**3GPP TSG-RAN WG2 Meeting #119 electronic R2-2208820**

**Electronic, 17th - 29th August, 2022**

Source: Huawei, HiSilicon

Title: [Offline-406][POS] Rel-15 16 positioning RRC (Huawei)

Agenda Item: 5.3.2

Document for: Discussion and Decision

# Introduction

This document provides a summary of the following contributions for R15/R16 RRC corrections for the following email discussion

* [AT119-e][406][POS] Rel-15/16 positioning RRC (Huawei)

Scope: Evaluate the CRs in R2-2207408/R2-2207561/R2-2207873/R2-2207874/R2-2207875/R2-2207876 and check for agreeability.

Intended outcome: Agreed CRs

Deadline: Tuesday 2022-08-23 1200 UTC

The following has been submitted to AI 5.3.2

|  |  |  |
| --- | --- | --- |
| [**R2-2207408**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_119-e/Docs/R2-2207408.zip) | Change request about Periodicity in SRSp configuration | vivo |
| [**R2-2207561**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_119-e/Docs/R2-2207561.zip) | Change request about Periodicity in SRSp configuration | vivo |
| [**R2-2207873**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_119-e/Docs/R2-2207873.zip) | Correction for SRS-PeriodicityAndOffset-R16 | Huawei, HiSilicon |
| [**R2-2207874**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_119-e/Docs/R2-2207874.zip) | Correction for SRS-PeriodicityAndOffset-R17 | Huawei, HiSilicon |
| [**R2-2207875**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_119-e/Docs/R2-2207875.zip) | Correction for the capability of SRS-PeriodicityAndOffset-R16 | Huawei, HiSilicon |
| [**R2-2207876**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_119-e/Docs/R2-2207876.zip) | Correction for the capability of SRS-PeriodicityAndOffset-R17 | Huawei, HiSilicon |

## Contacts

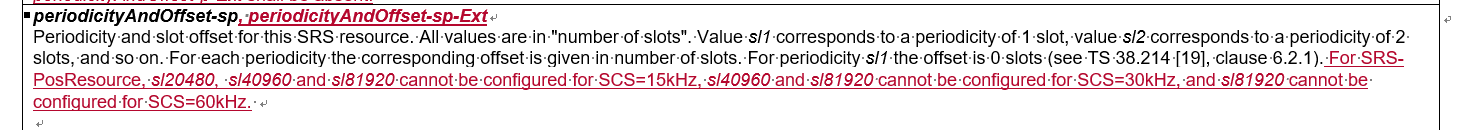
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# Discussion on SRS periodicities

## Correction to RRC spec

### 2.1.1 SRS periodicity and SCS

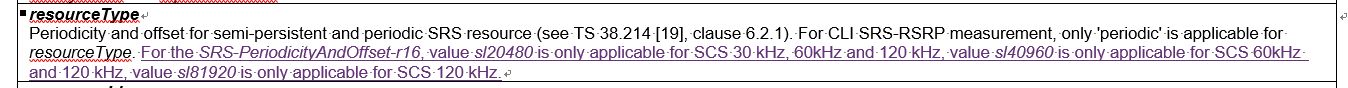
In R2-2207873/R2-2207874, it is also mentioned that certain SRS periodicity should only be restricted to certain SCS.



In R2-2207409/R2-2207561, it is mentioned that there are the following restrictions on the periodicity and SCS

|  |
| --- |
| for 30/60/120kHz only  sl20480 INTEGER(0..20479)  for 60/120kHz only  sl40960 INTEGER(0..40959)  for 120kHz only  sl81920 INTEGER(0..81919) |

Hence, the following change is proposed

***Question1, do companies agree that restriction should be added for RRC spec for the configuration of SRS periodicity that***

* ***Periodicity sl20480 is only applicable for scs of 30/60/120kHz***
* ***Periodicity sl40960 is only applicable for scs of 60/120kHz***
* ***Periodicity sl81920 is only applicable for scs of 120kHz***

|  |  |  |
| --- | --- | --- |
| Company | Yes/No | Comments |
| Intel |  | Should not it be partially covered by the change in R2-2207873 as “For SRS-PosResource, *sl20480*, *sl40960* and *sl81920* cannot be configured for SCS=15kHz, *sl40960* and *sl81920* cannot be configured for SCS=30kHz, and *sl81920* cannot be configured for SCS=60kHz. “? |
| ZTE | Yes |  |
| Qualcomm | Yes | Not essential, but O.K. to merge into another CR. |
| CATT | Yes |  |
| Ericsson | Yes | Same view as QC, can be merged to Huawei CR below |
| vivo | Yes | Agree to follow HW’s version to add the restrictions in the ***periodicityAndOffset*** fields***.*** |
| Lenovo | Yes but | Is already covered by the CRs in R2-2207873/R2-2207874. |
| Samsung | Yes | Same view with QC and E//. This can be merged to R2-2207873/R2-2207874. |
| Xiaomi | Yes |  |
| Nokia | Yes |  |

***Summary***

* Most of the companies think the change is OK but can be merged to R2-2207873/R2-2207874.
* The change above is essentially equivalent to the changes in R2-2207873/R2-2207874.

***Proposal1: Restriction should be added for RRC spec for the configuration of SRS periodicity: For SRS-PosResource, sl20480, sl40960 and sl81920 cannot be configured for SCS=15kHz, sl40960 and sl81920 cannot be configured for SCS=30kHz, and sl81920 cannot be configured for SCS=60kHz. (10/10)***

### 2.2.2 Missing SRS periodicities,

In R2-2207873/R2-2207874, it is mentioned that the following agreements have been made regarding the periodicities of SRS configuration.

|  |
| --- |
| Agreement:  The following periodicity values of DL PRS resource allocation are supported depending on SCS   * {4, 5, 8, 10, 16, 20, 32, 40, 64, 80, 160, 320, 640, 1280, 2560, 5120, 10240} slots, µ = 0, 1, 2, 3 for SCS 15, 30, 60 and 120kHz respectively |

However, for the current list of periodicities, it is found that the values corresponding to 64\* for =1,2,3 are missing and the values corresponding to for =1. Thus, it is proposed that these new values need to be added.

