**3GPP TSG-RAN WG2 Meeting #127 R2-24xxxxx**

**Maastricht, Netherlands, 19-23 August 2024**

**Agenda item: 7.2.5**

**Source: Ericsson**

**Title:** **[Post127][405][POS] Rel-18 positioning RRC CRs (Ericsson)**

**Document for: Discussion and Agreement**

# 1 Introduction

This document is to kick off the following email discussion:

* [Post127][405][POS] Rel-18 positioning RRC CRs (Ericsson)

 Scope: Check the CRs in R2-2407721 and R2-2407769, including confirming list extension mechanism for R2-2407769.

 Intended outcome: Agreed CRs

 Deadline: Short (for RP)

# 2 Contact Information

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| Company Name | Contact: Name (E-mail) |
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# 3 Discussions

## 3.1 SL RRC Correction for CBR Range

As captured in main session in RAN2#127

=> guidance is that NBC change for SLPP

=> For the RRC CR in R2-2407769 discuss the option over email discussion

For both alternatives, a UE that indicates the support for Rel-18 SL CBR feature (*sl-PRS-CongestionCtrl-r18*) shall support the CR and consequently the 18.3.0 RRC version of the specification. This means RAN2 assumes there are no UEs and Networks that implemented the feature based on 38.331 18.2.0.

During SL pos online discussion, companies expressed preferences for a BC solution (Alt 2), but during late offline discussions, it was discovered that a “real ASN.1 change” (Alt 1) was probably the best and simplest for UE and Network implementations.

*Alt 1: NBC Change (“real ASN.1 change”)*

Alt 1 means that the ASN.1 in 18.2.0 is directly modified to have the correct list sizes. To ensure that there are no problems with UEs (that do not support SL CBR feature), a NW will not include the corresponding configuration fields unless the UE indicates support of the feature in UE capabilities. The changes have isolated impact on the ASN.1 to this particular feature, but no impact on other features. In the past, RAN2 indicated similar ASN.1 deviations on the specification web page, since the ASN.1 in 18.2.0 cannot be used to implement all Rel-18 features.

A CR of Alt 1 is provided in R2-2406510

*Alt 2: BC Change (Dummify erroneous fields/IEs and introduce new with correct sizes)*

Instead of modifying the ASN.1 as in Alt 1, we replace the erroneous fields/IEs with new fields/IEs with correct size. The erroneous fields/IEs are dummified (meaning that they remain in the ASN.1, but a network shall not include them in messages sent to UE, and UE ignores the fields/IEs if anyway received). The new fields/IEs are introduced respecting the RRC extension principles. Hence, the new ASN.1 is backwards compatible with 18.2.0. Still, UEs and Networks that intend to support Rel-18 SL CBR feature must support the CR and 18.3.0. Typically, we did in the past to indicate similar issues on the specification web page.

A CR of Alt 2 is provided in R2-2407769 (Section 6.3.5, 6.4)

Please provide which alternative is preferred and any comments.

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| Company Name | Preferred Alternative (Alt 1/Alt 2) | Comments |
| ZTE | Alt1 | Alt 1 is simpler and more readable considering there is no implementation of the corresponding feature at this stage. |
| CATT(Proponent) | Alt2 | Please follow the conclusion which has been reached at the meeting online.Extension of CBR ranges (NBC and BC alternatives)R[2-2406510](file:///E%3A%5CWORK%5C1%203GPP%5CMeeting%5CRAN2%20127-Maastricht%5C2%20During%5CDocs%5CR2-2406510.zip) Corrections on SL positioning in TS 38.331 CATT CR Rel-18 38.331 18.2.0 4879 - F NR\_pos\_enh2-Core* Changes 3 and 4 are merged into the rapporteur CR

R[2-2407559](file:///E%3A%5CWORK%5C1%203GPP%5CMeeting%5CRAN2%20127-Maastricht%5C2%20During%5CDocs%5CR2-2407559.zip) Corrections for the extension of these IEs which do not support the maximum number of CBR ranges and levels for sidelink positioning in TS 38.331 CATT, Ericsson draftCR Rel-18 38.331 18.2.0 F FS\_NR\_pos\_enh2* Dummification to replace the field names completely as usual
* No capability is introduced
* To be merged into the rapporteur CR
* Change will be indicated as mandatory for UEs and networks implementing the concerned functionality

This short email is not for the decision on different options which have been finished online. I don’t find any reason to revise the conclusion we have reached online. |
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## 3.2 Validity Area list size correction

For validity area, the correction is needed so that the number of cells in validity area can be aligned with that of NRPPa. As discussed during online.

