3GPP TSG-RAN WG2#113-e DocNumber

Electronic meeting, 25th Jan – 5th Feb 2021

Agenda Item: 5.4.1.2

Source: Ericsson

Title: Report of [Offline-006][NR15] Measurements Misc and System Info

Document for: Discussion, Decision

# 1 Introduction

This contribution is related to the following email discussion.

* [AT113-e][006][NR15] Measurements Misc and System Info (Ericsson)

Scope: Treat R2-2100063, R2-2101834, R2-2101422, R2-2101423, R2-2100751, R2-2101285

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

Intended outcome: Report and Agreed CRs.

Deadline: Schedule A

**Deadline:** Email discussions with Deadline ***Schedule A***:

A first round with **Deadline for comments Thursday Jan 28 1200 UTC** to settle scope what is agreeable etc

A Final round with **Final deadline Thursday Feb 4 1200 UTC.** to settle details / agree CRs etc. Additional check points etc if needed are defined by the Rapporteur. In case some parts of an email discussion need more time, doesn’t converge, need on-line treatment etc Rapporteur please contact chair.

# 2 Contact Information

|  |  |
| --- | --- |
| Company | Contact: Name (E-mail) |
| Ericsson | pradeepa.ramachandra@ericsson.com |
| ZTE | liu.jing30@zte.com.cn |
| Huawei, HiSilicon | Lili Zheng (zhenglili4@huawei.com) |
| ZTE2 | gao.yuan66@zte.com.cn |
| Lenovo | hchoi5@lenovo.com |
| MediaTek | Chun-fan.tsai@mediaTek.com |
| Samsung | Himke.vandervelde@samsung.com |
| Qualcomm | (Mouaffac) mambriss@qti.qualcomm.com |
| Apple | Zhibin Wu (zhibin\_wu@apple.com) |
| OPPO | fanjiangsheng@oppo.com |
| LGE | [sangwon7.kim@lge.com](mailto:sangwon7.kim@lge.com) |
| Intel | [Sudeep.k.palat@intel.com](mailto:Sudeep.k.palat@intel.com) |
| NEC | hisashi.futaki@ nec.com |
| CATT | [liangjing@catt.cn](mailto:liangjing@catt.cn) |

# 3 Discussion

## 3.1 RAN5 LS related

[R2-2100063](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_113-e\Docs\R2-2100063.zip) LS on reporting of SINR measurements for serving cell (R5-206274; contact: Qualcomm) RAN5 LS in To:RAN2

[R2-2101834](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_113-e\Docs\R2-2101834.zip) Discussion on reporting of SINR measurements for serving cell MediaTek Inc. discussion

RAN5 has sent an LS on the interpretation of the RRC specification when it comes to serving cell SINR inclusion in the measurement reports. They have listed two possible interpretations.

1. UEs supporting SINR measurements can include SINR metrics for serving cell based on reference 2 **unconditionally** (per UE implementation) in the measurement report, and reference 1 is just to mandate the UEs to derive SINR measurement if configured as a trigger quantity and/or reporting quantity.
2. The SINR metric **shall not** be reported for the serving cell if SINR is not configured as trigger quantity and/or reporting quantity irrespective if the UE supports capability ‘ss-SINR-meas’ or not.

wherein;

**Reference 1:** TS 38.331 clause 5.5.3.1 contains the following text:

1> for each serving cell for which *servingCellMO* is configured, if the *reportConfig* associated with at least one *measId* included in the *measIdList* within *VarMeasConfig* contains SINR as trigger quantity and/or reporting quantity:

2> if the *reportConfig* contains *rsType* set to *ssb* and *ssb-ConfigMobility* is configured in the *servingCellMO*:

3> if the *reportConfig*contains a *reportQuantityRS-Indexes* and *maxNrofRS-IndexesToReport*:

4> derive layer 3 filtered SINR per beam for the serving cell based on SS/PBCH block, as described in 5.5.3.3a;

3> derive serving cell SINR based on SS/PBCH block, as described in 5.5.3.3;

**Reference 2**: TS 38.331 clause 5.5.5.1 contains the following text:

For the *measId* for which the measurement reporting procedure was triggered, the UE shall set the *measResults* within the *MeasurementReport* message as follows:

