[95e-42-R18-IoT-NTN] - Version 0.0.4
RAN

3GPP TSG RAN#95e RP-220902

Electronic Meeting, March 17 - 23, 20212

Source: Moderator (Balazs Bertenyi, Nokia)

Title: Moderator's Summary on "[RAN95e-42-R18-IoT-NTN]"

Document for: Endorsement

1 Initial Phase - now closed

This NWM thread handles the following input documents: RP-220754, RP-220847 (revision of RP-220755) and RP-220756. These documents address the workplan and the detailed scope for undertaking RAN4 work for both Rel-17 and Rel-18 IoT over NTN. The goal of this NWM thread is to produce an agreeable workplan and corresponding WID(s).

1.1 Overall workplan for RAN4 work on IoT-NTN

This section collects initial comments on proposed overall plan in RP-220754.

Feedback Form 1: Comments on overall plan (RP-220754)

1 – HUGHES Network Systems Ltd We support the overall work plan
2 – Sony Group Corporation We support the workplan to introduce the baseline requirement in Rel-17 and the enhanced requirement in Rel-18 for IoT-NTN. There is a demand from the industries, and thus it is benefit for RAN4 to start to work on it as soon as possible.
3 – Lockheed Martin We support this.
4 – Transsion Holdings we support this

5 – CATT

We support this.

6 – Qualcomm Incorporated

We support the high level timeplan. one thing that we may want to consider discussing a bit further is whether we should try to ”balance” a bit the R17 and R18 work: the R17 work has 4Q for core + performance, and the R18 work has 6Q (when in our understanding the amount of work is higher for R17 than for R18)

7 – Apple GmbH

We support the proposed plan.

8 – Spreadtrum Communications

We support the proposed plan.

9 – Intelsat

We support the overall proposed plan

10 – Intel Corporation (UK) Ltd

We do not support the proposed work plan.

Work item structure: We do not see a strong motivation to split the work into two different work items and all the scope can be merged into a single Rel-18 NTN-IOT evolution WI. The work on Enhanced requirements depends on the progress of Baseline requirements and keeping all objectives under a single umbrella WI will make it easier to manage discussions. Also, we would like to remind that this is the approach for NTN > 10GHz when it was merged into the Rel-18 NTN evolution WI and we do not see reasons for a different approach now.

Timelines: The work on Baseline Core requirements definition is expected to take at least 4 quarters and recommend extending completion. The following timelines are proposed for NTN-IOT work

· Baseline Core requirement: from RAN #96 till RAN #102

· Baseline Performance requirement: from RAN #98 till RAN #102

· Enhanced Core requirements: from RAN #100 till RAN #102

· Enhanced Perf requirements: from RAN #102 till RAN #104

11 – Nokia France

The plan seems reasonable at a high level, but the exact finishing times for the Rel-17 requirements and start of Rel-18 performance need to be checked with the overall TU plan which is currently a bit different (similar to Qualcomm’s comment).

12 – Lenovo (Beijing) Ltd

Lenovo:

We support this.

13 – THALES

We support the proposed work plan

14 – NOVAMINT

We support the proposed overall work plan. We fully agree with Sony comment that that it would be beneficial for RAN4 to start to work on the topic as soon as possible as there is a market demand.

15 – ZTE Corporation

we are fine with the proposed work plan.

16 – Samsung Electronics Co.

We do not have strong view on either having a new WI or including baseline requirements into Rel-18 WI.

Overall workplan looks fine for us.

17 – Sateliot

We support the workplan

18 – Omnispace

We support the plan

19 – Guangdong OPPO Mobile Telecom.

ok with the plan.

20 – Eutelsat S.A.

We support the proposed workplan.

21 – Beijing Xiaomi Mobile Software

We support the plan

22 – MediaTek Inc.

We support the plan. I believe the proposed TU plan is aligned with that plan.

Intention for a separate ”baseline requirements” WID is because as we propose 2 completion timelines and also approval of specs after the ”baseline” work, we feel that this makes project management clearer. The work on the enhancements core reqs work would not start until the completion of the baseline core work, and the same for performance work. We would be happy to clarify the relationship in e.g. the enhancement WID if it helps.

Regarding extending the timeframe for the baseline work (as proposed by Intel), we would like to target December 2022 completion. RAN4 has spent time discussing and working out how to define requirements for NR NTN. We believe a similar framework can be re-applied for most of the IoT NTN RAN4 requirements work, and agreements can be made much more rapidly. We would also be ok to formally start discussions on some high-level aspects by email already before Q3 if there is support for that.

23 – Inmarsat We support the plan

1.2 Scope for RAN4 work on Rel-17 IoT-NTN

This section collects initial comments on proposed new Rel-18 WID to address RAN4 work needed for Rel-17 IoT-NTN (RP-220847).

