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

eMeeting, 25th Jan – 5th Feb, 2021

Agenda Item: 5.4.4

Source: MediaTek Inc.

**Title: Correction**

Document for: Discussion and decision

# 1 Introduction

This is report for the following AT113-e mail discussion.

* [AT113-e][013][NR15] Idle Inactive (Mediatek)

 Scope: Treat [R2-2100181](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_113-e%5CDocs%5CR2-2100181.zip), [R2-2101249](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_113-e%5CDocs%5CR2-2101249.zip), [R2-2101250](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_113-e%5CDocs%5CR2-2101250.zip), [R2-2101355](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_113-e%5CDocs%5CR2-2101355.zip), [R2-2101840](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_113-e%5CDocs%5CR2-2101840.zip), [R2-2101896](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_113-e%5CDocs%5CR2-2101896.zip), [R2-2101897](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_113-e%5CDocs%5CR2-2101897.zip), [R2-2100247](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_113-e%5CDocs%5CR2-2100247.zip), [R2-2100248](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_113-e%5CDocs%5CR2-2100248.zip), [R2-2100306](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_113-e%5CDocs%5CR2-2100306.zip), [R2-2100307](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_113-e%5CDocs%5CR2-2100307.zip)

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

 Intended outcome: Report and Agreed CRs.

 Deadline: Schedule A (Deadline for comments Thursday Jan 28 1200 UTC). A Final round with Final deadline Thursday Feb 4 1200 UTC)

# 2 Discussion

## 2.1 Mobility State

### 2.1.1 Background

In the last RAN2 meetings, there was discussion on whether inter-RAT cell changes shall be counted for mobility state estimation. The following observation is made but the issue was postponed.

* Observation: 38.304 is not clear on whether inter-RAT cell changes shall be counted for mobility state estimation. The R5 test case is clear (option 1 – IRAT cell changes are counted). There seems to be different UE implementations.
* postponed

In this meeting, there are several proposals in [1-7] to conclude the topic. The e-mail discussion try to find an acceptable way forward.

### 2.1.2 Interpretation of current SPEC

As a starting point, we would like to confirm that current RAN2 specification is unclear on whether to include inter-RAT cell reselection in the MSE (mobility state estimation). No matter companies prefer to count IRAT cell reselection or not, it seems that the common understanding is that current SPEC is not clear enough.

**Question 1: Do companies agree that current RAN2 specification is not clear on whether inter-RAT cell changes shall be counted for mobility state estimation?**

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| **Company** | **Agree or not** | **Comments** |
| Nokia | No | This topic was discussed for E-UTRA in 2009 (R2-095617 – Nokia) and it was agreed in the meeting to leave this to up to UE implementation |
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In [4], company claims that RAN5 should define the test case based on RAN2 spec description. And in [5] it is pointed out that an editorial note is added in 38.523-1, which also implies that RAN5 test purposes shall be based on 3GPP core requirement. Rapporteur suggest to confirm this general 3GPP principle.

**Question 2: Do companies agree that RAN5 should define the test case based on RAN2 spec description?**

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| **Company** | **Agree or not** | **Comments** |
| Nokia | Yes | But as we expect this to be up to UE implementation test case should consider UE to pass independent of UE behaviour |
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### 2.1.3 Counting Inter-RAT cell reselection

In [1], company think that this is a purely UE side issue and the magnitude of the problem is not big. In [5], company also think that the issue is not so critical and leave to UE implementation would be reasonable. However, in [2], it is stated that there are some performance lost if UE does not count inter-RAT cell reselection. It seems worthwhile to discuss the consequence if UE does not count this inter-RAT reselection in MSE.

In [2], it is claimed that

“*As a consequence, taking the case when the UE is moving with high-mobility in inter-RAT cell reselection for instance, before the UE gets the new evaluation results of high-mobility state, the UE may be far away from the serving cell, in which case the UE may miss paging due to long transmission distance or may fail to transmit RRC setup/resume request message even after receiving paging successfully*”

**Question 3: Do companies agree that missing page or fail to access the network may arise if both the mobility state and reselection count are not inherited after inter-RAT cell reselection?**

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| **Company** | **Agree or not** | **Comments** |
| Nokia | No | See previous comments |
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In [2], it is claimed that

“*Take the inter-RAT cell reselection from NR to LTE for example, assuming that TCRmaxHys****t*** *broadcasted by the LTE cell is 240s, and the value of the timer corresponding to TCRmaxHys****t*** *(i.e. elapsed TCRmaxHys****t****) is 230s when the UE reselects the LTE cell from a NR cell.*

*If elapsed TCRmaxHys****t*** *is not inherited, the UE has to use the high-mobility state related parameters in cell reselection for at least 240s, else if inherited the UE may need to use the high-mobility state related parameters in cell reselection for 10s.*

*in other word, compared to the inheritance of elapsed TCRmaxHys****t****, no inheritance of elapsed TCRmaxHys****t*** *may lead to the time period 230s of contradiction between the adopted mobility state (i.e. high-mobility state) and actually mobility state (i.e. normal-mobility state). Considering the speed scaling factor of high-mobility state is 0.25~1, adopting high-mobility state may result in four times the number of cell reselections than adopting normal-mobility state within the same time period.*”

**Question 4: Do companies agree that power consumption may be increased if both the mobility state and reselection count are not inherited after inter-RAT cell reselection?**

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| **Company** | **Agree or not** | **Comments** |
| Nokia | No | See previous comments |
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### 2.1.4 Possible way forward

In [1], [4], [5], companies think that this should leave to UE implementation. In [2], it is proposed to have some clarification in Rel-16 but left to UE implementation in Rel-15. In [6] and [7], it is proposed to clarify inter-RAT cell reselection is counted for MSE in both Rel-15 and Rel-16. We suggest to discuss the way forward Release by Release. It is also possible to have further clarification in Rel-17 if we decided that it should be up to UE implementation at this moment.

