3GPP TSG-RAN WG2 #113e R2-210xxxx

Electronic meeting, 25th January – 5th February 2021

Agenda Item: 6.1.1

Source: Ericsson

Title: Summary of [AT113-e][016][POS V2X NR16] RRC III

Document for: Discussion, Decision

# 1 Introduction

This document is to handle the following email discussion:

* [AT113-e][016][POS V2X NR16] RRC III (Ericsson)

Scope: Treat R2-2101733, R2-2101825, R2-2100302, R2-2101571, R2-2100887, R2-2100888

Phase 1, determine agreeable parts, Phase 2, for agreeable parts Work on CRs.

Intended outcome: Report and Agreed CRs.

Deadline: See below

Regarding the deadlines, I would like to set the following 2 deadlines:

1) First deadline on **Thursday Feb 28 1200 UTC** to settle scope what is agreeable.

2) Second deadline on **Thursday Feb 4 1200 UTC** to agree the CRs, whenever needed.

# 2 Contact information

|  |  |
| --- | --- |
| Company (Name) | Email |
| Ericsson ([R2-2101733](http://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_113-e/Docs/R2-2101733.zip)) | martin.van.der.zee@ericsson.com |
| OPPO ([R2-2100887](http://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_113-e/Docs/R2-2100887.zip), [R2-2100888)](http://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_113-e/Docs/R2-2100887.zip) | [qianxi.lu@oppo.com](mailto:qianxi.lu@oppo.com)  fuzhe@oppo.com |
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# 3 Discussion

## 3.1 System information POS, V2X, On demand

### 3.1.1 Clarification for SIBs scheduled in posSchedulingInfoList

[R2-2101733](http://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_113-e/Docs/R2-2101733.zip) Clarification for SIBs scheduled in posSchedulingInfoList Ericsson CR Rel-16 38.331 16.3.0 2433 - F NR\_newRAT-Core

*Reason for change:*

When system information is changed, the UE is notified (systemInfoModification) in the current modification period about the change, and the updated system information is transmitted in the next modification period. However in case of ETWS/CMAS the system information is already changed in the current modification for latency reasons. An ETWS/CMAS capable UE immediately acquires the new scheduling in SIB1 to receive the ETWS/CMAS SIBs when notificed (etwsAndCmasIndication). An ETWS/CMAS capable UE is able to handle this, because it only impacts the ETWS/CMAS SIBs.

However the SIBs scheduled in posSchedulingInfoList are concatenated to the SIBs scheduled in schedulingInfoList. In case the ETWS/CMAS SIBs are transmitted in separate SI-messages from the legacy SIBs (e.g. because they have a different periodicity) then the SIBs scheduled in posSchedulingInfoList will be transmitted in different SI-messages during a modification period where ETWS/CMAS transmission is started (or stopped), as shown in figures below taking posSIBx-y as an example:

A picture containing graphical user interface

Description automatically generated

Normally the UE does not expect the SIB scheduling to change during a modification period, other than for ETWS/CMAS SIBs. It should be clarified that SIBs scheduled in posSchedulingInfoList may be transmitted in different SI-message during a modification period where ETWS/CMAS is started or stopped.

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| Company | Agree (y/n) | Comments |
| ERI (proponent) | yes | For information: this issue, that the posSIB may be scheduled in a different SI-message when ETWS/CMAS starts, and the UE may not be able to receive this posSIB in current/next MP, was also clarified for LTE when the new schedulingListExt was added, see [R2-2011247](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_112-e/Inbox/R2-2011247.zip). |
| OPPO (Qianxi) | Yes |  |
| Huawei, HiSilicon | N | The chagne not seem to be essential but just clarifications. It is generaly RAN2 understanding that modification period is not applicable for ETWS and CMAS |
| Qualcomm Incorporated | yes | This is similar to what RAN2 did for SIB19+ issue.  We think the proposed text would be better suited after “UEs in RRC\_IDLE or in RRC\_INACTIVE shall monitor..” or “ETWS or CMAS capable UEs in RRC\_IDLE or in RRC\_INACTIVE..” instead. The former looks more in line with what RAN2 did for SIB19+ issue. |
| Apple | Yes | The similar clarificaiton also appeared in TS 36.331 in clause 5.2.1.3 |
| Samsung | Yes | Same view with Ericsson. |
| ZTE(Yuan) | No | We understand this CR address the case when NW starts to broadcast CMAS/ETWS and change the SI scheduling info/pos SI scheduling info, in which case the SIB1 will also be updated. Both of the systemInfoModification and etwsAndCmasIndication will be sent to UE.  CMAS/ETWS capable UE will acquire the updated SIB1 and warning messages immediatedly while non-CMAS/ETWS capable UE will acquire the updated SIB1 in the next modification period, which is already clear in the current text. We do not see the need for clarification. |

