[98e-32-R18-IoT-NTN] - Version 0.0.5

RAN

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3GPP TSG RAN Meeting#98-e RP-223472

Electronic Meeting, December 12th – 16th 2022

Title: Moderator Report [98e-32-R18-IoT-NTN]

Source: MediaTek Inc. (Moderator)

Agenda Item: 10.2.1

1 Introduction

This discussion includes proposed WID updated from RP-223024, RP-223143, RP-223371 (Section 2.2).

2 Initial Round

2.1 Update to 4.1.1 IoT-NTN Performance Enhancement in Rel-18 to address remaining issues from Rel-17

Current Objective text:

This work considers Rel-17 IoT-NTN as baseline as well as Rel-17 NR-NTN outcome and the further IoT-NTN performance enhancements objectives are listed below:

- *Disabling of HARQ feedback to mitigate impact of HARQ stalling on UE data rates [RAN1,RAN2]*
- *Study and specify, if needed, improved GNSS operations for a new position fix for UE pre-compensation during long connection times and for reduced power consumption. Simultaneous GNSS and NTN NB-IoT/eMTC operation is not assumed. [RAN1]*

NOTE: The need for RAN4 Core requirements for this objective will be identified after the conclusion on the need for improvements.

Observation and proposal (from RP-223143 CICT):

Observation : RAN1 has concluded the necessity of GNSS measurement enhancement during long connection times, and some RAN2 work is needed. So the objective need to be updated accordingly.

Proposal 1: For the 2nd subbullet, remove ”if needed”, and add RAN2 as secondary responsible group.

Feedback Form 1: Proposed update to 4.1.1 - initial round comments

1 – HUGHES Network Systems Ltd Support this proposal
2 – Inmarsat We support this proposal
3 – Nokia France We support this proposal.
4 – Beijing Xiaomi Mobile Software Fine with the proposal.
5 – Apple R&D We think the change to WID is reasonable.
6 – Qualcomm Incorporated We are OK with the update.
7 – ZTE Corporation Agree
8 – HuaWei Technologies Co. Yes we understand this is consistent with RAN1's conclusion.
9 – ZTE Corporation We also support this proposal.
10 – Transsion Holdings we support this proposal
11 – Samsung Research America OK with the update.

12 – Lenovo (Beijing) Ltd

Lenovo:

OK with the proposal.

13 – CATT

Support this proposal.

14 – Guangdong OPPO Mobile Telecom.

OK with the proposal.

15 – VODAFONE Group Plc

ok with the update

16 – TURKCELL

We support the proposal

17 – NEC Telecom MODUS Ltd.

support

18 – MediaTek Inc.

We agree

19 – NOVAMINT

We support the proposal

20 – ROBERT BOSCH GmbH

We support the proposal

21 – Ericsson LM

OK to add RAN2 as secondary group but we wonder why ”if needed” needs to be removed? Only essential functionality should be specified and if RAN1 has concluded it is needed, then RAN2 can proceed with that. Otherwise removing ”if needed” opens up the study for any kind of improvements. Thus we support only to add the RAN2 as secondary group.

22 – Eutelsat S.A.

We support Proposal 1

23 – THALES

Ok with the proposal 1

24 – THALES

Ok with the proposal 1

25 – HUGHES Network Systems Ltd

OK with proposal 1

LATE UPDATE requested by Chair to also include P1 from RP-223371.

NOTE that this was added late, so it will be open for comments also during intermediate round.

Observations / Justifications: See RP-223371

Proposal: Update the second subbullet above, adding ”and other relevant operations for UL synchronization (e.g. SIB acquisition, enhancements on UL segmentation duration)” and add RAN2 as secondary responsible, giving the following text:

- *Study and specify, if needed, improved GNSS operations for a new position fix for UE pre-compensation and other relevant operations for UL synchronization (e.g. SIB acquisition, enhancements on UL segmentation duration) during long connection times and for reduced power consumption. Simultaneous GNSS and NTN NB-IoT/eMTC operation is not assumed. [RAN1, RAN2]*

Feedback Form 2: Update to 4.1.1 (late addition) - initial/intermediate Rnd

1 – NOVAMINT

We are OK with this addition

2 – MediaTek Inc.