1> set the *measId* to the measurement identity that triggered the measurement reporting;

1> for each serving cell configured with *servingCellMO*:

2> if the *reportConfig* associated with the *measId* that triggered the measurement reporting includes *rsType*:

3> if the serving cell measurements based on the *rsType* included in the *reportConfig* that triggered the measurement report are available:

4> set the *measResultServingCell* within *measResultServingMOList* to include RSRP, RSRQ and the available SINR of the serving cell, derived based on the *rsType* included in the *reportConfig* that triggered the measurement report;

In R2-2101834, MediaTek provides their views on the topic and mentions that whether to perform SINR measurement or not is a UE implementaiton choice even when the network has not configured the UE to perform SINR measurements and thus the UE is **not mandate** to report SINR but it is also **not forbidden** to report SINR. Thus, they propose the following.

Proposal 1: RAN2 confirms UEs supporting SINR measurements could include SINR metrics for serving cell(s) (per UE implementation) even if SINR result is not mandated (i.e. to adopt interpretation A in R5-206274).

**Question-1: Which of the following option is RAN2 interpretation?**

**Option-A**: UEs supporting SINR measurements can include SINR metrics for serving cell based on reference 2 unconditionally (per UE implementation) in the measurement report, and reference 1 is just to mandate the UEs to derive SINR measurement if configured as a trigger quantity and/or reporting quantity

**Option-B**: The SINR metric shall not be reported for the serving cell if SINR is not configured as trigger quantity and/or reporting quantity irrespective if the UE supports capability ‘ss-SINR-meas’ or not.

|  |  |  |
| --- | --- | --- |
| **Company Name** | **Preferred option (Option-A or Option-B)** | **Comments** |
| Ericsson | Option-B | The measurement report size overhead cannot be underestimated as there could be many serving cells configured to the UE as part of the cell group. If the network is interested in SINR measurements, then it can explicitly include the SINR as one of the report quantity or as a trigger quantity. |
| ZTE(LiuJing) | Option-A | In our view, it is always helpful if network can obtain more serving cell results from the UE.  For serving cell, UE always perform RSRP/RSRQ measurements. While for SINR measurement, we linked it with “trigger quantity and/or report quantity“, because SINR measurement is considered as to be something that requires extra effort from UE. So we mandate UE to MUST perform SINR measurement if at least one measID is associated with SINR triggerQuantity or reportQuantity. Without that configuration, the UE is allowed to not perform SINR measurements.  However, if UE already has available SINR results for serving cell, we see no benefit to prevent the UE from reporting the information to network. And we think the increase in message size is not a big concern compared to other part of measurement report. |
| Huawei, HiSilicon | Option B | Option B is more in line with the agreements achieved in RAN2 #100:  **Agreements**  1    UE shall report SINR measurements for each configured serving cell if SINR measurements are available (**ie** if the SINR measurements on serving cell **are required according to a configured meas ID**.)  Since the agreement uses the wording “ie” instead of “eg”, UE shall not report the SINR measurements when not configured. |
| Lenovo | Option-B | Our understanding is that the UE shall act on NW configuration in ReportConfigNR where BOOLEAN type is specified for each reporting quantity.  MeasReportQuantity ::= SEQUENCE {  rsrp BOOLEAN,  rsrq BOOLEAN,  sinr BOOLEAN  } |
| MediaTek | Option A | In response to the agreement cited by Huawei, the agreement say UE shall include SINR if some condition is met while the Option B saying that UE shall NOT include SINR if the condition does not matched. We believe that the agreement is NOT equivalent to Option B.  Based on our observation in the real network, there is no issue reported due to the additional SINR results. We would assume that the NW could handle the SINR results and the increased size does not cause performance issue. Note that we also found that the **SINR reporting is configured for most measurement event** in real NW. So, SINR result of serving cell is anyway “shall be included” in most scenario.  We would accept other UE vendors does not include SINR result in the concerned case. So, there are already different UE behavior in the field. Concluding this part as “up to UE implementation” should be a reasonable way forward. The “Shall NOT include” behavior in option B is a NBC change to us, which is not acceptable. |
| Nokia | Option A | We are fine with network getting additional measurements which are available at time of reporting. |
| Samsung | Recommend Option-B | We agree that in general this is a size critical message for which network controls the contents by configuration. We can however appreciate that Ref.2 can be understood to allow UE to include this if available. There may be UEs out on market doing so, hence at this late stage it seems difficult to do more than recommending the intended UE behavior i.e. to introduce a UE should  (it may be good to discuss/ conclude whether in general optional fields in UL are allowed to be sent only if procedures explicitly state this is allowed) |
| Qcom | Any | We see a value in supporting **Option-A**, where the SINR reported by the UE can be an additional benefit. However, if Infra vendors see no value in providing this info, we’re fine going with **Option-B**.  **It’s necessary to add clarification into the spec, to remove this confusion.** |
| Apple | Option A | Agree with MediaTeK. UEs are fine to always include SINR for the serving cells. |
| OPPO | Option A | More flexible from UE side. |
| LGE | Option A | My understanding is the option A is aligned with the original intention of RAN2. Though the SINR is not configured as trigger/reporting quantity, if UE has valid results of SINR for serving cells, the UE should report it, as UE always reports RSRP and RSRQ for serving cells.  Regarding comments on size critical message, NW can control the MR size by configuring/not configuring SINR measurement. |
| Intel | Option A | We share the same view as ZTE and MediaTek. |
| NEC | Option B | we are wondering if the SINR is not configured as trigger quantity nor reporting quantity, the UE is still allowed to report the SINR which is somehow available? If this is the intention of Option A, how it is ensured that those available SINR is actually according to the spec, because the UE does not go through section 5.5.3.3 for SINR in this case. |
| CATT | Option A | To report the available SINR result is acceptable. |

