**3GPP TSG-RAN WG2 Meeting #110e R2-20xx**

**1-12 June 2020**

**Agenda item: X.X**

**Source: Qualcomm Incorporated**

**Title: [Post109bis-e][936][NR-U] RRC open issues (Qualcomm))**

**Document for: Discussion and decision**

# Introduction

This document will capture the open issues and suggested solutions identified during the following email discussion:

* [Post109bis-e][936][NR-U] RRC open issues (Qualcomm)

Address stage-3 remaining open issues. Capture identified NEW, if any, stage-3 corrections/issues from ASN.1 review.  Issues that have already been discussed and not pursued should not be brought up again.

      Intended outcome: Agreable proposals and CR for 38.331 addressing open issues

      Deadline: Next Meeting, ASN.1 review schedule

The open issues in R2-2003953 which were not concluded and proposed to be discussed further are copied here with the comments provided during RAN2#109bis-e.

A format similar to the one used in ASN.1 discussion was used to enable merging with the list in that discussion. The guidelines for reporting issues are as follows:

**[Issue #]**: U + 3 digits

**[Class]**: Shall be set to value 2 or 3.

1. **Trivial** e.g. editorials, commas, colon, misspelling, missing/ double spaces, italics etc.   
   See procedure for Class 0 and Class 1 issues below.
2. **Minor** e.g. quite straightforward changes e.g. correction/ addition of specification references or sub-clauses.  
   See procedure for Class 0 and Class 1 issues below.
3. **ASN.1 session** **issue** e.g. ASN.1 issue e.g. related to need codes, extensibility, alternative encoding, ASN.1/ guidelines, general protocol (consistency) issue or issue affecting more than one WI
4. **WI session issue i**.e. an issue that is not purely ASN.1 but has some impact on functionality but only affecting a single WI.