This is a significant open-ended expansion of scope which is a concern to us esp. given these aspects, that were discussed in WGs have not been acknowledged by WG.

Side note: the proposal, if agreed, would also require significant TU expansion, which 3371 is not considering.

3 – Ericsson LM

We share the view with MTK on this, that is, it would be an expansion of the scope which has not been agreed in WGs

4 – HuaWei Technologies Co.

We share the same view as MediaTek, this proposal is not directly linked to the current objective and is kind of up-scoping without any conclusion in WGs.

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2.2 Update to 4.1.2 Mobility Enhancements

Current Objective text:

The following mobility enhancements objectives are listed.

- *Support of neighbour cell measurements and corresponding measurement triggering before RLF, using Rel□17 (TN) NB-IoT, eMTC as a baseline. [RAN2]*
- *Re-use the solutions introduced in Rel-17 NR NTN for mobility enhancements for eMTC, with minimum necessary changes to adapt them to eMTC [RAN2]*
- *Define UE RRM core requirements for the above mobility enhancement features [RAN4].*

Observation and proposal (from RP-223143 CICT and RP-223371 Nokia):

Observation: The following agreement was made in Q4 in RAN2: RAN2 doesn't introduce neighbour cell ephemeris in Rel-17 IoT-NTN, neither for eMTC not for NB-IoT. RAN2 agrees to support this in Rel-18, with details FFS.

Proposal 2: Add to objectives to *Introduce signalling of neighbour cell ephemeris, for eMTC and NB-IoT*, which is RAN2 responsibility.

Observation and proposal (from RP-223024 Apple):

Observation: Rel-17 feature of "initiation of connected neighbour cell measurements before RLF" was only specified for NB-IoT UE.

Observation: RAN2 spent significant time in deciding whether eMTC should be included in this objective.

Proposal 3: RAN to provide guidance whether eMTC is included or not in the following objective: *Support of neighbour cell measurements and corresponding measurement triggering before RLF, using Rel 17 (TN) NB-IoT, eMTC as a baseline. [RAN2]*

Moderator: Comment on proposals 2 and 3 above. Detailed wording can be commented in a later round.

Feedback Form 3: Proposed updates to 4.1.2 - Initial Rnd

1 – MediaTek Inc.

On Proposal 3, The Moderator understanding is the following: After RLF, a UE attempts to select a suitable cell. Details are not specified but a common assumption is that a UE does this as fast as possible, i.e. typically would use any available information about neighbor cells, e.g. recently measured / detected cells. For eMTC, a UE can be configured for connected mode measurements for handover etc, and thus if the base-station has configured correctly there is reason to believe that a UE may have useful neighbor cell info at RLF, to be used for fast cell selection. For NB-IoT, a UE cannot be configured for connected mode measurements for handover etc and a UE may need to search from scratch at RLF if no info is provided. THUS it seems that the most obvious case is for NB-IoT, and possibly the eMTC case need to be more clearly motivated

2 – Nokia France

Proposal 3 in RP-223371 and the proposal in RP-223143 for section 4.1.2 of the WID indeed seem well aligned.

We also support the applicability of section 4.1.2 to both NB-IoT and eMTC.

3 – Inmarsat

We support Proposal 2 as is.

For Proposal 3, in essence we agree with Mediatek's comment. It makes sense to consider including measurement of neighbouring cell by a NB-IoT UE in connected mode, including both intra-frequency and inter-frequency measurement, because this capability is currently not available. It doesn't seem anything is needed for eMTC since connected mode measurement is already supported.

4 – Qualcomm Incorporated

For Proposal 2, as this was from previous RAN2 agreement, we are ok to explicitly add or just continue to work based on previous agreements (no strong view). It can also be clarified that this is for both IDLE and CONNECTED mode measurements.

For Proposal 3, we also support the applicability of section 4.1.2 to both NB-IoT and eMTC.