In addition, rapporteur understand that the proposal in [2] and [6] applies for inter-RAT cell reselection between LTE and NR (i.e. not for reselection to/from UMTS/GSM). It seems that we also need 36.304 CR if agree to clarify. However, we would leave the CR discussion in phase 2 if necessary.

**Question 5: Which option(s) would be acceptable/preferable way forward for you in Rel-15?**

* **Option 1 – Leave to UE implementation**
* **Option 2 – Clarify that inter-RAT cell reselection between NR and LTE is counted in mobility state estimation.**

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| **Company** | **Prefer Option** | **Comments** |
| Nokia | Option 1 | This is agreed option in LTE and we see no need to have different handling in case reselections happened to different direction. In fact that would lead to quite werid situations that we do not have strict behaviour in case reselection occurs from LTE to NR but only if reselection occurs from NR to other RAT. |
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**Question 6: Which option(s) would be acceptable/preferable way forward for you in Rel-16?**

* **Option 1 – Leave to UE implementation**
* **Option 2 – Clarify that inter-RAT cell reselection between NR and LTE is counted in mobility state estimation.**

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| **Company** | **Prefer Option** | **Comments** |
| Nokia | Option 1 | See all the previous comments.  |
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### 2.1.3 LS to RAN5

In both [1] and [4], it is proposed to have LS to RAN5 to remove the mobility state test case related to the inter-RAT cell reselection. Rapporteur would assume that we should at least inform RAN5 our conclusion.

**Question 7: Do companies agree to send an LS to RAN5? If yes, what would be the suggested content?**

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| **Company** | **Agree to have LS** | **Comments**  |
| Nokia | No strong view |  |
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## 2.2 Other Idle/Inactive corrections

### 2.2.1 Corrections for Inactive (OPPO)

Companies are invited to provide comments on the following proposed CR.

[R2-2100247](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2101_R2_113e/Docs/R2-2100247.zip) Corrections for Inactive OPPO CR Rel-15 38.304 15.7.0 0197 - F NR\_newRAT-Core

[R2-2100248](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2101_R2_113e/Docs/R2-2100248.zip) Corrections for Inactive OPPO CR Rel-16 38.304 16.3.0 0198 - A NR\_newRAT-Core

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| **Company** | **Do you agree with the intent of the CR?** | **Comments** |
| Nokia | No | There is no misalignment. It is not PLMN selection to select PLMN in equivalent PLMN list. Only if PLMN is not part of the list! |
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### 2.2.2 UE power class in S Criterion (OPPO)

Companies are invited to provide comments on the following proposed CR.

[R2-2100306](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2101_R2_113e/Docs/R2-2100306.zip) Clarification on UE power class in S Criterion-R15 OPPO CR Rel-15 38.304 15.7.0 0199 - F NR\_newRAT-Core

[R2-2100307](file:///D%3A/Documents/3GPP/tsg_ran/WG2/RAN2/2101_R2_113e/Docs/R2-2100307.zip) Clarification on UE power class in S Criterion-R16 OPPO CR Rel-16 38.304 16.3.0 0200 - A NR\_newRAT-Core

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| **Company** | **Do you agree with the intent of the CR?** | **Comments** |
| Nokia | No | Even the LTE spec TS36.101 defines more than one UE power class e.g. 23 dB and 26 dBm UE power classes for certain frequency bands. Thus, NR is not any different from LTE and thus, the specs should also be aligned. And as there has not been problems in LTE it seems not justified to have changes in NR either. |
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# 3 Conclusions

Base on the discussion in section 2, we propose the following:

**Proposal 1:**

# 4 References

[1] R2-2100181, “Way forward for open issue on mobility state determination”, Samsung Electronics Co., Ltd

[2] R2-2101249, “Discussion on Inter-RAT Cell Reselection and Mobility State”, Huawei, HiSilicon

[3] R2-2101250, “Correction to Inter-RAT Cell Reselection and Mobility State”, Huawei, HiSilicon

[4] R2-2101355, “Clarification on Inter-RAT Cell Reselection and Mobility State”, Apple

[5] R2-2101840, “Discussion on Inter-RAT Cell Reselection and Mobility State”, MediaTek Inc,

[6] R2-2101896, “Clarification of inter-RAT Cell Reselection for Mobility State Determination”, Qualcomm Incorporated

[7] R2-2101897, “Clarification of inter-RAT Cell Reselection for Mobility State Determination”, Qualcomm Incorporated