**3GPP TSG-RAN WG2 Meeting #112-e *R2-201xxxx***

**Online, 2–13 November 2020**

**Agenda item: 5.4.1.3**

**Source: ZTE Corporation, Sanechips**

**Title: Report of [AT112-e][007][NR15] System Information and Idle mode (ZTE)**

**Document for: Discussion and Agreement**

# 1 Introduction

This is to report the result of the following email discussion in RAN2#112-e Meeting [1].

* [AT112-e][007][NR15] System Information and Idle mode (ZTE)

 Treat R2-2009394, R2-2009398, R2-2010414, R2-2010436, R2-2009808- R2-2009811, R2-2009782 (from AI 5.4.4, see further below)

 Intended outcome: Intermediate: Determine agreeable parts. Final: For agreeable parts, agreed CRs.

 Deadline: Intermediate deadline(s) by Rapporteur, Final: Discussion stop at Wed Nov 11, 1200 UTC

 Phase 1: collect companies’ view, by Wed 2020-11-05 12:00 UTC

 Phase 2: rapporteur will share summary report based on input of phase 1 for review, by Friday 2020-11-06 12:00 UTC

# 2 Contact Information

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| --- | --- |
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# 3 Discussion

## 3.1 SI mapping info

[R2-2009394](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_112-e%5CDocs%5CR2-2009394.zip) Clarification on SIB mapping to SI message MediaTek Inc.,Huawei, HiSilicon, Ericsson, Nokia, Nokia Shanghai Bell CR Rel-15 38.331 15.11.0 2065 - F NR\_newRAT-Core

[R2-2009398](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_112-e%5CDocs%5CR2-2009398.zip) Clarification on SIB mapping to SI message MediaTek Inc., Huawei, HiSilicon, Ericsson, Nokia, Nokia Shanghai Bell CR Rel-16 38.331 16.2.0 2066 - F NR\_newRAT-Core, NR\_pos-Core

**Question 1**: do you agree with the clarifications made in that paper, specifically that:

*Each SIB is contained only in a single SI message and each SIB is contained at most once in that SI message.*

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| Answers to Question 1 |
| Company | Yes/No | From which release | Technical justification |
| Nokia | Yes | Rel-15 | It is a real issue and specification needs update |
| MediaTek | Yes | Rel-15 | ProponentOne more thing to mention is that this is real issue found in the field. And we understand that it is some premature configuration in early R15 NR SA deployment. Therefore, we think that it would be good to clarify this in NR starting from Rel-15. |
| Ericsson (Martin) | Yes | Rel-15 | We do not recall why this was not interited from the LTE during the Rel-15 NR timeframe, but it seemed to be overlooked.  |
| Intel | Yes | Rel-15 | Better to clarify from the first applicable release to avoid inter-operability issue. |
| Samsung (Anil) | Yes | Rel-15 |  |
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**Conclusion:**

**To be added**

## 3.2 SIB acquisition

[R2-2010414](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_112-e%5CDocs%5CR2-2010414.zip) Correction on SIB acquisition Google Inc. CR Rel-15 38.331 15.11.0 2217 - F NR\_newRAT-Core

[R2-2010436](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_112-e%5CDocs%5CR2-2010436.zip) Correction on SIB acquisition Google Inc. CR Rel-16 38.331 16.2.0 2223 - F NR\_newRAT-Core

Moved from 6.16

The changes for Rel-15 and Rel-16 are slightly different as the SIB1 acquisition procedure has been slightly updated in Rel-16. Thus, two separate questions are asked for the Rel-15 CR and the Rel-16 CR.

**Question 2.1**: do you agree with the correction made in [R2-2010414](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_112-e%5CDocs%5CR2-2010414.zip) for SIB acquisition in Rel-15?

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| Answers to Question 2.1 |
| Company | Yes/No | Technical justification |
| Nokia | No | Change 1: Not OK. This is already covered in 5.2.2.3.5 for connected state UEs.Change 2: Not OK. This is already covered in 5.2.2.2.1 as part of SIB validity check. The for loop for each SIB is in that section. |
| MediaTek | No | For change 1, only SIB1 (and partial MIB) in connect mode is required in Rel-15. No need to mentioned the stored SIBs.For change 2, the original sentence already implies for each required SIB. No need to emphasize this. |
| Ericsson (Tony) | No | We have the same understanding as Nokia and MediaTek. Regarding the first change:* For Rel-15, there is no need to have the change because the UE need to have only SIB1 in connected mode.
* For Rel-16, what is proposed is already covered in section 5.2.2.3.5

Regarding the second change, this is already covered in 5.2.2.2.1 in the following action:1> for each stored version of a SIB:[…] |
| Intel | No strong view | We agree with others regarding change 1.Change 2 may be obvious from the other sentences mentioned by other companies but the current text does not seem to be exactly what is proposed - “for each SIB”. |
| Samsung (Anil) | No | Change1: In r15, other SIBs are not required in connected mode. So this change is not needed.Change 2: In our view, current text is clear. |
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**Question 2.2**: do you agree with the correction made in R2-2010436 for SIB acquisition in Rel-16?