[R2-2406793](file:///C%3A%5CUsers%5Cmtk16923%5CDocuments%5C3GPP%20Meetings%5C202408%20-%20RAN2_127%2C%20Maastricht%5CExtracts%5CR2-2406793%20Correction%20on%20SRS%20transmission%20in%20RRC_INACTIVE.docx) Correction on SRS transmission in RRC\_INACTIVE ZTE Corporation draftCR Rel-18 38.331 18.2.0 F NR\_pos\_enh2

* Constant to be replaced with maxNrOfCellsInVA-Ext-r18 (also equal to 16)
* No capability is introduced
* To be merged into rapporteur CR
* Change will be indicated as mandatory for UEs and networks implementing the concerned functionality

During Comeback session, it was mentioned that this can be simplified espcially considering the implemntation aspects which has to consider two lists instead of one list. Hence, we propose below alternatives.

Below we show that there are two different options to solve this issue (i.e use only one list) apart from the agreed third option.

For all options, a UE that indicates the support for LPHAP shall support the CR and consequently the 18.3.0 RRC version of the specification. This means RAN2 assumes there are no UEs and Networks that implemented the feature based on 38.331 18.2.0.

*Option 1: NBC change. We can update the value of* maxNrOfCellsInVA-r18 diretcly to 32. This means that the ASN.1 in 18.2.0 is directly modified to have the correct list sizes. To ensure that there are no problems with UEs (that do not support LPHAP feature), a NW will not include the corresponding (srs-PosRRC-InactiveEnhanced) configuration fields unless the UE indicates support of the feature in UE capabilities. The changes have isolated impact on the ASN.1 to this particular feature, but no impact on other features. In the past, RAN2 indicated similar ASN.1 deviations on the specification web page, since the ASN.1 in 18.2.0 cannot be used to implement all Rel-18 features.

SuspendConfig ::= SEQUENCE {

:

    srs-PosRRC-InactiveEnhanced-r18     SetupRelease { SRS-PosRRC-InactiveEnhanced-r18 }                    OPTIONAL,   -- Need M

:

}

SRS-PosRRC-InactiveValidityAreaConfig-r18 ::= SEQUENCE {

    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                     AreaValidityTA-Config-r18                                      OPTIONAL,   -- Need R

    ...

}

:

maxNrOfCellsInVA-Ext-r18 = 32

*Option 2: Dummy the previous defintion and create a new one with 32.* Instead of modifying the ASN.1 as in Option 1, we replace the erroneous fields/IEs with new fields/IEs with correct size. The erroneous fields/IEs are dummified (meaning that they remain in the ASN.1, but a network shall not include them in messages sent to UE, and UE ignores the fields/IEs if anyway received). The new fields/IEs are introduced respecting the RRC extension principles. Hence, the new ASN.1 is backwards compatible with 18.2.0. Still, UEs and Networks that intend to support Rel-18 LPHAP feature must support the CR and 18.3.0. Typically, we did in the past to indicate similar issues on the specification web page.

SRS-PosRRC-InactiveValidityAreaConfig-r18 ::= SEQUENCE {

 dummy 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 AreaValidityTA-Config-r18 OPTIONAL, -- Need R

 ...,

 [[

 srs-PosConfigValidityAreaExt-r18 SEQUENCE (SIZE(1..maxNrOfCellsInVA-Ext-r18)) OF CellIdentity OPTIONAL -- Need R

 ]]

}

maxNrOfCellsInVA-Ext-r18 = 32

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| *SRS-PosRRC-InactiveValidityAreaConfig* field descriptions |
| ***dummy***This field is not used in the specification. If received it shall be ignored by the UE. |

*Option 3: Use the previous definition and create a new extention to have another so that a total of 32 cells can be defined in a VA. Same as agreed during online session.*

SRS-PosRRC-InactiveValidityAreaConfig-r18 ::= SEQUENCE {

 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 AreaValidityTA-Config-r18 OPTIONAL, -- Need R

 ...,

 [[

 srs-PosConfigValidityAreaExt-r18 SEQUENCE (SIZE(1..maxNrOfCellsInVA-Ext-r18)) OF CellIdentity OPTIONAL -- Need R

 ]]

}

maxNrOfCellsInVA-Ext-r18 = 16

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| ***srs-PosConfigValidityArea/ srs-PosConfigValidityAreaExt***This field provides list of cells present in the validity area. The maximum number of cells in a validity area is 32 which can be provided by using these two fields *srs-PosConfigValidityArea* and *srs-PosConfigValidityArea-Ext*. |

Please provide which option would you prefer and any comments.

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| Company Name | Preferred Options (Option 1/Option 2/Option3) | Comments |
| ZTE | Option 3 | This BC change is readable for this change, so option2/3 are both ok. Option 3 is what we agreed during online so we prefer this. |
| CATT | Option 3 | Stick to the conclusion reached online which follows the same rule for Q1. We can’t revise the online conclusion freely.  |
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## 3.3 Any comments on CR available in R2-2407721

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## 3.4 Any other SL corrections

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## 3.5 Any other Comments

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