5 – Apple R&D

As the proponent of Proposal 3, we share the same view as MediaTek and Inmarsat that measurement before RLF is a feature beneficial to NB-IoT. Reasoning is NB-IoT UE does not support normal RRM in connected state, thus in Rel-17 3GPP defined a specific solution to enable measurement before RLF for NB-IoT in order to save the time of re-establishment. For eMTC, legacy mobility handling (MR and HO) is feasible so the motivation to enable a special measurement before RLF is not very clear.

For Proposal 2, in general we are fine to introduce neighbor cell ephemeris for both eMTC and NB-IoT.

6 – HuaWei Technologies Co.

We support Proposal 2.

We also support Proposal 3, and agree with Apple and the moderator's analysis. Unlike NB-IoT, eMTC already has Connected mode measurements, and will discuss time/location based CHO in Rel-18. Therefore it is unclear for us why this enhancement is essential for eMTC. This is a specific enhancement for NB-IoT in our view, as also explained by MediaTek.

7 – ZTE Corporation

We are generally fine with **P2** above but think **P3** in RP-223371 is a bit confused.

The original objective of neighbor cell measurements mainly refers to the connected mode measurement while this new objective can be applied to both idle/active states. We think it's better not mix them together.

We are fine to add a new objective bullet as the suggestion for section 4.1.2 in RP-223143. But we disagree to explicitly mention serving cell. During the R17 discussion, there was already concern on putting neighbour cell ephemeris in SIB31. So which message is used to provide this information can be left to WG2 discussion and decision. The wording suggesting is as below:

- Introduce neighbour cell ephemeris in ~~serving cell~~ system information, for eMTC and NB-IoT [RAN2]

For P3 above, we have similar view as MediaTek and Inmarsat and think it's unnecessary to introduce enhancements for connected mode neighbor cell measurements for eMTC.

8 – Transsion Holdings

we support P2.

For P3, we have similar view as MediaTek and think eMTC doesn't need this.

9 – Samsung Research America

OK with proposal 2.

Proposal 3 seems unnecessary.

10 – Lenovo (Beijing) Ltd

Lenovo:

For Proposal 2, we think a RAN2 agreement would be sufficient.

For Proposal 3, we think it would be necessary to clarify as RAN2 have spent much time discussing with such confusion. In our understanding, for eMTC whose mobility is not RLF-based, neighbour cell measurements and corresponding measurement triggering may consider similar solutions for NR NTN i.e. Event D1.

11 – CATT

we support Proposal 2.

and for Proposal 3, we support the intention, and we think this is not necessary for eMTC.

12 – Guangdong OPPO Mobile Telecom.

We support proposal 2.

For proposal 3, we would like to support enhancement for both eMTC and NB-IoT. Some companies argued that eMTC already has connected mode measurement, however, it is also true that connected mode measurement has been supported for NB-IoT in Rel-17. We should not discriminate between eMTC and NB-IoT when considering enhancements.

13 – VODAFONE Group Plc

support proposal 2, this is align with RAN2 agreement

14 – TURKCELL

We support proposal 2.

15 – NEC Telecom MODUS Ltd.

we are fine with P2.

on proposal 3, we agree with MediaTek. Measurement triggering before RLF is only necessary for NB-IOT case. For eMTC, UE should already be configured with neighbouring cell measurement for HO and the same measurement can be used for RLF if happens.

16 – NOVAMINT

We support proposal 2

For proposal 3, we tend to agree with MediaTek's comment

17 – Deutsche Telekom AG

P2: obviously urgently needed

P3: it is clear that this is related to both NB-IoT AND eMTC ("LTE-M")

18 – ROBERT BOSCH GmbH

We support proposal 2. For proposal 3, we support the requirement; but we believe it should be covered for eMTC.

19 – Eutelsat S.A.

We support Proposal 2.

20 – MediaTek Inc.

We concur with the Moderator's understanding

21 – Ericsson LM

We are OK with P2, considering it is a RAN2 agreement already (thus perhaps not strictly even needed)

On Proposal 3, we think it is clear in the current WID formulation that both NB-IoT and eMTC are included.