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| Answers to Question 2.2 |
| Company | Yes/No | Technical justification |
| Nokia | No | Same as above |
| MediaTek | No | Similar comment as above. We think the original text is fine, there is no need to emphasize “for each” part.  |
| Ericsson (Tony) | No | Same comments as above. |
| Intel | As above |  |
| Samsung (Anil) | No |  |
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**Conclusion:**

**To be added**

## 3.3 UAC for AC1 in shared NW

**Rel-15 CRs**

[R2-2009808](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_112-e%5CDocs%5CR2-2009808.zip) Correction on uac-AccessCategory1-SelectionAssistanceInfo ZTE corporation, Sanechips, Nokia, Ericsson, CMCC, ChinaTelecom, CATT CR Rel-15 38.331 15.11.0 2129 - F NR\_newRAT-Core

[R2-2009810](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_112-e%5CDocs%5CR2-2009810.zip) Correction on uac-AC1-SelectAssistInfo ZTE corporation, Sanechips, Nokia, Ericsson, CMCC, ChinaTelecom, CATT CR Rel-15 36.331 15.11.0 4487 - F NR\_newRAT-Core

**Rel-16 CRs**

[R2-2009809](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_112-e%5CDocs%5CR2-2009809.zip) Correction on uac-AccessCategory1-SelectionAssistanceInfo ZTE corporation, Sanechips, Nokia, Ericsson, CMCC, ChinaTelecom, CATT CR Rel-16 38.331 16.2.0 2130 - F NR\_newRAT-Core

[R2-2009811](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_112-e%5CDocs%5CR2-2009811.zip) Correction on uac-AC1-SelectAssistInfo ZTE corporation, Sanechips, Nokia, Ericsson, CMCC, ChinaTelecom, CATT CR Rel-16 36.331 16.2.1 4488 - F NR\_newRAT-Core, NB\_IOTenh3-Core => revised in R2-2010999

[R2-2010999](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_112-e/Inbox/R2-2010999.zip) Correction on uac-AC1-SelectAssistInfo ZTE corporation, Sanechips, Nokia, Ericsson, CMCC, ChinaTelecom, CATT CR Rel-16 36.331 16.2.1 4488 1 F NR\_newRAT-Core

The Rel-15 CRs are meant to clarify the association between the PLMN and the assistance information for Access Category 1 (AC1) selection as well as the UE behavior upon receving the assistance information for AC1 selection.

The Rel-16 CRs, in addition to the similar clarifications as in Rel-15 CRs, introduce AC1 selection assistance information with value {a, b, c, notConfigured} to allow network not to configure such assistance information for a certain PLMN in RAN sharing case.

Thus, two separate questions are asked for the Rel-15 CRs and the Rel-16 CRs.

**Question 3.1**: do you agree with the changes made in [R2-2009808](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_112-e%5CDocs%5CR2-2009808.zip) and R2-2009810 for AC1 selection assistance information in Rel-15 to clarify:

1. The UE behavior upon receving the assistance information for AC1 selection
2. The association between the PLMN and the assistance information for AC1

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| Answers to Question 3.1 |
| Company | Yes/No | Technical justification |
| Nokia | Yes | Proponent |
| MediaTek | Yes |  |
| Intel | May be | Though we agree with the contents of the CR, it is reasonable implementation and there may not be much risk of inter-operability issues. |
| Samsung (Sangbum) | Yes |  |
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**Question 3.2**: do you agree with the changes made in R2-2009809 and R2-2010999 for AC1 selection assistance information in Rel-16 to address the following:

1. The UE behavior upon receving the assistance information for AC1 selection
2. The association between the PLMN and the assistance information for AC1
3. Introduce AC1 selection assistance information with value {a, b, c, notConfigured} to allow network not to configure such assistance information for a certain PLMN in RAN sharing case.