# Open issues for NR RRC

| **Issue number** | **Company** | **Subclause** | **IE name** | **Class** | **Description/**  **correction** | **Status** |
| --- | --- | --- | --- | --- | --- | --- |
| U540 | Ericsson | 5.5.1 | RSSI/CO reporting | 3 | ~~Add~~ Modify as follows:  “the UE measures and reports on~~any~~ the defined measurement bandwidth and configured time domain measurement resources on the indicated frequency.”  Or at least:  “the UE measures and reports on **~~any~~ the defined/configured measurement resources** on the indicated frequency.”  The current description is **misleading and contradicts with Section 5.5.2.10a** and with TS 38.215.  The text should capture the intention and should be aligned/consistent with other parts of the specification rather than stating something else.  As we are writing a new spec, we can still improve specification text and just use LAA as a starting point and correct if necessary. | Open  **Rapporteur:** Current text is based on LAA. RAN2#109e decided to keep that text.  **Ericsson:**  We would like to explain the issue together with the change proposal. See text in red.. |
| U549 | Ericsson | 5.5.4.1 |  | 3 | Clarify that measurement report triggering when a (first) measurement result is available, is only valid for a*reportType* set to *periodical*. For event-triggered measurement reporting, the measurement report would otherwise be triggered even if none of the reporting conditions were fulfilled | Open  [MTK]: We don’t understand the problem. Some more explanation might be useful. Existing RAN2 agreements should not be reverted.  **Ericsson**:  Added the clarification in red.  For event-triggered reporting, the reporting should only be started when a reporting condition is fulfilled and not whenever RSSI measurement results are available. |
| U550 | Ericsson | 5.5.4.1 |  | 3 | Clarify that the report is triggered after the “L1 measurement *period”* (and not “L1 measurement *duration”* which in TS 36.133 is defined by the *rmtc-MeasDuration*). | Open  **Ericsson:**  If not changed, this may cause confusion between the given parameters for triggering RSSI measurement reporting. |
| U551 | Ericsson | 6.3.2 |  | 3 | Move *ssb-PositionQCL-Common* from *MeasObjectNR* to sub-element *SSB-ConfigMobility* within *MeasObjectNR.*  All SSB related configuration should be provided within *SSB-ConfigMobility*  *ssb-PositionQCL-Common* is only needed when corresponding SSB measurement configurations are configured (*ssb-ToMeasure*). | Open  **Rapporteur:** RAN1 agreement was to use *MeasObjectNR*  [MTK]: We prefer to keep RAN1 agreement.  **Nokia:** we are ok both ways. No behavioural change. But location proposed by ericsson makes sense  [HW] SSB-ConfigMobility is within MeasObjectNR? Not sure what is wrong.  **Ericsson:** *SSB-ConfigMobility* is signaled within *MeasObjectNR*, so *ssb-PositionQCL-Common* is still part of *MeasObjectNR.*  The change is still compliant with RAN1 proposal/agreement.  RAN1 does not look into detailed RAN2 parameter structure.  It is up to RAN2 to decide how to group the parameters.  We think that all SSB related configuration should be provided within *SSB-ConfigMobility.*  Furthermore, *ssb-PositionQCL-Common* is clearly related to *ssb-ToMeasure*, which is provided within *SSB-ConfigMobility* and provides the corresponding bitmap for the SSB candidate positions.  **LGE:**  *ssb-PositionQCL-Common* is used to derive the SSB based cell quality. so we also think *SSB-ConfigMobility* is a more proper location to include it. |
| U552 | Ericsson | 6.3.2 |  | 3 | Move cell specific Qfrom *MeasObjectNR* to *SSB-ConfigMobility* and use a Setup/Release structure | Open  **Rapporteur:** RAN1 agreement was to use *MeasObjectNR*  [MTK]: We prefer to keep RAN1 agreement  **Nokia:** see U551 comment and additionally we think that existing addmod/remove structure is corresponding with existing cell specific parameter configuration i.e. we do not need see for setup/release structure.  [HW] SSB-ConfigMobility is within MeasObjectNR? Not sure what is wrong.  About the setupRelease stuecutre, we wonder why we need this  **Ericsson:**  1) See argument above for moving information about the QCL relationship between SSB positions to *SSB-ConfigMobility.*  The change is still compliant with RAN1 proposal/agreement.  2) Adding an element costs 10 (for the PCI) + 2 bits (Q value), removing an element costs 10 bits. There is almost no signaling gain with such a delta approach. It is easier to setup a new list than modifying a list.  **LGE:**  see U551. Agree to move cell specific Q to *SSB-ConfigMobility* but the structure doesn’t need to be changed. |