Feedback Form 2: Comments on RAN4 scope for Rel-17 IoT-NTN (RP-220847)

1 – HUGHES Network Systems Ltd We support the RAN4 WID scope identified in RP-220847
2 – Sony Group Corporation we support this proposal with the understanding that time/frequency requirement will be covered as part of RF/RRM requirement.
3 – Lockheed Martin We support this.
4 – Qualcomm Incorporated We support this proposed scope.
5 – CATT We support this.
6 – Apple GmbH We are fine with the work scope.
7 – Spreadtrum Communications We support this proposed scope.
8 – Nokia France The proposed WID is OK.

9 – Intel Corporation (UK) Ltd

We are fine with the proposed objectives

To improve clarity we recommend to adjust the text as: *The objective of this Work Item is to specify RF and RRM requirements for NB-IoT and eMTC operation over NTN functionality defined in Rel-17* ~~*specifications*~~ *LTENBIOTeMTC_NTN WI*

10 – Lenovo (Beijing) Ltd

Lenovo:

We support this.

11 – THALES

fine with scope

12 – NOVAMINT

We support this proposed scope.

13 – China Mobile Com. Corporation

We are OK the the proposed scope. There are [] in the WID about HD-FDD, we propose to remove the restriction as below:

Be limited to requirements applicable for NB1/NB2 and Cat-M1 UE categories ~~*[operating in HD-FDD mode]*~~

14 – ZTE Corporation

we are fine with the proposed work scope.

15 – Sateliot

We support the proposed scope

16 – Omnispace

We support the scope

17 – Eutelsat S.A.

We support the scope for the RAN4 work for Rel-17 IoT-NTN as proposed.

18 – MediaTek Inc.

We support the scope. Do we understand correctly that CMCC would like to cover FD-FDD as well? It would be good to understand if there is really a strong need for that.

19 – MediaTek Inc.

We are also fine to include the WI code as proposed by Intel.

20 – Beijing Xiaomi Mobile Software Fine with the scope

1.3 Scope for RAN4 work on Rel-18 IoT-NTN

This section collects initial comments on proposed enhancements to the Rel-18 IoT-NTN WID to address RAN4 work (RP-220756).

Feedback Form 3: Comments on RAN4 scope for Rel-18 IoT-NTN (RP-220756)

1 – HUGHES Network Systems Ltd We support the RAN4 scope identified for Rel-18.
2 – Lockheed Martin We support the RAN 4 scope for Rel-18.
3 – Qualcomm Incorporated We are OK with the proposed modifications.
4 – CATT Ok with the proposed changes.
5 – Apple GmbH We are fine with the proposed modifications.
6 – Spreadtrum Communications We support the RAN 4 scope for Rel-18.
7 – Nokia France The proposed modifications are generally OK. However, there is one aspect where some clarification would be helpful: in the Rel-17 IoT-NTN WID, it is stated that simultaneous GNSS and NTN NB-IoT/eMTC operation is not assumed. We assume that the same assumption applies in the Rel-18 WI for consistency, and it would be helpful to state this explicitly. (Note that the Rel-17 IoT-NTN WID was not restricted to short transmission/connections, but only short transmission/connections were actually considered in RAN1/2 due to the limited time available, while leaving support of long transmission/long RRC connections to be handled in Rel-18. Therefore, in the Rel-18 WI, it is appropriate to handle support of long transmission/long RRC connections under the same assumption as used in the Rel17 WID.) We propose the following short clarification and hope this is helpful:

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.

Thank you.

8 – Intel Corporation (UK) Ltd

We are fine with the proposed objectives for RAN4.

Also, we agree with clarification proposed by Nokia on simultaneous GNSS and NTN NB-IoT/eMTC operation

9 – THALES

fine with proposed objectives and suggested clarification from Nokia

10 – NOVAMINT

We support this proposed scope and objectives. We are fine with the clarification suggested by Nokia.

11 – China Mobile Com. Corporation

OK with the proposed objectives for RAN4.

12 – ZTE Corporation

We are also fine with the proposed objectives for RAN4.

For simultaneous GNSS and NTN NB-IoT/eMTC operation as mentioned by Nokia, we also agree with that.

13 – Omnispace

We support the proposed scope

14 – Sateliot

OK with the proposed scope and with the clarification pointed out by Nokia.

15 – MediaTek Inc.

We are fine with the proposed scope in 756 of course. The intention of that input document was to address directly the RAN4 scope. So we expect to focus on those objectives in this email thread, hence the title of 1.3.

