[98e-04-ITU-AH] ITU discussion - Version 0.0.7

RAN

https://nwm-trial.etsi.org/#/documents/8400

3GPP TSG RAN#98e

RP-223444

Electronic Meeting, December 12-16, 2022

Agenda items 8, 8.2, 8.4, 9.1

Source: RAN ITU-R AH convener (Telecom Italia)

Document for: Information & Decision

The discussion in this thread covers topic #4 [98e-04-ITU-R].

Please note that since some documents have to be submitted to SA for their approval, **I plan to finalize the discussion on RP-223390, 3391 and 3392 by Wednesday 14th, 11:00 UTC**.

As a consequence, the timeplan for E-mail discussion is the following:

− **Initial discussion**: from Monday 12th 07:00 UTC to Tuesday 13th 12:00 UTC

− **Final discussion for documents on RP-223390, 3391 and 3392**: from Tuesday 13th 16:00 UTC to Wednesday 14th 12:00 UTC

− **Intermediate discussion for the remaining documents**: from Tuesday 13th 16:00 UTC to Wednesday 14th 12:00 UTC

− **Final discussion for the remaining documents**: from Wednesday 14th 16:00 UTC to Thursday 15th 12:00 UTC

The Chair indicated the following documents falls under this mail discussion: RP-222704, 2722, 2723, 3389, 3422, 3190, 3191, 3420, 3390, 3391, 3392, 3428.

- RP-222704, Status Report ITU-R Ad hoc, 3GPP ITU-R Ad hoc Contact (Telecom Italia)
- RP-222722, Reply LS to RP-221923 on Development of a new Report ITU-R M.[IMT.MULTIMEDIA]: Capabilities of the terrestrial component of IMT-2020 for multimedia communications, ITU-R WP5D
- RP-222723, Reply LS to ITU-T SG13-LS25 on feedback to ITU-T SG 3 regarding the Technical Report on “IMT2020-Related Policy Considering MVNOs” under development in Question 3 of SG3, ITU-T SG3
- RP-223389, LS on the initiation of the new work item Y.AN-Arch-fw: ”Architecture Framework for Autonomous Networks”, ITU-T SG13
- RP-223422, LS on Invitation to update the information in the IMT-2020 and beyond roadmap, ITU-T JCA IMT2020

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- RP-223428, LS on the new work item Y.Arch_NGNe_ncp ”Architectural evolution of NGN control plane by applying SDN technology”, ITU-T SG13
- RP-223390, DRAFT reply letter to ITU to ITU-R WP5D/TEMP/356 = RP-211634 on the schedule for updating Recommendation ITU-R M.2012 to Revision 6, 3GPP ITU-R AH
- RP-223391, DRAFT reply letter to ITU to ITU-R WP5D/TEMP/353-E = RP-211636 on the schedule for updating Recommendation ITU-R M.2150 to Revision 2 – 5G SRIT, 3GPP ITU-R AH
- RP-223392, DRAFT reply letter to ITU to ITU-R WP5D/TEMP/353-E = RP-211636 on the schedule for updating Recommendation ITU-R M.2150 to Revision 2 – 5G RIT, 3GPP ITU-R AH
- RP-223420, Invitation for submission of proposals for candidate radio interface technologies for the satellite component of the radio interface(s) for IMT-2020 and invitation to participate in their subsequent evaluation (Circular Letter 4/LCCE/134 of 23.11.2022 from ITU Radiocommunication Bureau (BR)), ETSI MCC
- RP-223190, 3GPP submission towards IMT-2020 Satellite, Ericsson
- RP-223191, New SID: Study on Self-Evaluation towards IMT-2020 Satellite Radio Interface Submission, Ericsson

1 Initial Round

1.1 Discussion and proposals

1.1.1 Status Report and incoming Liaisons from ITU

Relevant documents: 2704, 2722, 2723, 3389, 3422, 3428

Proposal:

1. It is proposed to note the ITU-R Ad-Hoc Status Report (tdoc 2704)
2. RP-222722 on IMT.MULTIMEDIA was discussed in the ITU-R Ad-Hoc but no draft answer was submitted. It is proposed to note RP-222722 and do not provide any answer to WP5D
3. It is proposed to note without answer documents 2723, 3389, 3422 from ITU-T since not relevant to RAN
4. Tdoc 3428 informs 3GPP of a new activity on architectural evolution of NGN control plane. It is proposed to submit 3428 to RAN2 for their review and note it in RAN (without answer)

Companies are encouraged to provide feedback on the moderator’s proposal

Feedback Form 1: Proposal: note Status Report and incoming Liaisons from ITU - submit 3428 to RAN2

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1 – Ericsson LM Agree with the moderator's proposal.
2 – VODAFONE Group Plc OK, although as 3428 talks about SDN and NFV, it might be more related to RAN 3 than RAN 2.
3 – Intel Technology India Pvt Ltd Agree with the moderators proposal, also support adding RAN3 for review of 3428
4 – Huawei Tech.(UK) Co.. Ltd Agree with the moderator's proposals 1 to 3. Regarding the LS in 3428, if the LS is to be forwarded to a WG it should be RAN3. But our preference would be to simply note the LS from ITU-T since it is a bit unclear whether this is even in scope of the work of RAN WGs.
5 – Qualcomm Incorporated Agree with proposals 1-3. No need, from my side, to fwd 3428 to other RAN WGs, can simply be noted by RAN.
6 – Beijing Xiaomi Mobile Software Agree with proposals 1-3. Not sure whether there is merit in forwarding 3428 to WGs but if it is deemed to be necessary then it seems more appropriate for RAN3?