| U554 | Huawei | 6.3.2 | *ConfiguredGrantConfig* | 3 | For CG-PUSCH and DG-PUSCH without slot aggregation, HARQ-ACK for the associated TB is valid if a first symbol of the PDCCH reception is after a last symbol of the PUSCH transmission, or of any repetition of the PUSCH transmission, by a number of symbols provided by cg-minDFIDelay-r16. For DG with slot aggregation, HARQ-ACK is valid if first symbol of the PDCCH reception is after a last symbol of the PUSCH transmission in a first slot from the multiple slots by cg-minDFI-Delay if the value of the HARQ-ACK information is ACK and after a last symbol of the PUSCH transmission in a last slot from the multiple slots, if value of the HARQ-ACK information is NACK. (see TS 38.213 [13], clause 10.3).. | **Ericsson:**  We agree that some clarification in the field description is needed as the parameter applies for for both CG-PUSCH and dynamically scheduled PUSCH.  However, we prefer not to copy the RAN1 specification text from 38.213 clause 10.3 about when the HARQ-ACK information is valid:  […] is valid if a first symbol of the PDCCH reception is after a last symbol of the PUSCH transmission, or of any repetition of the PUSCH transmission, by a number of symbols provided by cg-minDFIDelay-r16.  For a PUSCH transmission scheduled by a DCI format, HARQ-ACK information for a transport block of a corresponding HARQ process number is valid if a first symbol of the PDCCH reception is after a last symbol of the PUSCH transmission or, if the PUSCH transmission is over multiple slots,  -     after a last symbol of the PUSCH transmission in a first slot from the multiple slots by a number of symbols provided by *cg-minDFIDelay-r16*, if a value of the HARQ-ACK information is ACK.  -     after a last symbol of the PUSCH transmission in a last slot from the multiple slots by a number of symbols provided by *cg-minDFIDelay-r16*, if a value of the HARQ-ACK information is NACK.  Something as follows is sufficient, while more details are provided in the RAN1 spec:  “Indicates the minimum duration (in unit of symbols) from the ending symbol of the ~~CG-PUSCH or dynamically scheduled~~ PUSCH to the starting symbol of the PDCCH containing the downlink feedback indication (DFI) carrying HARQ-ACK for that PUSCH. HARQ-ACK received before that minimum duration is not valid, see TS 38.213 [13], clause 10.3.   * DG-PUSCH is not defined in RRC and we should use “dynamically scheduled PUSCH” instead or to keep it general, just refer to “PUSCH” instead of CG-PUSCH and dynamically scheduled grant * DFI is not defined in RRC and should be spelled out. * We propose to clarify that DFI is carried on PDCCH * Slot aggregation is already specified as part of 38.213 spec. * Remove all text that is specified in detail in 38.213.   [Samsung] Ericsson's alternative looks good. |
| --- | --- | --- | --- | --- | --- | --- |
| U556 | Huawei | 6.3.2 | *ConfiguredGrantConfig* | 3 | Wrong name "n-cg-DFIDelay-r16" and The explanation is not accurate. need to consider for slot aggretation for both CG and DG. For CG DFI delay for a CG PUSCH: HARQ-ACK for the associated TB is valid if a first symbol of the PDCCH reception is after a last symbol of the PUSCH transmission, or of any repetition of the PUSCH transmission, by a number of symbols provided by cg-minDFIDelay-r16. For DG - DFI delay for a DG PUSCH: Same as CG PUSCH expect for slot aggregation; \* cg-minDFIDelay-r16 after a last symbol of the PUSCH transmission in a first slot from the multiple slots if value of the HARQ-ACK information is ACK. \* cg-minDFIDelay-r16 after a last symbol of the PUSCH transmission in a last slot from the multiple slots, if value of the HARQ-ACK information is NACK | **Rapporteur:** This was H225 in ASN.1 RIL.  Name change was agreed by RAN2 email discussion to be compatible with ASN.1 convention.  **Ericsson:**  This is not about the field name.  Such a *formula* “n-cg-DFIDelay-r16” cannot be used in the field description. It would have to be captured in a different way.  However, these clarifications about the timing between PUSCH and HARQ-ACK are specified in TS 38.213 clause 10.3 and it is sufficient to describe on high level what is the purpose of this parameter.  This sentence can therefore be removed.  Summary: Agree with Ericsson that we don’t need to repeat 38.213 text. This is related to U554 so can be discussed together. |
| U562 | Ericsson | 6.3.2 | PUSCH-TimeDomainResourceAllocation-r16 | 3 | multiplePUSCH-Allocations-r16      SEQUENCE (SIZE(2..maxNrofMultiplePUSCHs-r16)) OF singlePUSCH-TimeDomainResourceAllocation-r16  - SIZE should start with 1 to support legacy table entry  - IEs should start with capital letters: SinglePUSCH-TimeDomainResourceAllocation-r16 | Rapporteur: The minimum size of “1” seems to be valid per RAN1 specification since this table is also used for scheduling of single PUSCH. |