***Question2, do companies agree that the new value for SRS periodicities sl128, sl256, sl512, and sl20480 should be added for periodic and semi-persistent SRS?***

|  |  |  |
| --- | --- | --- |
| Company | Yes/No | Comments |
| Intel | Yes | Looks ok, the space should be removed between extension mark and comma. |
| ZTE | Yes |  |
| Qualcomm | Yes |  |
| CATT | Yes |  |
| Ericsson | Yes |  |
| vivo | Yes |  |
| Lenovo |  | We are bit confused here about the SRS periodicities sl128, sl256, sl512 and are wondering what takes precedence: the agreements which have been minuted in the RAN1#99 report or the official information given in the RAN1 consolidated parameter list, e.g. in R1-2003190 (received per LS R2-2004380 in RAN2#110-e). In that parameter list the periodicities sl128, sl256, sl512 are not mentioned (see tab “Positioning” and row #66).  We agree that the SRS periodicity sl20480 is currently missing in RRC.  Furthermore, we don’t see the stringent need to add the condition below in the field descriptions. Normally, we trust NW implementation to handle the signaling correctly.  “When the field periodicityAndOffset-p/sp is present, the field periodicityAndOffset-p-Ext/sp-Ext shall be absent.”  [HW] Thanks for the comment. The sentence has been removed |
| Samsung | Yes | But we can’t understand why the new field *periodicityAndOffset-sp-Ext-r16* should be newly defined. We can simply use the extension mark in *SRS-PeriodicityAndOffset-r16* to add those values there.  Also in R2-2207873, the below sentence in the field descriptions seems not needed. Since *periodicityAndOffset-p/periodicityAndOffset-sp* are mandatory fields, they should be always present.  “When the field *periodicityAndOffset-p/sp* is present, the field *periodicityAndOffset-p-Ext* shall be absent.”  [HW] We think extending the original field is also workable. But since we need to add a new capability for the field, we think it is better to be extended by critical extension to replace the previous field.  On the second comment, the sentence has been removed |
| Xiaomi | Yes |  |
| Nokia | Yes |  |

***Summary***

* Most of the companies agree that the change is needed
* Intel pointed out that the space needs to be removed between extension marker and comma

***Proposal2: New value for SRS periodicities sl128, sl256, sl512, and sl20480 should be added for periodic and semi-persistent SRS. (9/10)***

## Correction to UE capability spec

With the newly introduced SRS periodicity, there are backward compatibility issues that old UE may not support the newly added values.

Then, in R2-2207873/R2-2207874, it is proposed that a new capability is added for the newly added SRS periodicities. The field description for this new capability field is added in R2-2207875/R2-2207876

***Question3: Do companies agree that new capability is needed for the newly added periodicities for SRS?***

|  |  |  |
| --- | --- | --- |
| Company | Yes/No | Comments |
| Intel | Yes | Looks ok, for 306 CR, the suffix -r16 should be added for the field name srs-PeriodicityAndOffsetExt in the field description. |
| ZTE | Yes |  |
| Qualcomm | Yes |  |
| CATT | Yes | Mulit-RTT positioning will be added in the cover sheet.  **Impacted functionality:**  UL-TDOA positioning, and UL-AOA positioning |
| Ericsson | Yes |  |
| vivo | Yes |  |
| Lenovo |  | 38.331 CRs in R2-2207873/R2-2207874:  The addition of UE capability srs-PeriodicityAndOffsetExt-r16 in IE Phy-ParametersCommon is NBC. Should discuss whether NBC change is acceptable or not. We prefer a backwards-compatible change.  38.306 CRs in R2-2207875/R2-2207876:   * Rel-16 CR   + Cover page: wrong meeting start date “15th”; wrong CR#0781 added (should be #0780).   + Suffix “-r16” is missing for the UE capability and the description has not been added in alphabetical order. * Rel-17 CR   + Cover page: wrong meeting start date “15th”.   + The capability name srs-ExtendedPeriodicityAndOffset-v16xy is not aligned with the 38.331 CRs and the Rel-16 38.306 CR.   + The description has not been added in alphabetical order. * For both CRs: To keep the context we think a condition should be added in the capability description, e.g. “The UE indicating support of this feature shall also indicate the support of srs-PosResources-r16 or srs-PosResourceSP-r16”. |
| Samsung | Yes |  |
| Xiaomi | Yes |  |
| Nokia | Yes |  |

***Summary:***

* The majority of the companies think that it is needed to add a new capability field for the newly added periodicities
* Lenovo thinks that the change in the UE capability is NBC. And prefer a backward compatible change
* Lenovo also mentions a few editorial issues in the CR

***Proposal3: Add new capability is needed for the newly added periodicities for SRS. (10/10)***

# Conclusion

Based on the summary as above, we propose the following for discussion:

***Proposal1: Restriction should be added for RRC spec for the configuration of SRS periodicity: For SRS-PosResource, sl20480, sl40960 and sl81920 cannot be configured for SCS=15kHz, sl40960 and sl81920 cannot be configured for SCS=30kHz, and sl81920 cannot be configured for SCS=60kHz. (10/10)***

***Proposal2: New value for SRS periodicities sl128, sl256, sl512, and sl20480 should be added for periodic and semi-persistent SRS. (9/10)***

***Proposal3: Add new capability is needed for the newly added periodicities for SRS. (10/10)***