1.1.2 Final submission of 3GPP material towards M.2012-6 and M.2150-2

Relevant documents 3390, 3391, 3392

ITU-R AH submitted the above documents for approval by RAN, SA and PCG (deadline for PCG approval 17 January 2023), providing the updated material to be included in the WP5D deliverables on technical specifications of IMT-Advanced (tdoc 3390) and IMT-2020 (tdocs 3391, update of 5G SRIT, and 3392, update of 5G RIT).

The documents provide the updated synopsis describing LTE and NR, the list of relevant specifications and the compliance templates (stating that the updates are still compliant with the requirements defined by ITU-R)

Proposal: it is proposed to endorse documents 3390, 3391 and 3392. The endorsed documents will be submitted to SA for their review and endorsement.

Companies are encouraged to provide feedback on the moderator's proposal

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Feedback Form 2: Proposal: endorse documents 3390, 3391, 3392

1 – Ericsson LM We agree to this, but have some editorial comments. in 3390 in section 10. The word ”Release” should be remove from the following sentence on p.5 in the second paragraph. ”The relay node appears as a conventional eNB to terminals but is wirelessly backhauled to the remaining part of the radio-access network using the LTE Release ~~10~~ radio-interface technology.” In 3391 in the compliance template there is a footer on most pages that refer to 5G at the first page. This should instead be an endnote in word. I have uploaded a version to the draft inbox fixing this. For the compliance templates in 3391 and 3392, I presume the track changes on the first page at least should be accepted in the final version.
2 – Intel Technology India Pvt Ltd ok
3 – Huawei Tech.(UK) Co.. Ltd Agree with the moderator’s proposal, and the editorial fixes from Ericsson.
4 – Beijing Xiaomi Mobile Software agree and with the updates proposed by Ericsson

1.1.3 3GPP submission towards IMT-2020 Satellite

Relevant documents: 3420, 3190, 3191

ITU-R WP4B defined a procedure for a new Recommendation specifying IMT-2020 for the satellite component (M.2150 defines only the terrestrial component of 5G) - further information is available in tdoc 3420.

The deadline for submission of the self evaluation report is (to be confirmed) 31 Dec 2023.

Tdocs 3190 and 3191 propose to have a RAN level study to provide the required documentation to WP4B and therefore include NR in satellite IMT-2020.

Issues for discussion (1):

- RAN should approve the RAN level Study Item noting that:
  - WGs need to be involved
  - The timeplan is very challenging: if the deadline is confirmed Dec 31, 2023, 3GPP will need to have a “rush” approval from RAN, SA and PCG after the December plenaries in 2023 (very short time for e-mail approval, overlapping with Christmas holidays)

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Proposal 1: note 3420 and 3190. RAN to approve 3191.

Companies are encouraged to provide feedback on the following questions

1. Do you agree to approve 3191 and note 3420 and 3190?
2. Any proposal to review 3191?

Feedback Form 3: Proposal: agree to approve 3191 and note 3420 and 3190

1 – MediaTek Inc.

- We support the overall approach, but we believe that **both NR NTN and IoT NTN (NB-IoT/eMTC) technologies should be included** in the 3GPP submission to ITU-R.
    - The proposal in 3190 say ”3GPP NTN”, so seems to allow for the above.
- Regarding doc 3420/3190, please could it be clarified how many test environments need to be passed by each ”component” RIT as part of an SRIT, and by any standalone RIT in general?

2 – VODAFONE Group Plc

No.

We see no reason to restrict 3191 to NR NTN. As a least one satellite has been launched aiming to deliver mobile broadband service to unmodified smartphones, the Study should be open to unmodified LTE UEs and pre-R17 NR UEs.

R17's NTN work developed enhancements that are needed if the satellite creates a very large cell on the earth (e.g. 600 km). In contrast, the example satellite configuration given in table 3 of annex 2 to M.2514 describes a satellite with an approximately 20 km cell on the earth. With such a cell, the differences in timing advance and Doppler shift from one side of the cell to the other can be accommodated by the normal UE adjustment ranges and the Rel 17 NTN enhancements are not needed for UEs operating with such a satellite. Note that in this case, the e/gNB compensates for the speed of the satellite on both uplink and downlink - while in the 3GPP R17 model the e/gNB compensates for the speed of the satellite only the downlink.

Note that the requirements in M.2514 are quite demanding and (as R'18 NTN work aims to ***enhance*** *to support 3.75 kbps AMR*) it seems that quite some rework of the R16/17 NTN models would need to be done to accommodate requirements such as:

Downlink peak data rate: Maximum achievable channel data rate under ideal conditions: 70 Mbit/s

Uplink peak data rate: 2 Mbit/s

Connection density: Total amount of connected MTD devices per unit area: 500/km2

Area traffic capacity: Overall traffic in a coverage area 8 kbit/s/km2 (DL)

1.5 kbit/s/km2 (UL)

3 – Rakuten Mobile

We share similar view as vodafone.

4 – Intel Technology India Pvt Ltd

for 3191, detailed simulation assumption discussion may be also needed so we suggest: "*The study will be done in coordination with the RAN ITU-R Ad-Hoc group. The study can start in the working groups after RAN#98, to discuss initial self-evaluation time-plan, TR template,* ***simulation assumptions*** *etc..*"

5 – Qualcomm Incorporated

To answer Mediatek comments:

- The intention of the submission plan is to evaluate NR NTN Rel-17 vs IMT-2020 SAT handheld requirements (for eMBB-s, HRC-s and mMTC-s), as well as to cover some optional evaluation for IOT NTN Rel-17 (vs mMTC-s requirements only).

- there are 3 TEs defined, for both RIT and SRIT, i.e. eMBB-s, HRC-s and mMTC-s in rural environment...ok to clarify that in the doc.