While eMTC does support connected mode mobility and measurement reporting etc., the triggering conditions under discussion in Rel-18 include location and time which can be beneficial in NTN deployments. Note that this was not the case for TN which is why the current framework was considered sufficient for eMTC back then. We think there is equal motivation to specify the new triggering conditions for eMTC as well as for NB-IoT. That is, we agree with the other companies who replied that there are use cases also for eMTC and we should not discriminate between NB-IoT and eMTC.

22 – HUGHES Network Systems Ltd

We support proposal 2

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2.3 Update to 4.1.3 Further Enhancements to discontinuous coverage

Current Objective text:

Potential enhancement to discontinuous coverage resulting from SA2 study (FS_5GSAT_Ph2).

Observation and proposal (from RP-223143 CICT):

Observation: SA2 has finished the study of the SI FS_5GSAT_Ph2, two key issues related to discontinuous coverage have been identified, and about 23 solutions have been given□TR 23.700-28 V1.1.0 (2022-10)□.

Observation: RAN WGs can start the study to address the two key issues and relative solutions mentioned in the TR 23.700-28, or we just wait for the further progress of SA2.

Proposal 4: update the WID and replace the current objective text with the following:

The following further discontinuous coverage enhancements objectives are listed.

- *Support further mobility management enhancement with discontinuous satellite coverage [RAN2, RAN3]*
- *Support power saving enhancement for UE in discontinuous coverage [RAN2, RAN3]*

Note: the output of SA2 SI (FS_5GSAT_Ph2) can be started as a baseline.

Moderator: Initial comments on the proposal 4 above. Wordsmithing detailed comments can be provided in a later round.

Feedback Form 4: Proposed update to 4.1.3 - Initial Rnd

1 – HUGHES Network Systems Ltd Support proposal 4
2 – Nokia France In our understanding, proposal 4 is based on an old version of the WID. The WID was updated in RP-221806 in RAN#96 with the following text for this objective: ”Study and specify, if needed, mobility management enhancements and power saving enhancements for discontinuous coverage, taking into account the conclusions from the SA2 study FS_5GSAT_Ph2. [RAN2, RAN3].” With this, the proposal from 3143 seems already taken into account. We could, however, delete ”if needed” from this objective.
3 – Inmarsat We support proposal 4 in its current wording

4 – Qualcomm Incorporated

We think the current WID version is sufficiently clear and do not see the need to revise the objective in 4.1.3.

5 – Apple R&D

As Nokia pointed out, seems only minor correction (removing ”if needed”) to the WID is required.

6 – HuaWei Technologies Co.

Perhaps the first step is to check whether SA2’s conclusion really impacts anything in RAN WGs, it is a bit unclear to us for the time being. So if we are not sure on this, perhaps to keep the current WID is already sufficient.

7 – ZTE Corporation

Agree with Nokia and Qualcomm.

8 – Samsung Research America

Work is ongoing, no need for an update.

9 – Lenovo (Beijing) Ltd

Lenovo:

OK to update the bullet and start with SA2’s output as baselines.

10 – CATT

We can gree with Apple, to remove ”if needed”, to start RAN work.

11 – Guangdong OPPO Mobile Telecom.

The current WID version is sufficient.

12 – VODAFONE Group Plc

could wait for SA2 conclusion for further update to this objective

13 – TURKCELL

The current WID is ok. We can make the minor update as Nokia suggested.

14 – NEC Telecom MODUS Ltd.

Agree with Nokia and fine to delete “if needed” from the objective.

15 – Deutsche Telekom AG

PLEASE CONSIDER THIS TIME BOTH: the NTN-NTN DC aspects AND the **UNCHANGED** TN aspects when UE experience DC on the NTN !!!!!!

16 – NOVAMINT

As pointed out by Nokia, the WID was modified in RAN#96 with RP-221806; However, we tend to prefer the wording of proposal 4 as it is splitting the 2 sub-objectives (mobility and power saving) in the same way as the other objectives and anyway ”if needed” should be removed.