**Rapportuer summary**: To be added later

Further, if the companies think that the specification is not clear, rapporteur would like to ask if there is any need to change the RRC specification.

**Question-2: Is there a necessity to change the RRC specification procedural text to avoid confusion?**

|  |  |  |
| --- | --- | --- |
| **Company Name** | **Yes/No** | **Comments (If yes, the company is requested to provide suggested change)** |
| Ericsson | No | The specification is already clear that the UE is expected to perform serving cell SINR measurements only when the network configures SINR as a trigger quantity or as a report quantity in at least one measID. Therefore, we believe there is no need to change anything in the RRC specification. |
| ZTE(LiuJing) | No | No spec change is needed, because the spec already says the UE can report “the available SINR of the serving cell”. |
| Huawei, HiSilicon | No | Agree with Ericsson. |
| Lenovo | No |  |
| MediaTek | No | The “if available” part already clear say that the UE could include this SINR result. There is no need to have further change. |
| Samsung | Maybe | As there seem to be different views |
| Qcom | Note | It’s clear from the feedback from other companies that **there are different interpretations to the current spec** 🡪 clarification is needed.  We support adding clarification |
| Apple | No |  |
| OPPO | No |  |
| LGE | No | The UE behavior in option A is already properly captured in the specification. |
| NEC | No | but we would like to ask capturing the conclusion in the Chairman note explicitly. |
| CATT | No |  |

**Rapportuer summary**: To be added later

## 3.2 On trigger quantity related clarification

[R2-2101422](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_113-e\Docs\R2-2101422.zip) On trigger quantity related clarification Ericsson CR Rel-16 38.331 16.3.1 2410 - A NR\_newRAT-Core

[R2-2101423](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_113-e\Docs\R2-2101423.zip) On trigger quantity related clarification Ericsson CR Rel-15 38.331 15.12.0 2411 - F NR\_newRAT-Core

Ericsson wants to clarify that the Ax threshold (*aN-ThresholdM*) and Ax offset (*a3-Offset*/*a6-Offset*) provides not only the threshold and offset values for the respective events but they also indicate the trigger quantity used for the event. The current procedural text is a copy-paste from LTE wherein there is an explicit parameter called triggerQuantity in RRM, to indicate what was used as triggerQuantity for measurements events. In NR, the signaling was designed so that this would not be needed. However, the field description associated to Ax offset and Ax thresholds still refer to the ‘selected trigger quantity’ which is not correct.