### 3.1.2 Correction to the UE action upon SIB1 reception

[R2-2101825](http://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_113-e/Docs/R2-2101825.zip) Correction to the UE action upon SIB1 reception Huawei, HiSilicon, Ericsson CR Rel-16 38.331 16.3.0 2441 - F NR\_pos-Core

*Reason for change:*

In the field description for *si-BroadcastStatus*, the following has been captured:

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| ***si-BroadcastStatus***  Indicates if the SI message is being broadcasted or not. Change of *si-BroadcastStat*us should not result in system information change notifications in Short Message transmitted with P-RNTI over DCI (see clause 6.5). The value of the indication is valid until the end of the BCCH modification period when set to *broadcasting*. |

So, the validity only applies for broadcasting during the current MP. The reason behind this is that, when the SI request is triggered after the initial SI acquisition, UE should re-check SIB1 before sending the SI request – in case another UE already requested and SIB is already being broadcast

In 5.2.2.3.1, there is the following description to check the broadcasting status of UE required SI message (including UE concerned SIBs or posSIBs) in SIB1.

If the UE is in RRC\_CONNECTED with an active BWP with common search space configured by *searchSpaceSIB1* and *pagingSearchSpace* and the UE has not stored a valid version of a SIB, in accordance with sub-clause 5.2.2.2.1, of one or several required SIB(s), in accordance with sub-clause 5.2.2.1, and, UE has not acquired SIB1 in current modification period or if requested by upper layers; or

The above text is clearly contradictory with the description for *si-BroadcastStatus* above. It is possible that the status of broadcastStatus changes from notBroadcast to Broadcast. In this case, even if the UE has already read the field in the MP, the UE should still read the SIB1 to get the most update status of the SIB1.

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| Company | Agree (y/n) | Comments |
| Samsung | See commens | The proposed change is incorrect.  A) If the si-BroadcastStatus is set to broadcasting in the SIB1 acquired in current modification period, **there is no need to reacquire SIB1** as the value of the si-BroadcastStatus is valid until the end of the BCCH modification period when set to broadcasting.  B) If the si-BroadcastStatus is set to notbroadcasting in the SIB1 acquired in current modification period, SIB1 **needs to be reacquired**.  The proposed change forces UE to reacquire SIB1 for both case A) and case B), which is not the intended behaviour.  The intention (as highlighed in green for reason for change) of proponent is to address the case B), so if it is agreed to address this, change should be as follows:  if the UE is in RRC\_CONNECTED with an active BWP with common search space configured by *searchSpaceSIB1* and the UE has not stored a valid version of a SIB, in accordance with sub-clause 5.2.2.2.1, of one or several required SIB(s), in accordance with sub-clause 5.2.2.1, and, UE has not acquired SIB1 or si-BroadcastStatus is set to notbroadcasting in acquired SIB 1 in current modification period or if requested by upper layers |
| OPPO (Qianxi) |  | Same view as Samsung. |
| Huawei, HiSIlicon (proponent) | Y |  |
| Qualcomm Incorporated |  | Samung raises a good point. Also there are cases where the UE is not even interested in the SIB broadcast status of a given SIB, then reaquiring SIB1 is also not necessary.  In general, we should avoid a change which leads to unnecessary SIB1 re-acquisition, in order to address merely the case B in Samsung’s comment. |
| Apple |  | This issue has been discussed in the last RAN2 meeting and it is not clear to us why any more change is needed. The case B behavior has been captured in Chairman’s notes. We agree with Samsung the UE does not need to re-acquire SIB1 in Case A. |
| ZTE(Yuan) | Yes | We understand the following cases should be considered:  Case 1: UE has not yet acquired SIB1 in current modification period.  Case 2: UE has acquired SIB1 in current modification period and broadcastStatus is set to Broadcasting in this acquired SIB1  Case3: UE has acquired SIB1 in current modification period and broadcastStatus is set to notBroadcasting in this acquired SIB1   |  |  | | --- | --- | | UE behavior if we follow the original text | | | Case 1 | UE re-acquire SIB1 | | Case 2 | UE continue to acquire other SIBs | | Case 3 | * If the broadcast status remains to be notBroadcasting, UE will initiate SI request. * If the broadcast status changes from notBroadcasting to Broadcasting while UE has not reacquire the latest SIB1 thus is not aware of the change, UE will initiate SI request but will stop sending the request after receiving the required SIB. |  |  |  | | --- | --- | | UE behavior if we follow this CR R2-2101825 | | | Case 1 | UE re-acquire SIB1 | | Case 2 | UE re-acquire SIB1 and continue to acquire other SIBs | | Case 3 | UE re-acquire SIB1 and continue to acquire other SIBs |   From network’s perspective, either way is fine (keep the original text or follow this CR) and we slightly prefer the proposed changes in this CR. |