17 – ROBERT BOSCH GmbH

Similar to Nokia’s proposal, we suggest removing ”if needed” only from the objective.

18 – MediaTek Inc.

As pointed out above, the latest WID already states:

4.1.3 Further enhancement to discontinuous coverage

- *Study and specify, if needed, mobility management enhancements and power saving enhancements for discontinuous coverage, taking into account the conclusions from the SA2 study FS_5GSAT_Ph2. [RAN2, RAN3].*

SA2 has concluded its study: §8.1 in 23.700-28 v2.1.0 is relevant to this discussion: impacts are concentrated at NAS with very limited corresponding impact into the RAN/AS (some of which requires further discussion during SA2 normative work).

”if needed” could be removed; ”taking into account” could be rephrased to ”according to”

Study and specify~~, if needed,~~ mobility management enhancements and power saving enhancements for discontinuous coverage, ~~taking into account~~ according to the conclusions from the SA2 study FS_5GSAT_Ph2. [RAN2, RAN3].

19 – Eutelsat S.A.

We support removing ”if needed” from the related objective.

20 – Ericsson LM

As mentioned by number of companies, the current formulation in the current WID is sufficient also in our opinion.

3 Intermediate Round

3.1 Update to 4.1.1 IoT-NTN Performance Enhancement in Rel-18 to address remaining issues from Rel-17

Item 1 Moderator Proposal:

- *Study and specify~~, if~~ needed~~,~~ improved GNSS operations for a new position fix for UE pre-compensation during long connection times and for reduced power consumption. Simultaneous GNSS and NTN NB-IoT/eMTC operation is not assumed. [RAN1, RAN2]*

Moderator: Given the comments, the above proposal should be agreeable. Anyway a possibility for further comments here (comment only if you need to)

Feedback Form 5:

1 – Nokia France Agreed
2 – Spreadtrum Communications Support
3 – CATT Support
4 – China Telecommunications Agree
5 – Apple R&D Agree
6 – Lenovo (Beijing) Ltd Agree
7 – ZTE Corporation Agree
8 – THALES Agree
9 – THALES Agree

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10 – THALES Agree
11 – THALES Agree
12 – ROBERT BOSCH GmbH Agree
13 – NOVAMINT Agree
14 – Inmarsat Agree
15 – Ericsson LM We can go with the majority but would like to ensure that by removing ”if needed” we don’t open the study to all kind of optimizations which are not essential for the work (and thus expanding the scope etc.).
16 – NEC Telecom MODUS Ltd. agree
17 – Eutelsat S.A. Support removing ”if needed” and adding RAN2.
18 – HuaWei Technologies Co. agree

Item 5 (P1 from RP-223371)

The Proposed Change:

- *Study and specify, if needed, improved GNSS operations for a new position fix for UE pre-compensation and other relevant operations for UL synchronization (e.g. SIB acquisition, enhancements on UL segmentation duration) during long connection times and for reduced power consumption. Simultaneous GNSS and NTN NB-IoT/eMTC operation is not assumed. [RAN1, RAN2]*

Moderator: As promised, this discussion to continue in intermediate round. If possible, maybe proponent can attempt to address concerns expressed in initial comments, to understand if something can be agreeable in the end.

Feedback Form 6: Continuation from feedback form 2, on P1 from RP-223371

1 – MediaTek Inc.

MODERATOR: Summary from Initial Round, where this item was added late:

- Novamint support the proposal

- Mediatek, Huawei, Ericsson expresses concerns that this proposal involves an increase in scope

See also above, feedback form 2.

2 – Nokia France

We (obviously!) support this proposal. In order to make long connections work, which is the goal of the objective, it is necessary to ensure that UEs that are using many repetitions can acquire SIBs before timer expiry forces them to move back to IDLE, leading to having to restart the data transfer. Thus these elaborations are necessary in order to complete the objective.