**Question-3: Do you think the change is necessary?**

|  |  |  |
| --- | --- | --- |
| **Company Name** | **Yes/No** | **Comments, if any** |
| Ericsson | Yes | The field description was a copy-paste from LTE and therefore, it was incomplete. |
| ZTE(LiuJing) | No | We understand the motivation is correct, but seems there is no room for misunderstanding even without clarification. And people can also know these are used for trigger quantity based on the IE definitions (see below).  eventA3 SEQUENCE {  a3-Offset MeasTriggerQuantityOffset,  reportOnLeave BOOLEAN,  hysteresis Hysteresis,  timeToTrigger TimeToTrigger,  useWhiteCellList BOOLEAN  },  eventA4 SEQUENCE {  a4-Threshold MeasTriggerQuantity,  reportOnLeave BOOLEAN,  hysteresis Hysteresis,  timeToTrigger TimeToTrigger,  useWhiteCellList BOOLEAN  }, |
| Huawei, HiSilicon | No | Same view with ZTE. There’re no real consequences if not approved.  The corresponding IE to the fields *a3-Offset/a6-Offset/aN-ThresholdM* is *MeasTriggerQuantityOffset*, one can easily understand the trigger quantity by its name. |
| Lenovo | No | The current field descriptions properly reflect ASN.1. |
| MediaTek | May not | Indeed we use single field to indicate trigger quantity and offset/threshold configuration in NR. So, the intention is fine. However, there is no room to misunderstanding as ZTE pointed out, so the CR is not really necessary.  On the other hand, we are okay with this change if majorities prefer to have it. In that case, we think this could just be included in the Rapporteur’s CR. |
| Nokia | No | We did not see any changes to UE behaviour. Maybe we miss something? |
| Samsung | No | Seems minor spec polishing i.e. no real need to change in particular R15 (might include something in Rap CR for R16) |
| Apple | No | Seems cosmetic issues. |
| OPPO | No | Not essential |
| LGE | No | Not essential. |
| Intel | No | We think it is quite clear from the IE clarification is not needed. |
| NEC | No | we do not see a need for this, while can go with majority. In any case, rapporteur CR should be sufficient at most. |
| CATT | No | The intention is fine, but together with the IE name we think there is no confusion. |

**Rapportuer summary**: To be added later

## 3.3 On stored SIB validity related clarification

[R2-2100751](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2//TSGR2_113-e/Docs/R2-2100751.zip) The validity of a stored SIB if SI Area ID is absent Fujitsu discussion Rel-15 NR\_newRAT-Core

Fujistu brings up an issue related to the valididty of the SI version stored by the UE and the version broadcasted by the cell. The issue is for the scenario when the *systemInformationAreaID* is not available in the stored version of the SI and also when *systemInformationAreaID* is not available in the SIB1 broadcasted by the serving cell as observed in the contribution.

**Question-4: Is there any ambiguity related to the validity of the stored SIB when the *systemInformationAreaID* is not available in the stored version of the SIB and/or when *systemInformationAreaID* is not available in the SIB1 broadcasted?**