| U567 | ZTE ( RIL Z020) | 6.3.2 | Field description of ChannelAccessPriority | 2 | For the field description, 38.321 is referenced, but CAPAC seems not mentioned within this spec.  Also, the CAPAC signalled will be applicable for the case when UL grant indicates LBT type 1 in DCI 0\_0. This needs to be clarified. | ZTE: When DCI 0\_0 is used, CAPC is not signalled. The table used for DCI 0\_0 is as below.    When DCI 0\_0 is used and type 1 is indicated, since CAPC can not be indicated, UE determines CAPC based on the multiplexed traffic. So, the UE assumes that the gNB used CAPAC=4, but the UE doesn’t use this in UL (the UL CAPAC is based on the multiplexed traffic) in our understanding. |
| U601 | Intel (RIL I904) | 5.3.10.3 |  | 2 | Text is not aligned with the others like:  upon random access problem indication from MCG MAC while neither T300, T301, T304, T311 nor T319 are running  **[Proposed Change]**: Propose to change to:  upon consistent uplink LBT failure indication from MCG MAC  or  upon indication from MCG MAC that consistent uplink LBT failure has occurred | **Rapporteur:** Agree, will use the first suggestion. |
| U602 | Intel (RIL I905) | 5.3.10.3 |  | 2 | Text is not aligned with the others like:  upon random access problem indication from SCG MAC  **[Proposed Change]**: Propose to change to:  upon consistent uplink LBT failure indication from SCG MAC  or  upon indication from SCG MAC that consistent uplink LBT failure has occurred | **Rapporteur:** Agree, will use the first suggestion. |
| U603 | Intel (RIL I907) | 6.5 |  | 2 | **[Description]**: PO is defined as apprevation. Should just use paging occasion.  **[Proposed Change]**: The following change is proposed to align with other part of RRC spec:  ***stopPagingMonitoring***  If set to 1: stop monitoring PDCCH occasions(s) for paging in this paging occasion. | **Rapporteur:** Agree, will replace PO with paging occasion. |
| U604 | Intel (RIL I661) | 6.3.3 | *SlotFormatCombinationsPerCell* | 2 | **[Description]**: Doesn’t look like Need N. No field description or procedural text associated with this field to know how it is used.  **[Proposed Change]**: Change to BOOLEAN OPTIONAL Need M or Need R. And add field description as necessary. | **Rapporteur:** Will change to Need R |
| U605 | Intel (RIL I679) | 6.3.2 | PhysicalCellGroupConfig | 2 | **[Description]**: ENUMERATED true Need M cannot be released once configured.  **[Proposed Change]**: Consider changing to Need R or BOOLEAN.  **[Comments]**: | **Rapporteur:** Will change to Need R for all ENUMERATE true. |
| U606 | Nokia (RIL N025) | 6.3.2 | *SSB-PositionQCL-Relationship* | 2 | **[Description]**: Name should be shortened – this is about QCL relations, not “relationships”. The name doesn’t need to repeat everything that the semantics already cover.  **[Proposed Change]**: Use SSB-PositionQCL-r16 as the IE name (needs to be propagated everywhere).  **[Comments]**: | **Rapporteur:** This is a matter of taste. It came from RAN1 and I don’t see a strong reason to update all PHY specs for this. |
| U607 | Samsung (RIL S056) | 6.3.2 | *MAC-CellGroupConfig* | 2 | **[Description]**: SetupRelease with Need M should be used so that the configuration can be released.  This is for lbt-FailureRecoveryConfig  **[Proposed Change]**: Change it to SetupRelease with Need M. | **Rapporteur:** This is acceptable unless other companies have a concern. |
| U608 | Samsung (RIL S057) | 6.3.2 | *MAC-CellGroupConfig* | 2 | **[Description]**: It should be Need R so that the configuration can be released later.  This is for schedulingRequestID-LBT-SCell-r16  **[Proposed Change]**: Change Need code to Need R. | **Rapporteur:** Will change to Need R |
| H541 | Huawei | 6.3.2 | *SlotFormatIndicator* | 3 | **[Description] searchSpaceSwitchTrigger-r16 SEQUENCE {**  **positionInDCI INTEGER(0..maxSFI-DCI-PayloadSize-1),**  **id CHOICE {**  **servingCellId ServCellIndex,**  **groupId INTEGER (0..1)**  **}**  **[Corrections]**  **group id can be removed according to R2-2003190.** |  |
| H542 | Huawei | 6.3.2 | *SlotFormatIndicator* | 3 | **searchSpaceSwitchTrigger-r16 SEQUENCE {**  **positionInDCI INTEGER(0..maxSFI-DCI-PayloadSize-1),**  **id CHOICE {**  **servingCellId ServCellIndex,**  **groupId INTEGER (0..1)**  **}**  **Should be a list according to the RAN1 description** |  |
| H543 | Huawei | 6.3.2 | *SlotFormatIndicator* | 3 | **co-DurationPerCellList-r16 SEQUENCE (SIZE(1..maxNrofAggregatedCellsPerCellGroup)) OF CO-DurationPerCell-r16 OPTIONAL -- Need N**  **An AddModList should be defined.** |  |
| H544 | huawei | 6.3.2 | *ConfiguredGrantConfig* | 3 | **CG-COT-SharingList**  **One entry can be used to indicate that their no UL to DL COT sharing for CG** |  |
| H545 |  |  | *SlotFormatIndicator* | 3 | searchSpaceSwitchTriggerList If configured, provides position in DCI of the bit field indicating search space switching flag for a group of serving cells in searchSpaceSwitchingGroup-r16 (see TS 38.213 [13], clause 11.5.2)  **Field description for searchSpaceSwitchTrigger should be revised.A list of SearchSpaceSwitchTrigger objects is configured for one or more groups of serving cells.** |  |

