, the UE shall:  1> release the configured *srs-PosRRC-Inactive*, if configured;  1> release the configured *srs-PosRRC-InactiveValidityArea*, if configured.  3/ if the trigger is from upper layer, not sure why the RRC layer determines the access category. This can be dicsused in the future meetings.  "Requst for configuration" can be removed  1> else if *srs-PosRRC-InactiveValidityAreaConfig* is configured and the resumption of the RRC connection is triggered due to upper layers request for configuration or activation of preconfigured SRS for positioning when the UE is camped in one of the cells indicated in *srs-PosConfigValidityArea*:  2> select '8' as the Access Category;  2> set the *resumeCause* to *srs-PosConfigOrActivationReq*;  4/ should be "indicate to the lower layer to update TA and stored RSRP"  1> else if cell reselection occurs when *srs-PosRRC-InactiveValidityAreaConfig* is configured and if the cell is included in the *srs-PosRRC-InactiveValidityAreaConfig*:  2> if *autonomousTA-AdjustmentEnabled* is configured;  3> autonomously adjusts the time advance value and the stored RSRP for TA validation.  5/ the realed UE behavior seems to have already been covered in TS 38.213    When the UE is (pre)configured to transmit SRS for positioning in a validity area, the UE shall:  1> if the RS in *spatialRelationInfoPos* cannot be accurately measured:  2> suspend the transmission of the SRS for positioning resource.  For the power control of an SRS for positioning (pre)configuration in validity area, the UE shall:  1> if pathloss RS is provided in *pathlossReferenceRS-Pos*:  2> use the provided pathloss RS;  2> if pathloss RS cannot be accurately measured:  3> calculate pathloss based on the RS resources obtained from SS/PBCH block of the new camping cell that the UE uses to obtain MIB.  6/ The preconfigured SRS should be a list with the following agreement in the last meeting. When multiple validity areas are configured, it should also be clarified that the validity areas do not overlap.    srs-PosRRC-InactiveValidityAreaConfig-r18 SetupRelease { SRS-PosRRC-InactiveValidityAreaConfig-r18 } OPTIONAL, -- Need M  Also, there should be only a single SRS-PosRRC-InactiveValidityAreaConfig that can be configured as "not-preconfigured"  7/ The relase of the SRS configuration does not necessarily follow RAN paging. The network can choose to release the configuration e.g., at a periodic RNAU, or SRS configuration/activation request or even e.g., SDT procedure. No need to mention about paging here    8/ When the RACH procedure is successful, the RRC layer should indicate to the lower layer the applicable SRS configuration when pre-configured is configured for activation request and for configfuation request when the UE moves ouf of the validity area.  1> else if *srs-PosRRC-InactiveValidityAreaConfig* is configured and the resumption of the RRC connection is triggered due to cell reselection to a cell that is not included in *srs-PosConfigValidityArea* and there is an on-going SRS for positioning transmission:  2> select '8' as the Access Category;  2> set the *resumeCause* to *srs-PosConfigOrActivationReq*;  1> else if *srs-PosRRC-InactiveValidityAreaConfig* is configured and the resumption of the RRC connection is triggered due to upper layers request for configuration or activation of preconfigured SRS for positioning when the UE is camped in one of the cells indicated in *srs-PosConfigValidityArea*:  2> select '8' as the Access Category;  2> set the *resumeCause* to *srs-PosConfigOrActivationReq*; |
| CATT | 2> if *srs-PosRRC-InactiveValidityArea* is configured:  3> apply the configuration and instruct MAC to start the *inactivePosSRS-ValidityAreaTAT*;  Should be “ *srs-PosRRC-InactiveValidityAreaConfig*”. |
| CATT | Upon receiving a positioning SRS configuration for RRC\_INACTIVE release request from lower layers, the UE shall:  1> release the configured *srs-PosRRC-Inactive*, if configured;  1> release the configured *srs-PosRRC-InactiveValidityArea*, if configured.  This has not been agreed yet. Under what condition the lower layer will send SRS release request is not clear. |
| CATT | SRS-PosRRC-InactiveValidityAreaConfig-r18 ::= SEQUENCE {  configType-r18 ENUMERATED {preconfig, non-preconfig},  srs-PosConfigValidityArea-r18 SEQUENCE (SIZE(1..maxNrOfCellsInVA-r18)) OF CellIdentity,  srs-PosConfigNUL-r18 SRS-PosConfig-r17 OPTIONAL, -- Need R  srs-PosConfigSUL-r18 SRS-PosConfig-r17 OPTIONAL, -- Need R  bwp-NUL-r18 BWP OPTIONAL, -- Need S  bwp-SUL-r18 BWP OPTIONAL, -- Need S  areaValidityTA-Config-r18 SetupRelease { AreaValidityTA-Config-r18 } OPTIONAL, -- Need M  srs-PosHyperSFN-Index-r18 ENUMERATED {even0, odd1} OPTIONAL, --Need S  ...  }  For preconfigured SRS, multiple SRS can be configured and each of them is associated with a validity area. The current structure cannot support that. |
| CATT | SRS-PosRRC-InactiveValidityAreaConfig-r18 ::= SEQUENCE {  configType-r18 ENUMERATED {preconfig, non-preconfig},  srs-PosConfigValidityArea-r18 SEQUENCE (SIZE(1..maxNrOfCellsInVA-r18)) OF CellIdentity,  srs-PosConfigNUL-r18 SRS-PosConfig-r17 OPTIONAL, -- Need R  srs-PosConfigSUL-r18 SRS-PosConfig-r17 OPTIONAL, -- Need R  bwp-NUL-r18 BWP OPTIONAL, -- Need S  bwp-SUL-r18 BWP OPTIONAL, -- Need S  areaValidityTA-Config-r18 SetupRelease { AreaValidityTA-Config-r18 } OPTIONAL, -- Need M  srs-PosHyperSFN-Index-r18 ENUMERATED {even0, odd1} OPTIONAL, --Need S  ...  }  1.We think the srs-PosHyperSFN-Index-r18 should not be included in IE SRS-PosRRC-InactiveValidityAreaConfig-r18. According to the RAN1 parameter list, the hyper SFN is contained in “ In srs-PosResource in srs-PosResourceSet in srs-PosConfig in SRS-PosRRC-InactiveConfig-ValidityArea in RRCRelease”, rather than include the hyper SFN in SRS-PosRRC-InactiveValidityAreaConfig-r18 directly. The hyper SFN is used to determine the SRS time position, so it should be only configured together with the SRS periodity in IE SRS-PosResource-r16.  2.Additionally, the SRS perodicity should be extended to support 20480ms. |

# Conclusion

In the previous sections we made the following observations:

Based on the discussion in the previous sections we propose the following:

# References