To answer Vodafone:

- we are not in favor to submit a 3GPP terrestrial technology as a IMT-2020 Satellite RIT, thus we can not agree on the proposal to submit pre-Rel17 non-NTN technologies

- in terms of KPIs, Ericsson and Qualcomm did a first-pass check on those requirements, and believe Rel-17 NTN can meet them

To answer Giovanni:

- Our view is that RAN should ENDORSE 3190 (the submission plan), and agree the SID

6 – Huawei Tech.(UK) Co.. Ltd

As a first step, we would suggest discussing a principle proposal along the lines that 3GPP RAN will study the performance of Rel-17 NTN (for both NR NTN and IoT NTN) and - pending confirmation that at least one or a combination of those techniques meets the conditions for the satellite component for IMT-2020 - that 3GPP RAN will prepare a submission of one or more RIT or SRIT to ITU-T. Once this is agreed in principle, then we can discuss the formal SID starting from 3191 (see further comments in the next question). We would prefer seeing a clear proposal formulated rather than endorsing 3190, since some of the details (how many RITs, SRIT, etc) depend on the actual study.

7 – THALES

We agree with the proposal

We do support the intention of the submission plan is to evaluate NR NTN Rel-17 vs IMT-2020 SAT handheld requirements (for eMBB-s, HRC-s and mMTC-s), as well as to cover some optional evaluation for IOT NTN Rel-17 (vs mMTC-s requirements only).

Wrt to Vodafone proposal, we understand that

· it applies to a very specific deployment scenario whereas NR-NTN and IoT-NTN have been designed to support the widest range of satellite deployment scenarios

· the specific adaptations at e/gNB level (compensation for the speed of the satellite on both uplink and downlink) have not been defined by 3GPP

On the basis of the above, we are questioning the relevance for 3GPP to submit a specific implementation of the LTE/NR radio protocol to ITU-R.

8 – THALES

We agree with the proposal

We do support the intention of the submission plan is to evaluate NR NTN Rel-17 vs IMT-2020 SAT handheld requirements (for eMBB-s, HRC-s and mMTC-s), as well as to cover some optional evaluation for IOT NTN Rel-17 (vs mMTC-s requirements only).

Wrt to Vodafone proposal, we understand that

· it applies to a very specific deployment scenario whereas NR-NTN and IoT-NTN have been designed to support the widest range of satellite deployment scenarios

· the specific adaptations at e/gNB level (compensation for the speed of the satellite on both uplink and downlink) have not been defined by 3GPP

On the basis of the above, we are questioning the relevance for 3GPP to submit a specific implementation of the LTE/NR radio protocol to ITU-R.

9 – ESA

We fully agree and support the proposal.

10 – Airbus

We fully support this proposal

11 – NOVAMINT

We agree with the proposal to approve 3191

We also share the same view as Qualcomm that RAN should endorse 3190 as it is the submission plan associated

12 – HISPASAT SA

We support the proposal

13 – Ericsson LM

Agree to the proposal. On including additional technologies in the submission, we share the same view as Qualcomm as we believe that NR NTN will meet all the requirements. 3GPP has spent significant effort on including NTN its specification and this should be reflected in the submission. When it comes to “plain” NR, it is anyway be included in the submitted RIT. It should be noted that while the work load for the activity can be limited in RAN and the working groups, significant efforts are needed by the contributing companies in order to do the evaluations. Adding additional technologies will risk the completion of the SI which already has a quite short timeline. Hence our preference is to agree to submit Rel-17 NR NTN as a RIT.

14 – MediaTek Inc.

We are still seeking some clarification from the proponents. In Terrestrial case, there was a standalone RIT that had to pass X test environments, and an SRIT that overall had to pass X test environments, with each component RIT passing at least Y test environments. I understand here we have 3 test environments, so what are the corresponding rules? Qualcomm, what do you mean by ”optional evaluations”? And what does that mean in the context of the above?

We understand that the intention is for NR to be provided as a standalone RIT. However, my question is more in relation to IoT NTN, which would likely only pass the MTC-s test environment.

15 – MediaTek Inc.

”mMTC-s”

16 – VODAFONE Group Plc

To Thales and others: the NR-NTN work addresses a very generic satellite (with very large cell) that seems unlikely to meet the ITU criteria, hence significant re-evaluation of that satellite concept in 3GPP seems necessary.

I am opposed to a study that excludes deployed satellite technology.

17 – HUGHES Network Systems Ltd

We fully support the proposal to endorse 3190 (the submission plan) and approve 3191 (the new SID) to self-evaluate NTN Rel-17 against SRIT for IMT-2020. 3420 should be noted.

We support QC’s view that we should not consider a 3GPP terrestrial technology as a candidate for an IMT-2020 SRIT and not pre- Rel-17 either

18 – Magister Solutions Ltd

We support the proposal.

19 – Beijing Xiaomi Mobile Software

we also support the proposal

20 – Ericsson LM

To MediaTek: Regarding the ”optional evaluations”, M.2514 states that:

”In order to evaluate whether a proposed satellite radio interface technology meets the technical performance requirements for the Satellite Component of IMT-2020, demonstration of compliance assuming **handheld terminals** is necessary and sufficient. Other evaluations, e.g. for directional and MTD devices, may be provided by the proponent, though are not required.”

21 – THALES

To Vodafone, NR-NTN has been designed to support any LEO satellite with small and large beam size. For example, a beam size of 50 km has been considered in TR 38.821 as reference scenario for LEO@600 km

Feedback Form 4: Any proposal to review 3191

1 – MediaTek Inc.

Yes, if we agree to include both NR NTN and IoT NTN, then the TR would likely be a 37 series TR, or we need 2 TRs. Also clarification would be necessary on which test environments will be verified for each technology (see MediaTek previous comment about SRIT/RIT passing criteria).

2 – VODAFONE Group Plc

No. We see no reason to restrict 3191 to NR NTN. As a least one satellite has been launched aiming to deliver mobile broadband service to unmodified smartphones, the Study should be open to unmodified LTE UEs and pre-R17 NR UEs.