# Open issues for LTE RRC

| **Issue number** | **Company** | **Subclause** | **IE name** | **Class** | **Description/**  **correction** | **Status** |
| --- | --- | --- | --- | --- | --- | --- |
| U801 | Ericsson | 6.3.5 | MeasObjectNR | 3 | In order to providefrequency specific Q values in the *MeasObjectNR* for E-UTRAN, include *ssb-PositionQCL-CommonNR* in the existing IE *RS-ConfigSSB-NR-r15* | Open.  [MTK]: We prefer to keep the IE structure common between NR and LTE.  **Ericsson:**  Same argument as above.  *ssb-PositionQCL-CommonNR* should be grouped together with other SSB related measurement configurations.  We made acorresponding proposal also for NR.  Summary: Discuss online |
| U802 | Ericsson | 6.3.1 | SIB24 | 3 | Per-cell Q value can be broadcasted in LTE SIB24 for NR-U neighbour cells. | Open  **Rapporteur:** In NR RRC, a common Q value per frequency is signalled in SIB4 for inter-frequency. LTE SIB24 is for NR (inter-frequency) and the current signalling is per-frequency.  [MTK]: We prefer to keep Q value per frequency.  **Ericsson:**  In SIB4, this can also be signaled for inter-frequency neighbor cells according to RAN1 agreements, and this is captured in 38.331, v16.0.0, in *InterFreqNeighCellInfo*.  RAN1 agreements:  • Support signaling of a common Q value per frequency by broadcast RRC signaling (SIBx) and/or dedicated RRC signaling (measObjectNR) from the serving cell.  • Support signaling from the serving cell of a Q value for a listed neighbour cell.  Summary: Discuss online |
|  |  |  |  |  |  |  |

# Conclusion

**EASY AGREEMENTS**

**Proposal 1: (Issue U506 and U557) Extend RSSI/CO measurements to inter-frequency (as in LTE LAA). The IE *rmtc-SubframeOffset-r16* is Optional for inter-frequency (as in LTE LAA).**

**Proposal 2: (Issue U510) Keep the ASN.1 for *useInterlacePUCCH-PUSCH-r16* as ENUMERATED {true} with Need M. No changes to the 38.331 is needed.**