Regarding the Nokia proposal (for which I believe there was no input), MediaTek actually has a different view, in that there was no intention to preclude simultaneous GNSS/NTN operation in the Rel-18 work item (differently to Rel-17), and the study objective was not based on that assumption in our understanding.

16 – Eutelsat S.A. We support the scope for the RAN4 work for Rel-17 IoT-NTN as proposed.
17 – Beijing Xiaomi Mobile Software We are also fine with the proposed objectives for RAN4.
18 – Ligado Networks We agree with the proposed objectives and Nokia's clarification.

2 Proposed Way Forward

2.1 Overall Workplan

Based on the overwhelming support expressed during the Initial Phase, it is proposed to endorse the overall workplan presented in RP-220754.

2.2 Finalization of New Rel18 WID to address Rel-17 IoT NTN RAN4 work

Based on overwhelming support expressed during the Initial Phase, it is proposed to approve RP-220847 with two additional changes:

- *The objective of this Work Item is to specify RF and RRM requirements for NB-IoT and eMTC operation over NTN functionality defined in Rel-17 ~~specifications~~ LTENBIOTeMTC_NTN WI*
- *Be limited to requirements applicable for NB1/NB2 and Cat-M1 UE categories ~~[operating in HD-FDD mode]~~*

Mediatek to formally submit the revision of RP-220847 to cover the 2 changes above with a new TDoc number for formal approval.

2.3 Finalization of Revised Rel18 NTN IOT WID to address RAN4 work

Based on overwhelming support expressed during the Initial Phase, it is proposed to approve RP-220756 with the following additional change:

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]

Mediatek to formally submit the revision of RP-220756 to cover the change above with a new TDoc number for formal approval.

2.4 Final comments

Feedback Form 4: Final comments on the Proposed Way Forward

1 – MediaTek Inc.

Just to point out that in 756 there was an error in the UE request sheet, missing TUs in RAN4#106/106bis/107 (between RAN#98 and RAN#100). I will add those TUs accordingly. Apologies for the error.

2 – MediaTek Inc.

”TU” request sheet, not ”UE”.

3 – ZTE Corporation

By the removal of HD-FDD, whether only FD-FDD will be defined or both FD-FDD and HD-FDD would be defined, this need more clarifications.

4 – Nokia France

Our understanding of CMCC’s suggestion to delete the limitation to HD-FDD was to allow additionally FD-FDD, not to preclude HD-FDD. That said, in our understanding, typical implementations are most likely to be HD-FDD, so from our perspective we would not have a problem with prioritising HD-FDD.

5 – MediaTek Inc.

We would also appreciate clarification from CMCC on the intention, also considering the Nokia comment.

6 – Sony Group Corporation

a minor comment: should the acronym for Rel-17 WI be LTE_NBIOT_eMTC_NTN?

7 – Ericsson LM

To MTK: can you please draft of the revisions of RP-220756 so companies can check. I suggest to review it during the next round.

8 – MediaTek Inc.

To Ericsson: I can do that. But I think we should wait for the outcome of the discussion first. The revisions would be:

1) Add the sentence *Simultaneous GNSS and NTN NB-IoT/eMTC operation is not assumed.*

2) Add TUs to the TU request sheet between RAN#98 and RAN#100, according to the following:

- RAN4#106: RF: 0.5, RD: 0.5
- RAN4#106bis: RF: 0.5, RD: 0.5
- RAN4#107: RF: 0.25, RD: 0.5

9 – MediaTek Inc.

To Sony: Yes I will apply the correct acronym to the new baseline WID.

3 Proposed conclusions

The overall workplan in RP-220754 is proposed to be endorsed.

The new Rel-18 WID to cover Rel-17 NTN IoT RAN4 aspects in RP-220938 is proposed to be approved.

The revised Rel-18 WID to cover Rel-18 NTN IoT RAN4 aspects in RP-220939 is proposed to be approved. RP-220939 was editorially further revised to RP-220979.

Feedback Form 5: Final comments on Draft_RP-220938

1 – MediaTek Inc.

Very minor comment to the following:

- Be limited to requirements applicable for NB1/NB2 and Cat-M1 UE categories, **with Cat-M1 UE** operating in HD-FDD or FD-FDD mode.

2 – MediaTek Inc.

As nobody had commented yet, I uploaded an 938r1 version, which I think covers what was requested better than the above:

- Be limited to **FDD** requirements applicable for NB1/NB2 and Cat-M1 UE categories **(HD and FD for Cat-M1)**.

3 – THALES

Fine with Mediatek latest suggestions

4 – Nokia France

938r1 is OK for us.

5 – MediaTek Inc.

maybe best to say ”HD-FDD and FD-FDD” in the brackets actually... but not real change

Feedback Form 6: Final comments on Draft_RP-220939

1 – Nokia France We support