|  |  |  |
| --- | --- | --- |
| **Company Name** | **Yes/No** | **Comments, if any** |
| Ericsson | No | In our view it is obvious that there is only a match when there is a stored *systeminformationAreaID* and a broadcasted *systeminformationAreaID* and they are the same. Otherwise there is not a match. |
| Huawei | No | If the network wants to use area specific SIB, there’s no reason not to include SIAID. The case is not valid. |
| ZTE(Yuan) | No | We understand in an appropriate NW implementation, the areaScope and systemInformationAreaID will be configured together and the issue raised in this paper will not appear. |
| Lenovo | No | The presence of areaScope is condition to the presence of systemInformationAreaID. This should be clear from the sentence below in the field description of systemInformationAreaID.  *“Any SIB with areaScope within the SI is considered to belong to this systemInformationAreaID.”*  Therefore, the condition below already implies that systemInformationAreaID is present in SIB1 from the serving cell.  2> if the *areaScope* is associated and its value for the stored version of the SIB is the same as the value received in the *si-SchedulingInfo* for that SIB from the serving cell: |
| MediaTek | No | The confusion come from the following assumption, which we think it is a wrong NW configuration.  “*The network may not provide the systemInformationAreaID in some cases even some SIBs are associated with ‘areaScope’*”  There is no need to discuss UE behavior on this kind of configuration. As pointed out by Huawei, if the NW want to use area specific SIB, it should of course configure the SIAID. |
| Nokia | No | Disagree with P1, If there is no SI area ID associated with a SIB, this means the SIB is cell specific SIB. But it is not practical that a previously area specific SIB suddenly changes to a cell specific SIB. Not sure what the use case would be. For P2 we are talking about a corner case here again disagree. We disagree with P3 as you are talking about improper configuration scenarios. These are not practical deployment scenarios.  SI Area ID has Need R. It means if the UE does not receive it, the UE must release the SI Area ID for the SIB concerned. It means the SIB must now be treated as cell specific SIB and hence the stored version of the SIB cannot be used any more. UE must follow the behaviour for cell specific SIB acquisition.  For Observation 3, this means the SIB is cell specific SIB. But it is not practical that a previously area specific SIB changes to a cell specific SIB. Not sure what the use case would be. |
| Samsung | No | We agree there seems no valid case requiring clarification and that areaScope and systemInformationAreaID will be configured together |
| Qcom | No | No need to complicate the behavior, just to avoid UE reacquiring the SI messages. If no SI Area ID is provided in either stored or broadcasted 🡪 UE assumes stored SI not valid |
| Apple | No | We think the configuration does not make sense if NW configures areaScope for a given SIB, but not includes SIAID in the SIB1. |
| OPPO | No | A good network implementation will avoid this case. |
| LGE | No | If the network wants to use area specific SIB, the *systemInformationAreaID* should be provided. |
| Intel | No | The match is based on presence and value and not for absence. |
| NEC | No | same view as Ericsson |
| CATT | No | The systemInformationAreaID is tied to areaScope, therefore this change is not needed. |

**Rapportuer summary**: To be added later

If the answer to the previous question is YES, then is there any need to change the specification.

**Question-5: Is there any need to clarify the specification about the validity of the stored SIB when the *systemInformationAreaID* is not available in the stored version of the SIB and also when *systemInformationAreaID* is not available in the SIB1 broadcasted?**

|  |  |  |
| --- | --- | --- |
| **Company Name** | **Yes/No** | **Comments, (if YES, please provide your preferred clarification)** |
| Ericsson | No | PS: we also think the text would become very awkward if we would try to clarify this further. |
| Huawei | No | Same as Question-4. |
| ZTE(Yuan) | No |  |
| Lenovo | No | The current specification is clear. |
| MediaTek | No |  |
| Nokia | No |  |
| Samsung | No |  |
| Qcom | No |  |
| Apple | No |  |
| OPPO | No |  |
| LGE | No |  |
| Intel | No |  |
| NEC | No |  |
| CATT | No |  |

## 3.3 Other changes

[R2-2101285](file:///D:/Documents/3GPP/tsg_ran/WG2/RAN2/2101_R2_113e/Docs/R2-2101285.zip) Miscellaneous non-controversial corrections Set IX Ericsson CR Rel-15 38.331 15.12.0 2399 - F NR\_newRAT-Core

Couple of non-controversial corrections are provided in R2-2101285 by the RRC rapporteur.

1. IE MIMO-ParametersPerBand

Re-arranged explanation of Conditional Presence *RBTermChange* to use the same layout as *RBTermChange1.* An “and” was deleted that could cause confusion. (Rel-15 change)

1. 5.3.7.2 Initiation (RRC connection re-establishment)

Deleted erroneous reference to clause 5.2.6 (Selection of cell at transition to RRC\_IDLE or RRC\_INACTIVE state) in TS 38.304, since at re-establishment UE is in RRC\_Connected.  
With this change, TS 38.331 is aligned with corresponding text in TS 36.331. (Rel-15 change)