### 3.1.3 Clarifications on the required SIB or posSIB

[R2-2100302](http://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_113-e/Docs/R2-2100302.zip) Clarficiations on the required SIB or posSIB CATT CR Rel-16 38.331 16.3.1 2317 - F NR\_pos-Core, 5G\_V2X\_NRSL-Core

*Reason for change:*

*Issue 1: Which SIB or posSIB is required to operate within the cell*

According to sub-clause 5.2.2.4.2 as follows, when the UE is in RRC\_CONNECTED, upon receiving SIB1, the UE will check whether the UE has a stored valid version of a required SIB or posSIB. And which SIB or posSIB is required to operate within the cell is according to sub-clause 5.2.2.1. But in sub-clause 5.2.2.1, which SIB is requred in RRC\_CONNECTED and when posSIB is required are missing.

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| 1> if in RRC\_CONNECTED while T311 is not running:  2> disregard the *frequencyBandList*, if received, while in RRC\_CONNECTED;  2> forward the *cellIdentity* to upper layers;  2> forward the *trackingAreaCode* to upper layers;  2> forward the received *posSIB-MappingInfo* to upper layers, if included;  2> apply the configuration included in the *servingCellConfigCommon*;  2> if the UE has a stored valid version of a SIB or posSIB, in accordance with sub-clause 5.2.2.2.1, that the UE requires to operate within the cell in accordance with sub-clause 5.2.2.1:  3> use the stored version of the required SIB or posSIB;  2> else:  3> acquire the required SIB or posSIB requested by upper layer as defined in sub-clause 5.2.2.3.5; |

*Issue 2: When to perform SI acquisition*

According to sub-clause 5.2.2.2.1 as follows (highlighted with yellow), the UE shall apply the SI acquisition procedure upon receiving upper layer request. However, upon receiving upper layer request for positioning, the UE performs posSIB validity check first. If the UE has already had a stored valid version of the request posSIB, the UE doesn’t need to apply SI acquisition procedure, including acquisition of *SIB1*.

In addition, as highlighted with green, the UE apply the SI acquisition procedure whenever the UE does not have a valid version of a stored posSIB. However, the UE doesn’t need to apply acquisition procedure if the UE does not have a valid version of a stored posSIB but upper layer doesn’t request the posSIB. For example: If the expiration time associated with a stored posSIB expires but the upper layer doesn’t request to acquire it, the UE doesn’t need to apply SI acquisition procedure to obtain a valid posSIB.