R17's NTN work developed enhancements that are needed if the satellite creates a very large cell on the earth (e.g. 600 km). In contrast, the example satellite configuration given in table 3 of annex 2 to M.2514 describes a satellite with an approximately 20 km cell on the earth. With such a cell, the differences in timing advance and Doppler shift from one side of the cell to the other can be accommodated by the normal UE adjustment ranges and the Rel 17 NTN enhancements are not needed for UEs operating with such a satellite. Note that in this case, the e/gNB compensates for the speed of the satellite on both uplink and downlink - while in the 3GPP R17 model the e/gNB compensates for the speed of the satellite only the downlink.

Note that the requirements in M.2514 are quite demanding and (as R'18 NTN work aims to ***enhance*** *to support 3.75 kbps AMR*) it seems that quite some rework of the R16/17 NTN models would need to be done to accommodate requirements such as:

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Uplink peak data rate: 2 Mbit/s

Connection density: Total amount of connected MTD devices per unit area: 500/km2

Area traffic capacity: Overall traffic in a coverage area 8 kbit/s/km2 (DL)

1.5 kbit/s/km2 (UL)

3 – VODAFONE Group Plc

Sorry, I've had problems with NWM's cut and paste errors....

Possibly just need to delete "NTN" in all (2?) places in 3191 and edit this sentence as below?

"The candidate IMT-2020 RIT **or SRIT or RITs** submission by 3GPP based on Rel-17 ~~**NTN**~~, will be evaluated and described as part of the study."

4 – Telstra Limited

We share the similar view as Vodafone, simply excluding NTN specific references from proposal 1 allows for a more complete approach in terms of meeting M.2514 requirements.

Going forward, 3GPP should aim to be inclusive of all satellite radio technologies that connect 3GPP devices.

5 – Huawei Tech.(UK) Co.. Ltd

The evaluations should be a pre-requisite for identifying which techniques to submit to WP4B, since the submitted techniques need to meet the requirements. So 3GPP should first verify which of the techniques specified by 3GPP can meet the requirements. It may be so that several RATs meet the requirements, e.g. NR with Rel-17 NTN enhancements, NB-IoT with Rel-17 NTN enhancements, etc. Therefore, in section 3 (Other related Work Items and dependencies), the WIs on IoT NTN could also be included.

Depending on the results of the evaluations and the technology choice, the TR may end up being in another series than 38 (e.g. 37). The sentence below uses 36 series, which is inconsistent with the table provided in section 5.

"The study will produce documents used for the 3GPP IMT-2020 submission to ITU-R based on the ITU-R templates, including a description of the self-evaluation results in a new TR, 36.9xx, created by this study."

In terms of workplan, TU needed in RAN WGs should be minimized, which is consistent with the proposal in 3191. However, a more detailed workplan from the proponents would be useful to understand when each step of the evaluations and submission preparation are expected in each TSG/WG/AH meeting

6 – Qualcomm Incorporated

ok with some changes/clarifications provided by Mediatek and Huawei.

Regarding NTN NR vs IoT, I think it could be already clarified as part of the submission plan, i.e. the RIT should be NTN Rel-17 onward (including NR and IoT). Note also that there is not a full set of reqs (or RIT criteria) for IoT/MTD, in fact its only optional; on the other hand there are 3 TEs defined for handheld, which should be evaluated using NR NTN. Please check the 4B report for details.

7 – THALES

agree with QC

8 – ESA

We are fine with the valuable changes from QC/MTK and HW.

9 – NOVAMINT

We agree with the changes and clarifications provided by MTK, HW and QC

10 – HISPASAT SA

We support the proposal with the changes proposed by MTK, HW and QC

11 – Ericsson LM

Most comments here seem to be related to what technologies that should be part of the submission. There was a typo in the specification series where it should be 38.xxx and not 36.xxx. A detailed work plan will of course be provided by the rapporteurs at the start of the study item.

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12 – Magister Solutions Ltd We support the proposal with changes proposed by MTK, HW and QC.
13 – HUGHES Network Systems Ltd The candidate SRIT for IMT-2020 should be based on NTN Rel-17 and this include NR and IoT. This should be updated in 3191.
14 – Beijing Xiaomi Mobile Software we also are happy to support the proposal with the changes suggested by MTK, HW and QC

In case RAN approves 3191 (or a revision of the document) the following issues have to be considered

- SA and PCG need to approve the process
- Since the proponent of the Radio Interface Technology will be the 3GPP OPs, there is the need to check if all the OPs are ok to proceed or only some of the 3GPP OPs will back the proposal
- Who is going to submit the documents to ITU?
- When to inform ITU-R WP4B: The earliest opportunity is June 2023, but 3GPP could anticipate an indication of interest to contribute after RAN, SA and PCG approval
- Therefore, SA and PCG should provide a feedback to RAN latest by RAN#99

Proposal 2: to submit an LS to SA and PCG to inform them of the approval of the study, requiring their consensus to proceed with the activity and asking to answer to the above questions latest by RAN#99

Companies are encouraged to provide feedback on the moderator's proposal 2

Feedback Form 5: Proposal 2: to submit an LS to SA and PCG

1 – MediaTek Inc. See MediaTek previous comments on Proposal 1, in case that is needed in any LS to SA/PCG.
2 – VODAFONE Group Plc OK, assuming that the SID is inclusive.
3 – Huawei Tech.(UK) Co.. Ltd Agree with the moderator's proposal
4 – Qualcomm Incorporated ok

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5 – THALES We agree with the moderator's proposal
6 – ESA Ok
7 – HISPASAT SA ok
8 – NOVAMINT we agree with the proposal
9 – Ericsson LM OK
10 – Magister Solutions Ltd Ok.
11 – HUGHES Network Systems Ltd Support moderator's proposal
12 – Beijing Xiaomi Mobile Software sure

1.2 Summary of Initial round

1.2.1 Status Report and incoming Liaisons from ITU

The moderator proposes to note documents 2704, 2722, 2723, 3389, 3422, 3428 and close this discussion.