3 – Qualcomm Incorporated

First, based on item 1/ form 5 above, 'if needed' would be removed from here. In our view, there is already procedure defined for the 'SIB acquisition' in connected mode. If improvement is needed in this context, the "study and specify" ... "improved GNSS operations" should cover it. We do not see a need to add the clarification on "other relevant operations for UL synchronization" since RAN1 is already discussing these issues and assessing if they are needed. So, we do not see a need for this update.

4 – CATT

We share the similar view with MTK, E/// and HW, it looks like an expansion of the scope which has not been agreed in WGs.

5 – Apple R&D

We as well are afraid this is an up-scoping without agreement from WG(s).

6 – Lenovo (Beijing) Ltd

We share the view that this proposal is extending the scop w/o WG agreements.

7 – ZTE Corporation

We also share the view with MTK and no need to up-scope this topic.

8 – Samsung R&D Institute UK

This would seem like a non-negligible addition. Furthermore, our view is that RAN1/RAN2 should not spend a lot of time dealing with issues arising from extreme transmission durations.

9 – MediaTek Inc.

Our position remains the same as in the initial round - this is a significant upscoping with no prior vetting from the working groups when these were discussed.

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10 – Ericsson LM Same position as during the first round.
11 – HuaWei Technologies Co. same view as the first round.

3.2 Update to 4.1.2 Mobility Enhancements

Item 2 Moderator Proposal:

The following mobility enhancements objectives are listed.

- *Support of neighbour cell measurements and corresponding measurement triggering before RLF, using Rel17 (TN) NB-IoT, eMTC as a baseline. [RAN2]*
- *Support signalling in system information of neighbour cell ephemeris, for eMTC and NB-IoT [RAN2]*
- *Re-use the solutions introduced in Rel-17 NR NTN for mobility enhancements for eMTC, with minimum necessary changes to adapt them to eMTC [RAN2]*
- *Define UE RRM core requirements for the above mobility enhancement features [RAN4]*

Item 3

Moderator observes that there is some confusion on the first bullet of the objective:

- *Support of neighbour cell measurements and corresponding measurement triggering before RLF, using Rel17 (TN) NB-IoT, eMTC as a baseline. [RAN2]*

Opinions, and moderator speculations of the intentions:

- Some Companies (majority) seems to think that the intention is to enhance the NB-IoT Neighbor cell measurements for the RLF based mechanism, and i.e. this is only for NB-IoT.
- Some Companies seems to think that this is about enabling further neighbor cell measurements in general for NTN (e.g. by providing the Ncell ephemeris), i.e. for all current mechanisms using neighbor cell measurements, for MTC and for the RLF based mechanism for NB-IoT.
- Some Companies seems to think that also eMTC should have improved Ncell measurements specifically for RLF recovery, (i.e. additionally inheriting the NB-IoT mechanism and its enhancements for eMTC). A number of companies confirm the opposite, i.e. that eMTC doesnt need to inherit the particulars of the NB-IoT RLF mechanism.
- Other intention ?!

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Moderator observes that initial round doesn't support changing the text, but think that it could be fruitful to collect another round of comments, looking for potential clarification, if any. Companies are asked to clarify their intentions, e.g. along the lines outlined by moderator.

Feedback Form 7:

1 – Qualcomm Incorporated

In our view eMTC is not excluded from the objective. The confusion may have come from mix-up of solutions, i.e., whether the Rel-17 (TN) NB-IoT solution can be applicable to eMTC. It should not be applicable because eMTC has its own procedure defined for measurement. If such clarification helps, we are OK to clarify.

Otherwise, even if we do not update the objective, there should not be any issue as RAN2 has made following agreement in the last meeting:

- RAN2 will continue to consider neighbour measurement enhancements in connected mode for eMTC.

2 – CATT

Support the moderator's proposal.

3 – CATT

Support the moderator's proposal.

4 – China Telecommunications

Support

5 – Lenovo (Beijing) Ltd

OK with the moderator's proposal.

6 – Apple R&D

Regarding the first sub-bullet, the debate whether measurement before RLF applies to eMTC consumed significant online time in RAN2 for three meetings. In round 1 discussion, a clear majority of companies among the ones who commented on this matter shared the understanding that it is mainly for NB-IoT. It would be very helpful that RAN plenary provides a guidance to avoid the same debate in RAN2.