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| 5.2.2.2.1 SIB validity The UE shall apply the SI acquisition procedure as defined in clause 5.2.2.3 upon cell selection (e.g. upon power on), cell-reselection, return from out of coverage, after reconfiguration with sync completion, after entering the network from another RAT, upon receiving an indication that the system information has changed, upon receiving a PWS notification, upon receiving request (e.g., a positioning request) from upper layers; and whenever the UE does not have a valid version of a stored SIB or posSIB or a valid version of a requested SIB. |

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| Company | Agree (y/n) | Comments |
| Samsung | Agree partially | Agree with change in 5.2.2.1  Regarding second issue, 5.2.2.2.1 further specifies that  "The UE may use a valid stored version of the SI except *MIB*, *SIB1*, *SIB6*, *SIB7* or *SIB8* e.g. after cell re-selection, upon return from out of coverage or after the reception of SI change indication."  So suggested change seems not needed. |
| OPPO (Qianxi) |  | Agree with change in 5.2.2.1  For the change on 5.2.2.2.1, we tend to agree with the issue, but the change seems to simply remove it, so wonder if we should clarify the cases instead. |
| Huawei, HiSilicon | Agree | For posSIB, it should only be triggered to acquire when upper layer requests for it. |
| Qualcomm Incorporated | Agree |  |
| Apple | Agree |  |
| ZTE(Yuan) | / | We do not think the second change on posSIB is needed.   * The intention of 5.2.2.1**General UE requirements** is to give general description on the SI acquisition procedure and define some essential SIBs, not to describe exactly the timing to trigger SI acquisition. * Even for other essential SIBs mentioned in this chapter, e.g. SIB1 through SIB4, SIB5, validity check will also be performed before SI acquisition and the validity check for SIB and posSIB have been captured in 5.2.2.2.1. * We do not need to capture every detail in 5.2.2.1 **General UE requirements**. |

### 3.1.4 Corrections to on-demand SI

[R2-2101571](http://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_113-e/Docs/R2-2101571.zip) Corrections to on-demand SI ZTE Corporation, Sanechips CR Rel-16 38.331 16.3.1 2423 - F TEI16

*Reason for change:*

In the current spec, the UE shall store the on-demand SI related configuration (e.g. *onDemandSIB-Request*) in the UE Inactive AS Context upon entering RRC\_INACTIVE state. And the UE does not release the *onDemandSIB-Request* upon initiation of RRC Resume procedure, which may cause the wrong UE behaviour after the UE successfully resumes in the target node since the UE may request SIB(s) on-demand but the target node does not configure/allow on-demand SI request*.*

Upon reception of *RRCRelease* message, the UE shall stop timer T350, if running. However, such behaviour has not been properly reflected in the stop condition of timer T350 in 7.1.1.

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| Company | Agree (y/n) | Comments |
| Samsung | Disgaree | Upon successful resumption, UE discard the UE Inactive AS context as per 5.3.13.4. So there is no issue. |
| OPPO (Qianxi) |  | For the first change, the procedure in 5.3.13.4 is for after resuming, while the issue above is before resuming.  For the second change, just wonder what is the use case for RRC release before successful on-demand SI request by IDLE/INACTIVE Ues. |
| Huawei, HiSilicon | Disagree | Same view as Samsung |
| Qualcomm Incorporated |  | There are many parameters which are released upon initiation of resume procedure in section 5.3.13.2, .e.g.   * 1> release *delayBudgetReportingConfig* from the UE Inactive AS context, if stored;   Those seem to be related to UE initiated procedures, i.e. to avoid UE initated procedures before AS context is released in 5.3.13.4? *onDemandSIB-Request* is of the same category. |
| Apple |  | The 1st change is not needed. We are fine with the second change. |
| ZTE(Yuan) | Yes, as the proponent | * For the first change, as mentioned by QC, some configuration in *otherconfig* (e.g. *delayBudgetReportingConfig)* will be released upon initiation of resume procedure while the *onDemandSIB-Request* will be discarded as part of UE AS context upon reception of *RRCResume* message. We do not understand why different handling is needed. Since all these UE initiated procedures will not be initiated by UE in inactive state, it is better not to store it as part of inactive context or release it upon initiation of RRC resume procedure to make it consistent with others. * The second change is consistent with the following description in 5.3.8.3:  5.3.8.3 Reception of the *RRCRelease* by the UE The UE shall:  1> delay the following actions defined in this sub-clause 60 ms from the moment the *RRCRelease* message was received or optionally when lower layers indicate that the receipt of the *RRCRelease* message has been successfully acknowledged, whichever is earlier;  1> stop timer T380, if running;  1> stop timer T320, if running;  1> if timer T316 is running;  2> stop timer T316;  2> clear the information included in *VarRLF-Report,* if any;  1> stop timer T350, if running; |