Concerning tdoc 3428 it seems there is no real need to forward it to WGs. Interest companies can anyhow come back with proposals at RAN#99

1.2.2 Final submission of 3GPP material towards M.2012-6 and M.2150-2

There is general consensus to agree documents 3390, 3391, 3392 with the corrections indicated by Ericsson.

Conclusion:

- LSin 3390 noted, used as basis for LSout 3439
- LSin 3391 noted, used as basis for LSout 3440

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- LSin 3392 noted, used as basis for LSout 3441

This discussion can be closed

1.2.3 3GPP submission towards IMT-2020 Satellite

There is a general consensus to approve the activity but some open points still remains, such as which radio technologies should be considered for submission to ITU:

- NR-NTN Rel 17 only
- NR-NTN Rel 17 plus IoT NTN (NB-IoT/eMTC)
- The technologies above plus ”regular” NR and LTE without specific adaptation to satellite operations

The identification of the radio technologies to be considered in the study will be part of the intermediate discussion.

Moreover, some edits to the SID were proposed by companies and there is general consensus to send an LS to SA and PCG to inform them of the RAN decision. The finalisation of the Study Item Description and LS will be done in the final round.

2 Intermediate round

2.1 Discussion and proposals

2.1.1 Status Report and incoming Liaisons from ITU

Discussion closed

2.1.2 Final submission of 3GPP material towards M.2012-6 and M.2150-2

Discussion closed

2.1.3 3GPP submission towards IMT-2020 Satellite

The moderator suggests to focus the discussion on the identification of radio technologies to be submitted to ITU. As a general principle, I don’t like to count companies, but I believe some clarity on what to pursue in the study is needed and that we should look for a compromise. Also note that as any 3GPP activity the study will be contribution driven. The submission will not be compromised if the evaluation of some technology is not finalised by the deadline set by WP4B.

Companies are encouraged to provide their view on the following proposals. Please also comment if the submission should be a Radio Interface Technology (e.g. 3GPP NTN) or a Set of Radio Interface Technologies (SRIT), encompassing multiple RITs.

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1. NR-NTN Rel 17 only
2. NR-NTN Rel 17 plus IoT NTN (NB-IoT/eMTC)
3. The technologies above plus ”regular” NR and LTE without specific adaptation to satellite operations
4. Leave open the discussion and decide in the study phase

Feedback Form 6: Radio technologies to be included in the study

1 – Ligado Networks

Ligado supports Option 2.

We are strongly opposed to Option 3. Our view is that the raison d’être of NTN in 3GPP was the recognition that existing air interfaces are inadequate for use via satellite and adaptations are essential. It would therefore be inappropriate for 3GPP to offer unmodified air interfaces it has already itself deemed inadequate to the ITU.

It is likely that even where an unmodified UE is used, proprietary modifications will be required for the e/gNodeBs of such systems. This places them outside of 3GPP standards.

For 3GPP to potentially support such undocumented implementations would go against the entire spirit of 3GPP and we believe Option 3 must be rejected for these reasons.

2 – Eutelsat S.A.

We support option 2. i.e., NR-NTN R17 (onwards) and to include IoT-NTN.

Option 3, as presented, is outside the scope of 3GPP NTN.

3 – HUGHES Network Systems Ltd

We prefer **Option 2** (NR-NTN Rel 17 plus IoT NTN (NB-IoT/eMTC). This is the most qualified candidate(s) to be evaluated for RIT and SRIT for satellite component of IMT-2020.

Option 3 as presented is not adapted for satellite within the 3GPP framework. Therefore, it is not a valid option/topic for 3GPP self-evaluation and merits no further consideration.

4 – Lockheed Martin

We support Option 2.,

5 – Qualcomm Incorporated

We support option 2, ok/open with option1&2.

We are open to discuss further offline issues/challenges of option 3 (e.g. agree to postpone the decision to RAN#99)

We can not accept option 4 (RAN should decide)

6 – Intelsat

Intelsat supports Option 2 as the most appropriate option NTN

7 – ZTE Corporation

Support Option 2.

The ones mentioned in Option 3 are based on implementations, not standards, so 3GPP don't need to discuss this.

8 – Sateliot

Sateliot supports Option 2 (NR-NTN Rel 17 plus NTN IoT (NB-IoT/eMTC)), which we believe is currently the option that properly reflects the adopted approach and the set of standardised solutions delivered by 3GPP for satellite access in Rel-17/18 specs.

9 – THALES

We support Option 2 (NR-NTN Rel 17 plus IoT NTN (NB-IoT/eMTC))

Option 3 is unknown in 3GPP and therefore it should not be considered

10 – HISPASAT SA

Hispasat strongly supports Option 2.

Sharing the same concerns as the majority of partners before, we strongly oppose to Option 3 since:

- It does not correspond to a proper analyzed and adapted specification for satellite scenarios, with unknown proprietary adaptations to work in specific and unknown scenarios.
- It does not follow 3GPP spirit of creating global standards that provides interoperability under documented technical specifications.

11 – HISPASAT SA

Hispasat strongly supports Option 2.

Sharing the same concerns as the majority of partners before, we strongly oppose to Option 3 since:

- It does not correspond to a proper analyzed and adapted specification for satellite scenarios, with unknown proprietary adaptations to work in specific and unknown scenarios.
- It does not follow 3GPP spirit of creating global standards that provides interoperability under documented technical specifications.

12 – Huawei Tech.(UK) Co.. Ltd

We support option 2. With option 2, it should be understood that all functionalities common with terrestrial networks that are needed for a functioning system will also be included in the submission. We would additionally like to state our understanding that the evaluations and the submission will only consider the NTN bands defined by 3GPP.