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| Answers to Question 3.2 |
| Company | Yes/No | Technical justification |
| Nokia | Yes | Proponent |
| MediaTek | Yes |  |
| Intel | Yes (with comments) | But we note that the third change is an enhancement and should not ideally have been combined with the mirror corrections of a Rel-15 CR. The following “and set to a, b, or c” was a bit confusing to understand that it has to be read with “if present and set to a, b, or c”. Don’t have any immediate better suggestion though other than point out that “*a*, *b*, or *c*” should be in italics. It is not clear to us why the magic sentence on early implementation is needed for this CR. |
| Samsung (Sangbum) | Yes |  |
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**Conclusion:**

**To be added**

## 3.4 Inter-RAT Cell Reselection and Mobility State

[R2-2009782](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_112-e%5CDocs%5CR2-2009782.zip) Clarifications for Inter-RAT Cell Reselection and Mobility State MediaTek Inc. discussion

In the above paper, it has been observed that:

*Observation 1: The text in idle/inactive-mode procedure specification (TS 38.304) does not specify explicitly whether inter-RAT cell reselections should be counted when determining UE mobility state based on the number of cell reselections within a given duration.*

*Observation 2: In UE conformance specification (TS 38.523), inter-RAT cell reselections are counted when determining UE mobility state based on the number of cell reselections within a given duration.*

However, as analyzed by the proponent, intra-RAT cells are geographically separated with possibly small overlaps, while the cell coverages of different RATs are likely to overlap with each other, or even the base stations are co-located. The reason why the number of cell reselections can be used to determine UE mobility is that UE can estimate the distance it has moved during a given duration based on the number of geographically separated cells it has crossed, with the assumption that average distance UE travels in a cell is similar for different deployments. Counting inter-RAT cell reselection may result in a much higher estimation of UE mobility and makes the mobility state determination more imprecise.

Also considering that the scope of a specification is limited in its own RAT as shown in “*NOTE:When the UE is camped on or searching for a cell to camp on belonging to other RATs, the UE behaviour is described in the specifications of the other RATs”* in clause 1 (Scope) of TS 38.304 [2], the following proposal is given:

**Proposal: Inter-RAT cell reselections should NOT be counted when determining UE mobility state based on the number of cell reselections within a given duration.**

**Question 4.1**: do you agree with the above proposal:

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| Answers to Question 4.1 |
| Company | Yes/No | Technical justification |
| MediaTek | Yes | (as summarized above by rapporteur) |
| Ericsson (Martin) | Maybe no | Not sure if we have a strong view, but we read 38.304 as if counting is continued (i.e. it is not explicitly excluded, only re-selections to the same cell are explicitly not counted). It is not clear to us why RAN5 added a conformance test for NR, but nof for LTE, where there is a similar issue. We understand the comment that another RAT may have different cell sizes, but the same may apply for inter-frequency NR (FR1 and FR2), i.e. mobility detection based on cell re-selection needs to be put in context. We also wonder if there are different implementation, i.e. different UE vendor views to answer yes or no.  |
| Intel | Yes | It seems reasonable to not count the inter-RAT cells as the specifications are about the current RAT by default. While counting inter-RAT cells may be useful where the NR coverage is not uniform, it should not be that common apart from initial deployment. |
| Samsung (Sangyeob) | No | It may have a similar issue for inter-frequency re-selection i.e. that other NR frequency may overlap. Reselection parameters normally make UE to stick on a frequency layer, and scaling rule can also somehow control UE's mobility state i.e. consider both intra-RAT and inter-RAT cells separately for TreselectionRAT, so we do not see any issue. Also, we would like to highlight that it indeed impacts UE conformance specification TS 38.523 and it may bring a functional change on current UE behaviour, which seems undesirable.  |
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**Question 4.2**: if the answer to Question 4.1 is “Yes”, how to clarify that in specs?

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| Answers to Question 4.2 |
| Company | Comments |
| MediaTek | * We may have NOTE TS 38.304 (clause 5.2.4.3.0), saying that “Inter-RAT cell reselections should not be counted when determining UE mobility state based on the number of cell reselections within a given duration.”
* We may trigger LS to RAN5. CR for RAN2 specifications is not critical if RAN2 has already common understanding.
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| Intel | Either or both of the proposals from MediaTek is OK  |
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**Conclusion:**

**To be added**

# 4 Conclusion

**TBD**

# 5 References

[1] RAN2 112-e Chairman Notes 2020-11-02 1600 UTC.docx

[2] TS38.304-g20.docx