## 3.2 IIoT Unlicensed

[R2-2100887](http://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_113-e/Docs/R2-2100887.zip) Co-configuration of NR-IIoT and other features OPPO discussion Rel-16 NR\_IIOT-Core, NR\_unlic-Core

*Proposal 1 Stage-3 spec change is needed to reflect RAN2 agreement on no support of simultaneous configuration of autonomousTX and cg-RetransmissionTimer.*

*Proposal 2 RAN2 confirms R16 UE is not expected to receive DCI format 0\_2/1\_2 for unlicensed band.*

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| Company | Agree on P1 and P2 (y/n) | Comments |
| OPPO (Zhe) | y for both | For P1: Although the agreement in RAN2#112e says that CR is not needed for now, we still propose to capture this restriction in RRC spec, considering, 1) It is a bit against to RAN2 principle if nothing is captured. As what we did in usual, similar configuration restrictions are already be reflected in RAN2 spec. 2) On the safe side it is better capture the restriction to avoid misunderstanding to the developers and potential discussion on the same issue in the future. 3) It is not against to current agreement, since it is just said the CR is not needed for now.  For P2: In R16 IIoT, the assumption was the configuration is based on licensed band. Accordingly, the unlicensed-specific fields, e.g. *ChannelAccess-CPext*, is not considered in the design of DCI format 0\_2/1\_2. Yet, *ChannelAccess-CPext* is the key field and very useful for unlicensed band, i.e. Without *ChannelAccess-CPext*, UE does not know how to access the channel on unlicensed band. Thus, we propose not to support DCI format 0\_2/1\_2 for unlicensed band. |
| Huawei, HiSilicon |  | It is already a common understanding that NR-U cannot work together with IIOT/URLLC. Not necessary to clarify their stage-3 parameters cannot be configured simultaneously. |
| Qualcomm Incorporated | n | We would stick to the previous agreement that no CR is needed. |
| Apple | No | RAN2 has made the agreement that CR is not needed. |
| Samsung | Y for both | IioT discussion focused on licensed band. Those proposals are correct understandings. |
| ZTE(FeiDong) | Not agree with P1 | For P1, we should respect the agreements achieved in R17 room, no CR or change is needed.  For P2, can agree. |
| Ericsson | No for both | The first proposal is also discussed in the other email discussion [AT113-e][025][IIOT]. The gist of the Ericsson’s answer is copied below:   * The Rel-17 discussion did not conclude that any feature is broken when two are configured together. It points to the direction that, if some optimizations are needed after the Rel-17 discussion, then RAN2 does not need to go back and change the Rel-16 spec.   It is not essential to have the second clarification. It is clear in the TS 38.212 that *ChannelAccess-CPext-xxx* is not present for format x\_2 and it has zero bit in the case of unlicensed spectrum for format x\_1. If unlicensed band needs these parameters to work, they cannot be configured with these DCI formats. |

[R2-2100888](http://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_113-e/Docs/R2-2100888.zip) CR on co-configuration of NR-IIoT and other features OPPO CR Rel-16 38.331 16.3.1 2363 - F NR\_IIOT-Core, NR\_unlic-Core

*Reason for change:*

1. According to latest RAN2 agreement, it depends on the network to assure *autonomousTx* and *cg-RetransmissionTimer* are not configured simultaneously per cell, and no CR is needed in R16. However, it is a bit against to RAN2 principle, i.e. configuration restriction should be reflected in normative work, as what we did as usual. Thus, we suggest to reflect such configuration restriction in stage-3 spec.

2. Due to the feature of R16 IIoT designed only for licensed band, the design of DCI format 0\_2 and DCI format 1\_2 does not include channel access related field, e.g. *ChannelAccess-CPext*, which is necessary and thus the key field for DG for unlicensed band. Without this field, UE is not sure how to access the channel on unlicensed band.

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| Company | Agree (y/n) | Comments |
| OPPO(Zhe) | y for both | See reasons above. |
| Huawei, HiSilicon | N | See comments above |
| Qualcomm Incorporated | n |  |
| Apple | No |  |
| Samsung | Y |  |
| ZTE(FeiDong) | Partly agree | The first change is not needed  We are fine with the second change. |
| Ericsson | N | See above |

# Conclusion

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

# References