13 – VODAFONE Group Plc

Option 3 or 4.

Options 1 and 2 are not acceptable as they exclude deployed/deploying system(s).

14 – VODAFONE Group Plc

Option 3 or 4.

Options 1 and 2 are not acceptable as they exclude deployed/deploying system(s).

15 – TTP plc

We Support Option 2.

We strongly oppose Option 3. Option 3 is a proprietary technology and not in the family of 3GPP Technologies

16 – ESA

We strongly support **Option 2**. In addition, we would like to enforce the statement that **Option 3 is based on specific and ad-hoc implementations and not standard solutions**. Again, Option 3 is not in line with the 3GPP spirit.

17 – Omnispace

Omnispace supports Option 2.

Option 3 is contains non-3GPP/proprietary implementations so it should not be considered.

18 – Gatehouse Satcom A/S

Gatehouse strongly support **option 2**.

We (GHs/3GPP) have had no chance to asses the viability of proprietary proposals in option 3 so we can not endorse this option.

The only assessment by 3GPP of option 3, was the study which found the need for specification of NTN standards and launched their development.

19 – NOVAMINT

We strongly support **Option 2** which properly reflects the work done by 3GPP regarding satellite access with proper analysis and documented technical specifications.

We strongly oppose to Option 3 as it corresponds to proprietary implementations with neither proper analysis including interoperability aspects nor any adapted specifications for satellite scenarios done by 3GPP therefore it is not a valid option which cannot be submitted to ITU on behalf of 3GPP.

We believe Option 4 is a well not acceptable as RAN needs to decide.

20 – Beijing Xiaomi Mobile Software

our understanding is that option 2 is appropriate, and support this

21 – Inmarsat

We strongly support Option 2, NR-NTN Rel 17 plus IoT NTN (NB-IoT/eMTC), as we believe both NR NTN and IoT NTN technologies are mature and well-suited to fulfil the IMT-2020 Satellite SRIT requirements.

We cannot accept Option 3 because, as indicated by other companies, the approach proposed is based on scenarios with unknown parameters never shared, studied or even discussed in 3GPP, contains unknown proprietary modifications at least on the network side that have not been disclosed, studied, qualified or discussed in 3GPP before and it's not clear which bands it would be applicable to, since the 3GPP standardization of satellite bands has only just started.

To be honest including these scenarios in this 3GPP submission to ITU would tarnish the professionality of the submission from 3GPP, since there would be no 3GPP study or background data on those scenarios, therefore there wouldn't be a justifiable technical merit for the last-minute inclusion, on top of not being within the 3GPP spirit of contribution and collaboration.

We invite the companies proposing Option 3 to contribute the relevant scenario parameters, technical analysis, required network modifications and targeted bands in future 3GPP releases so that they can be properly studied.

Option 4 is also not acceptable as it provides no meaningful guidance. We need to make a decision on what will be the 3GPP submission to ITU.

22 – Ericsson LM

Ericsson supports option 1. With the limited time available for evaluations, we see it as critical that a RIT is submitted. Hence NR NTN only is the preferred way

23 – MediaTek Inc.

MediaTek supports Option 2. We see no reason to limit this to NR if we are talking about mMTC-s.

24 – Telstra Limited

We are supportive of option 3. Similar to Vodafone, excluding un-modified 3GPP based operational systems is unacceptable.

25 – Nokia Corporation

We are supportive of option 3 at least in some form. It appears a bit odd to claim that some 3GPP technologies are proprietary and thus out of scope. One alternative is to clearly define in the submission that the NR-NTN and IoT-NTN are building on top of their terrestrial basis enshrined in the M.2150 rather than being fully independent RITs, while the evaluation only focuses on the NR-NTN and IoT-NTN.

https://nwm-trial.etsi.org/#/documents/8400

2.1.4 Summary of intermediate round

Considering the feedback received in the intermediate round, it is clear the at least NR-NTN and IoT-NTN are to be considered in the study.

The proposal to also consider ”regular” NR and LTE without specific adaptation to satellite operations received a limited support, while many companies objected due to the fact that non-standard implementation is required.

The moderator believes that the proposal from Nokia is a possible compromise: *define in the submission that the NR-NTN and IoT-NTN are building on top of their terrestrial basis enshrined in the M.2150 rather than being fully independent RITs, while the evaluation only focuses on the NR-NTN and IoT-NTN*

The final round is to confirm the moderator’s proposal and finalise the Study Item description and LS to SA, PCG and 3GPP OP.

3 Final round

3.1.1 Discussion and proposals

3.1.2 Status Report and incoming Liaisons from ITU

Discussion closed

3.1.3 Final submission of 3GPP material towards M.2012-6 and M.2150-2

Discussion closed

3.1.4 3GPP submission towards IMT-2020 Satellite

Based on the outcome of the intermediate round, the moderator suggest the following way forward:

Proposal 1:

- At least NR-NTN and IoT-NTN are to be considered in the study
- Define in the submission that the NR-NTN and IoT-NTN are building on top of their terrestrial basis enshrined in the M.2150 rather than being fully independent RITs, while the evaluation only focuses on the NR-NTN and IoT-NTN

The moderator uploaded in Inbox / Drafts / [98e-04-ITU-AH] the draft LS to SA, PCG and 3GPP OP.

Proposal 2: please review the draft LS and provide comments in the draft inbox, by adding your company name at the end of the file

The moderator asks the proponents to update the the Study Item description and upload it in the in Inbox / Drafts / [98e-04-ITU-AH]

https://nwm-trial.etsi.org/#/documents/8400

Proposal 3:

- Tdoc 3190 is endorsed
- Please review the draft Study Item description and provide comments in the draft inbox, by adding your company name at the end of the file

Feedback Form 7: Radio technologies to be included

1 – VODAFONE Group Plc

It is **not** acceptable to exclude technologies that are already in the process of being deployed, e.g. LTE.