For the newly added sub-bullet, we are fine with it.

7 – Samsung R&D Institute UK

Item 2 looks good.

For Item 3 - Our view is that we think that using the same mechanisms that have been agreed to be introduced for NB-IoT can be beneficial for eMTC as well. This may not be for the purpose of RLF, but rather for avoiding performing measurements until it is needed.

We think that RAN2 can continue discussing the technical merits of this and that there is no need for RAN to restrict the technical discussions in RAN2 at this stage. If discussions do not progress and this is still an open item in a few meetings time then we can make a decision that it should apply only to NB-IoT.

8 – NOVAMINT

agree with Qualcomm

9 – Nokia France

Item 2 is fine.

For item 3, discussion can continue in RAN2 and we do not see a need to update the objective. For clarification, in our understanding neighbour-cell measurements before RLF are supported only for NB-IoT; eMTC can configure connected mode measurements which can be used for handover and also for RLF (to detect the target cells quickly), so enhancements are not critical for eMTC.

10 – Inmarsat

We are not against applying neighbour cell measurement in connected mode to both NB-IoT and eMTC if that's the issue. But NB-IoT is where it matters the most.

11 – ZTE Corporation

Item 2 is fine.

Agree with Qualcomm about Item 3.

12 – Ericsson LM

The added ephemeris bullet seems to be something RAN2 has agreed already and therefore it is not needed in the WID.

The options from the moderator are not fully clear to us, e.g. what is the difference between the second and the third bullets?

In our view, as also explained in our previous reply, the mechanism developed and specified for measurement triggering to cope better with RLF in Rel-18 for IoT NTN should apply equally to both NB-IoT and eMTC there is no need for RAN to restrict the technical discussion in RAN2. This seems to be what the third bullet says, however, we don't think there is a need to introduce the Rel-17 mechanism specified for NB-IoT UEs based on RSRP measurements for eMTC UEs. That is, we are fine not to specify the Rel-17 RSRP-based triggering mechanism for eMTC UEs, but only specify the new criteria based on e.g. time, location., that are under discussion as part of the current work item.

13 – NEC Telecom MODUS Ltd.

NEC: Item2 is fine

For Item3, we share the moderator's summary. we prefer to follow the majority opinion that it is only applicable to NB-IoT. Measurement enhancement for eMTC is covered by the other bullet in our opinion.

14 – HuaWei Technologies Co.

There seems some confusion here, we understand neighbour cell measurements are needed for NB-IoT and eMTC, while the RLF part seems more dedicated to NB-IoT. Therefore we suggest some update as below:

Support of neighbour cell measurements for NB-IoT and eMTC, and corresponding measurement triggering before RLF for NB-IoT, using Rel17 (TN) NB-IoT, eMTCas a baseline. [RAN2]

3.3 Update to 4.1.3 Further Enhancements to discontinuous coverage

Item 4 Moderator Proposal: There is no need to update the WID

4 Final Round

Moderator: The proposed WID changes from Initial Round are agreeable. (no need to further discuss)

Moderator: P1 from RP-223371 is not agreeable. (no need to further discuss)

Moderator: On the following WI objective sub-bullet: *Support of neighbour cell measurements and corresponding measurement triggering before RLF, using Rel17 (TN) NB-IoT, eMTC as a baseline. [RAN2],* It is proposed to not update the WID, and/but it is proposed to endorse the following two clarifications:

Clarification 1: The objective text includes addressing neighbor cell measurements for eMTC (assuming current eMTC mechanisms), and includes addressing neighbor cell measurements for NB-IoT (assuming current NB-IoT mechanisms, including the mechanism of measurement triggering before RLF).

Clarification 2: The objective text is not intended to include applying the NB-IoT measurement triggering before RLF mechanism and its enhancements to eMTC.