**Proposal 3: (Issue U515) The IE for signaling of Q in measurement object is kept Optional. It is added to the field description that the UE applies default value 8 when not signaled.**

**Proposal 4: (Issue U528) No changes to the field description of *ra-ResponseWindow* is needed.**

**Proposal 5: (Issue U538) Move the IEs *searchSpaceGroupIdList-r16* and *freqMonitorLocations-r16* from *SearchSpace* to *SearchSpace-v16xy* in order to allow search space switching for Type-3 CSS.**

**Proposal 6: (Issue U544) No changes are made to the field description of *ssb-PositionInBurst.***

**Proposal 6b: If Proposal 6 is not agreed, introduce the following changes in order to address U544:**

* For *ServingCellConfigCommon, a*dd “If *ssb-PositionQCL* is configured”in the field description of *ssb-PositionsInBurst* before *“*the UE expects that a bit at position k > *ssb-PositionQCL* is 0”
* For *ServingCellConfigCommonSIB*, modify field description of *ssb-PositionsInBurst* as follows: “The UE assumes that a bit at position k > is 0, where is obtained from MIB as specified in TS 38.213 [13], clause 4.1”

**Proposal 7: (Issue U548) No changes are made to the field description of *measRSSI-ReportConfig***

**Proposal 8: (Issue U555) Introduce text for setting *failureType* as *scg-lbtFailure* in 5.7.3.5 (corresponding to NR-NRU DC)**

**Proposal 9: (Issue 558) No changes are made to *betaOffsetCG-UCI-r16* IE.**

**Proposal 10: (Issue 559) The IE *ChannelAccessMode* is kept in *ServingCellConfigCommon* without any changes.**

**Proposal 11: (Issue 561) No changes are made to the structure of IE *searchSpaceGroupIdList-r16.***

**Proposal 12: Agree to the editorial changes suggested in:**

U563: Change “neighbour” to “this serving cell” for field description of *ssb-PositionQCL* in *ServingCellConfigCommon*

U564: Change semistatic to semiStatic

**NEEDS ONLINE DISCUSSION**

**Proposal 13: (Issue U549) It should be clarified that the “when a (first) measurement result is available” for RSSI reporting in 5.5.4.1 is only applicable to *reportType* set to *periodical*.**

**Proposal 14: (Issue U551) Move *ssb-PositionQCL-Common* from *MeasObjectNR* to sub-element *SSB-ConfigMobility* within *MeasObjectNR.***

**Proposal 15: (Issue U552) Movecell specific Qfrom *MeasObjectNR* to sub-element *SSB-ConfigMobility* within *MeasObjectNR*. However, do not change the structure, i.e. keep the list.**

**Proposal 16: (Issue 540) Change the text for RSSI reporting as follows:** “the UE measures and reports on~~any~~ the defined measurement bandwidth and configured time domain measurement resources on the indicated frequency.”

**Proposal 17: (U801) Putfrequency specific Q values in the *MeasObjectNR* for E-UTRAN, include *ssb-PositionQCL-CommonNR* in the existing IE *RS-ConfigSSB-NR-r15***

**Proposal 18: (U802) Per-cell Q value can be broadcasted in LTE SIB24 for NR-U neighbour cells.**

**CHANGING PREVIOUS AGREEMENTS**

**Proposal 19: (Issue 560) The UE applies default guard band when signalling is absent; no guard band is signalled by an explicit IE.**

**NEEDS FURTHER DISCUSSION**

The following issues are related to aligning RAN2 and other group specs or there was no feedback or there was no clear majority so should be kept open for further discussion.

**Proposal 20: Further discuss the following issues until next RAN2 meeting:**

U550: L1 measurement period vs duration

U554, U556: field description for *cg-minDFIDelay*

U562: Change the minimum size of multi-TTI PUSCH table (allow list with single entry)

U567: CAPC determination when DCI 0\_0 is used.