In response to some of the round 2 comments: in at least some 3GPP RAN working groups, 3GPP has a long and firmly held position of not specifying how the network works, so, any NTN system that works with unmodified mobiles is merely maintaining that 3GPP position.

I offered some compromise wording in round 1 to avoid any delay this work on NR/IoT NTN. In the same compromise approach, an alternative wording for proposal 1 could be something along the lines of:

”At least NR-NTN and IoT-NTN are to be considered in the study but pre-Rel 17 LTE and NR are not excluded from the study.”

...with similar modification to the second paragraph.

Proposals 2 and 3 are similarly unacceptable - they need to be aligned with an acceptable version of proposal 1.

2 – Ligado Networks

We would be ok with the Nokia proposal but suggest the following wording changes:

Define in the submission that the NR-NTN and IoT-NTN are ~~buildingontopof~~ *adaptedfrom* their terrestrial basis enshrined in the M.2150 rather than being fully independent RITs, while the evaluation only focuses on the NR-NTN and...

Option 3 remains unacceptable to Ligado. Current LTE and NR protocols are only deployed for terrestrial networks and cannot work for satellite networks without proprietary modification of the implementation. It is unclear whether the modified e/gNodeBs in such networks could meet the eNodeB conformance tests, for example. No work has been done on this, there is no documentation and no evidence has been provided that these could in any way be considered 3GPP compliant. This work needs to be done (as it has been for NTN IoT and NTN NR) before any consideration of these networks.

Therefore it remains unacceptable for 3GPP to put these forward as they are undocumented and outside the standard.

3 – ZTE Corporation

We support Proposal 2 - to endorse the draft LS in the inbox. We support to mention that the candidate technologies are ”NR-NTN Rel 17 plus NTN IoT (NB-IoT/eMTC)”.

4 – Telstra Limited

Vodafone has described the concerns well, we support their comments and possible compromise wording.

5 – ESA

We agree with Ligado’s comment and with the rewording to include Nokia’s view.

@Vodafone: unmodified mobiles are already part of IMT, do you agree? So what more is there to study?

6 – VODAFONE Group Plc

@ESA - If there is nothing to study, then the inclusion of LTE into the template for IMT-2020-satellite should be easy to do? (But in reality, I’m sure that filling out the template for LTE will require some work).

@Ligado - our (and I expect all) terrestrial networks use e/gNodeBs with proprietary implementations. KPIs/counters on e.g. data throughput and energy consumption can be used to judge the relative performance of different vendors.

7 – Eutelsat S.A.

We support the proposal and agree the slight rewording suggested by Ligado: ”Define in the submission that the NR-NTN and IoT-NTN are adapted from their terrestrial basis enshrined in the M.2150....”.

We also assume that the 3GPP submission being discussed here would need to include both UE and Access Network aspects in order for a meaningful IMT evaluation to be made.

8 – Huawei Tech.(UK) Co.. Ltd

We agree with proposal 1 above.

Proposal 3 is not agreeable because proposal 1 in 3190 limits the submission to one RIT. So this is not consistent with proposal 1 above. We agree with MediaTek that from the discussion, we will have to decide later whether the submission will consist of 2 RITs, 1 RIT and 1 SRIT, or 1 SRIT. Therefore, we don’t agree with endorsing 3190. Note also that apart from the proposals, 3190 is mostly a summary of the ITU process and doesn’t really provide a workplan. An actual workplan could be directly included in the SID, so that companies know what work to expect in each quarter.

9 – Inmarsat

We support the slightly modified wording proposed by Ligado.

@Vodafone: Throwing ”unmodified LTE and NR” in the submission without any scenario parameters or any technical analysis and peer review done by 3GPP, or any indication of the network-level changes

(which are extensively discussed for NTN on the other hand), would make the 3GPP submission to ITU look extremely lousy and unprofessional.

We encourage Vodafone and other companies interested in ”unmodified” LTE and NR to be included in future 3GPP submissions to ITU, to do like everyone else of us had to do, and actually contribute scenario parameters and technical analysis for the benefit of the 3GPP community, for inclusion in the next 3GPP Release. We will then be happy to discuss it.

Also, if this was possible all along without any modifications, why wasn't it proposed years ago when LTE was first specified or later NR? It's obvious that the air interface was not satellite ready back then?

10 – THALES

We do agree with the proposal 1. We also support to the proposed ligado correction.

"*Define in the submission that the NR-NTN and IoT-NTN are ~~buildingontopof~~ adapted from their terrestrial radio interface basis enshrined in the M.2150 rather than being fully independent RITs, while the evaluation only focuses on the NR-NTN and IoT-NTN*"

@Vodafone: Our concern with the proposed pre R17 solution(s) is that the targeted deployment scenario and the adaptations to mitigate its specifics are not known in 3GPP. Furthermore the baseline configuration parameters that should be applied in analytical and simulation assessment of such a candidate satellite radio interface are not known /agreed either in 3GPP. Therefore how can this solution be studied in 3GPP for the purpose of submission to ITU-R ?

11 – Ericsson LM

We are fine with proposal 1 and 2.

For proposal 3, we agree that 3190 is outdated given proposal 1, but any updated can be directly captured in the moderator's proposal.

12 – HISPASAT SA

We support the moderator's proposal and the modified wording by Ligado.

We strongly recommend proposing, in such fora, only fully analyzed and standardized specifications that fit with the overall of the required scenarios. As a standard body, solutions that are not clearly documented and that depends on proprietary implementations to work only on specific scenarios cannot be proposed.

On the other side and following previous comments from @Vodafone, we do agree that 3GPP does not specify network configuration and implementations, but if a solution depends on such specific implementation to work it's clear that it shall be documented and analyzed following the 3GPP mechanisms, as NTN streams have done in the past years.