Moderator, final Rnd: The Clarifications 1 & 2 (proposed for endorsement) can be further commented on in the final round, if comments are needed. Note that there was some support to go in opposite direction to Clarification 2, but the opposition was stronger than support and the moderator assumes that such change need either clear justification or strong support. Intention to save time and have better focus in the WG.

Feedback Form 8: Final Comments (focus on clarifications 1 and 2)

1 – Qualcomm Incorporated

Thanks to moderator for the discussion. We are fine with the clarifications.

2 – Ericsson LM

We have a question for clarification (of the clarifications): Is the intention with 1 & 2 to say that eMTC would be excluded for the improvements being currently discussed in Rel-18 (e.g. the possible time/dis-

tance based triggers to start measurements before RLF)? Or are they to say that the intention is not to copy the NB-IoT mechanism from Rel-17 to eMTC, but whatever comes in Rel-18 applies to both?

As we mentioned in our previous reply, we are fine to not port the R17 NB-IoT mechanism for eMTC, but we do not want to exclude any new mechanisms developed in R18 from eMTC. (We'll update our reply if needed based on possible clarification)

3 – Apple R&D

Thanks to the moderator for the great efforts. We are fine with the two clarifications.

4 – Lenovo (Beijing) Ltd

Fine with the clarifications.

5 – HuaWei Technologies Co.

We think the clarifications are reasonable and we are fine with it.

6 – Samsung R&D Institute UK

Thank you for the great efforts on this. We are fine with clarification 2.

We are a bit confused about clarification 1 and the summary. Is the intention to say that RAN2 1) should/can address enhancements for neighbour cell measurements for eMTC or 2) should/can not address enhancements for neighbour cell measurements for eMTC?

If the intention is that RAN2 can address enhancements for neighbour cell measurements, then perhaps an addition of "The objective text includes **addressing enhancements** for neighbor cell measurements for eMTC" could make things more clear.

If the intention is that RAN2 should not discuss enhancements for neighbour cell measurements for eMTC, then the text does not spell this out clearly for us.

Either way, our preference is that RAN2 can address enhancements for neighbour cell measurements for eMTC, but we are OK to compromise either way.

7 – Ericsson LM

It is not clear to us what is intended with Clarification 1, considering that Clarification 2 states explicitly that the objective on neighbor cell measurements does not apply to LTE-M devices. We wonder whether there is a misunderstanding and therefore should reconsider the final proposal to address the concerns on why this objective should also apply to LTE-M devices. But as said, it is not exactly clear to us what Clarification 1 intends to say.

We do not agree with Clarification 2 and we think that it would not be appropriate to leave the objective as it is in the WID and capture the proposed clarification(s) in meeting minutes to address the concerns brought up by companies based on different interpretations of this objective.

As we tried to explain multiple times in the WG meetings and in this RAN plenary meeting, it would be beneficial to have this objective in Rel-18 for both NB-IoT and LTE-M devices, especially when one has both NB-IoT and LTE-M implementations. As one motivation, in Rel-18, for IoT NTN, new criteria such as time and location are considered for measurement triggering. Such criteria are expected to be much more efficient to trigger neighbor cell measurements especially considering that location is reported which would make it easier for the network to configure the thresholds. This improvement is likely to be beneficial for both NB-IoT and LTE-M devices (in NTN) considering the scenario and mobility aspects are different compared to a TN deployment.

8 – Nokia France

We are fine with the clarifications.

Moderator: Outcome of final Round: It seems no clarification text can be agreed.

Moderator Observation: It seems that there is a minority of companies that wants to enhance eMTC by having separate control of measurements to be used for cell selection after RLF (similar to the NB-IoT mechanism), and these companies seems not ready to agree the opposite. Furthermore it seems not productive to further use TSG RAN e-time to clarify this (but it would have been quick at a f2f TSG RAN).

FYI at TSG RAN, RAN2 chair instructions, for RAN2 (related e.g. to further work on this objective): There should be gain for a common case for the functionality to be introduced, i.e. please dont use an unlikely corner case in order to motivate a certain solution.

5 Conclusion

Conclusion of this discussion: The provided WID update, capturing changes from the initial round, is aggreeable and can be approved.