**Question-6: Are the changes in R2-2101285 agreeable?**

|  |  |  |
| --- | --- | --- |
| **Company Name** | **Yes/No** | **Comments, (if YES, please provide your preferred clarification)** |
| Ericsson | Yes |  |
| Huawei, HiSilicon | No | The changes are not essential. Nothing is broken in the current text. |
| ZTE(Yuan) | Acceptable to us |  |
| Lenovo | Yes | The intention of rapporteur CRs is to fix minor issues. |
| MediaTek | Yes | Coversheet issue. There is no IE *MIMO-ParametersPerBand* related change.  And we have one more suggestion on editorial change in 5.7.4.3. The following field/IE name is not italic in the procedure text. Suggest to make them *italic*. (This apply to R16 too)  2> if the UE experiences internal overheating:  3> if the UE prefers to temporarily reduce the number of maximum secondary component carriers:  4> include reducedMaxCCs in the OverheatingAssistance IE;  4> set reducedCCsDL to the number of maximum SCells the UE prefers to be temporarily configured in downlink;  4> set reducedCCsUL to the number of maximum Scells the UE prefers to be temporarily configured in uplink;  3> if the UE prefers to temporarily reduce maximum aggregated bandwidth of FR1:  4> include reducedMaxBW-FR1 in the OverheatingAssistance IE;  4> set reducedBW-FR1-DL to the maximum aggregated bandwidth the UE prefers to be temporarily configured across all downlink carriers of FR1;  4> set reducedBW-FR1-UL to the maximum aggregated bandwidth the UE prefers to be temporarily configured across all uplink carriers of FR1;  3> if the UE prefers to temporarily reduce maximum aggregated bandwidth of FR2:  4> include reducedMaxBW-FR2 in the OverheatingAssistance IE;  4> set reducedBW-FR2-DL to the maximum aggregated bandwidth the UE prefers to be temporarily configured across all downlink carriers of FR2;  4> set reducedBW-FR2-UL to the maximum aggregated bandwidth the UE prefers to be temporarily configured across all uplink carriers of FR2;  3> if the UE prefers to temporarily reduce the number of maximum MIMO layers of each serving cell operating on FR1:  4> include reducedMaxMIMO-LayersFR1 in the OverheatingAssistance IE;  4> set reducedMIMO-LayersFR1-DL to the number of maximum MIMO layers of each serving cell operating on FR1 the UE prefers to be temporarily configured in downlink;  4> set reducedMIMO-LayersFR1-UL to the number of maximum MIMO layers of each serving cell operating on FR1 the UE prefers to be temporarily configured in uplink;  3> if the UE prefers to temporarily reduce the number of maximum MIMO layers of each serving cell operating on FR2:  4> include reducedMaxMIMO-LayersFR2 in the OverheatingAssistance IE;  4> set reducedMIMO-LayersFR2-DL to the number of maximum MIMO layers of each serving cell operating on FR2 the UE prefers to be temporarily configured in downlink;  4> set reducedMIMO-LayersFR2-UL to the number of maximum MIMO layers of each serving cell operating on FR2 the UE prefers to be temporarily configured in uplink;  2> else (if the UE no longer experiences an overheating condition):  3> do not include reducedMaxCCs, reducedMaxBW-FR1, reducedMaxBW-FR2, reducedMaxMIMO-LayersFR1 and reducedMaxMIMO-LayersFR2 in OverheatingAssistance IE; |
| Nokia | Yes | OK with corrections, the first change refers to wrong IE name on the cover page.   * + - 1. **IE MIMO-ParametersPerBand**   Re-arranged explanation of Conditional Presence RBTermChange to use the same layout as RBTermChange1. An “and” was deleted that could cause confusion. (Rel-15 change |
| Samsung | Yes |  |
| Qcom | Yes |  |
| Apple | Yes | The coversheet of CR does not have “clauses affected” indicated. |
| OPPO | Yes |  |
| LGE | Yes | Both changes are acceptable, but the coversheet issue as identified by MediaTek, i.e. the condition is not relevant to the IE MIMO-ParametersPerBand |
| Intel | Not essential | While it is certainly good to have clean specifications and thank the rapporteur for the effort, if these changes are felt needed, it can be included in the Rel-16 rapporteur CR. There is no functional change or correction of misunderstanding in this CR and is only editorial. |
| NEC | Yes | but do not see a strong need. can go with majority |
| CATT | Yes |  |

# 3 Conclusion

To be added later