13 – MediaTek Inc.

On Proposal 1, propose to modify as follows:

- ~~At least~~ NR NTN and IoT (NB-IoT/eMTC) NTN are to be considered in the study

- Define in the submission that the NR-NTN and IoT-NTN are building on top of their terrestrial basis ~~enshrined in the M.2150 rather than being fully independent RITs, while the evaluation only focuses on the NR-NTN and IoT-NTN~~

Rationale for most of the above is that 3GPP has defined the technology components needed for satellite operation, and specified this accordingly. We do not believe that 3GPP can submit some other approach that it has never discussed or evaluated or made any agreements on as a submission for satellite operation to ITU-R.

We also agree with Huawei that it would be best to have some form of work plan. It would be good for such a work plan to cover the whole process including the SRIT/RIT decision-making process. We captured something in the SID, but as it said the process is out of scope of the study maybe we need a separate document to be endorsed at plenary level.

14 – NOVAMINT

We support proposal 1 with the change proposed by Ligado:

"*Define in the submission that the NR-NTN and IoT-NTN are ~~buildingontopof~~ adapted from their terrestrial radio interface basis enshrined in the M.2150 rather than being fully independent RITs, while the evaluation only focuses on the NR-NTN and IoT-NTN*"

We support proposal 2 and support the changes provided by Qualcomm and Huawei on the draft LS.

On proposal 3, we understand the point made by Huawei regarding 3190 - We are fine with the changes made by Ericsson, Huawei, MediaTek, ZTE which are aligned with proposal 1 and the context of a study on Self-Evaluation for 3GPP submission to ITU.

15 – TELECOM ITALIA S.p.A.

As moderator

I would like to propose the following compromise.

Please provide your comments if this is acceptable:

- The submission is based on NR-NTN and NTN-IoT
    - Other 3GPP technologies are not excluded (contribution based)
- The submission is not compromised if the activity is not finalized for one or more of the technologies
    - The submission will be done if at least one technology is fully evaluated and passes the criteria established by WP4B

16 – TELECOM ITALIA S.p.A.

As moderator:

I also noted a potential confusion in the discussion. The process is based on at least two steps:

1. 3GPP carries out the self-evaluation. At this stage the exercise is internal to 3GPP (we are not submitting anything to WP4B, a part from a generic statement we are willing to contribute)

2. by the deadline we agree what to submit (based on completed evaluation and fulfillment of the requirements

17 – VODAFONE Group Plc

The moderator's proposed compromise may be OK.

18 – HUGHES Network Systems Ltd

On Proposal 1, we propose to modify as follows:

- ~~At least~~ NR NTN and IoT (NB-IoT/eMTC) NTN are to be considered in the study
- Define in the submission that the NR-NTN and IoT-NTN are *adapted*~~building~~*from*~~on top of~~ the~~ir~~ terrestrial basis ~~enshrined in the M.2150 rather than being fully independent RITs, while the evaluation only focuses on the NR-NTN and IoT-NTN~~

Agreed with MediaTek on the rationale - 3GPP has defined the technology components needed for satellite operation and specified this accordingly. We do not believe that 3GPP can submit some other approach that it has never discussed or evaluated or made any agreements on as a submission for satellite operation to ITU-R. Also agreed with ESA's comment that unmodified terrestrial had been part of the terrestrial IMT so there is no need to tag with satellite.

We support proposal 2 and support the changes provided by Qualcomm and Huawei on the draft LS.

19 – Telstra Limited

We think the moderators 2-step proposal is a good compromise.

Feedback Form 8: Comments to LS and SID (please simply state you made revisions in the inbox

1 – MediaTek Inc.

We have a few initial comments (relating to 3190 and the SID) and on the assumption that we agree to make a submission for IoT NTN and NR NTN:

- Currently it says "RIT" in both docs, but one of the outstanding points is to discuss whether to submit a "standalone RIT" or "SRIT with 2 component RITs". So this point should be highlighted as an objective of the SID, and there should be some RAN plenary discussion and a milestone (e.g. RAN#99) set to agree on which of those submission approaches we will use.

- It should be clarified in the SID which test environment (bullets b/c/d) are planned to be simulated for each RAT (we assume all 3 for NR NTN and- only mMTC-s for IoT NTN). It may also be good to be clear of the RAN1/2 work split (or say that it will follow the approach taken for TN).
- Should the TR not be 37 series of it covers both NR and IoT NTN?
- Also it would be good to be clear in the SID that the ITU-R adhoc (as part of RAN plenary discussions) are making decisions on the more administrative tasks including submission type and how, and that RAN1/2 are focused purely on the technical evaluation work to support that.

(I will try to formulate this in terms of modifications to the SID tomorrow morning).

2 – MediaTek Inc.

(Note: my comment was related to the original SID in 3191... so maybe it helps for the updated drafting) :)

3 – MediaTek Inc.

I now see from the draft SID update that the ”37 series” point is fully covered.

4 – VODAFONE Group Plc

Any SID needs to be clear that it does not exclude the study of unmodified LTE and NR. Otherwise it will be unacceptable.

5 – Qualcomm Incorporated

Made a rev of the LS, with few clarification edits...please double check if ok. Next RAN dates are missing.

For the SID, looks ok to me, but will wait for Mediatek’s revision (open to the suggested clarifications).

6 – ZTE Corporation

For this SID, we are in general but prefer to explicitly mention ”evaluation assumption” as part of the discussion at the WG group level since compared to the TN, all conditions including channel models are different.

“”The study can start in the working groups after RAN#98, to discuss initial self-evaluation time-plan, TR template, **evaluation assumption**, etc..”

7 – Huawei Tech.(UK) Co.. Ltd

On the LS, we have provided a simple editorial to clarify that Rel-17 applies to both NR NTN and IoT NTN. We also prefer not to attach 3190 to the LS since as written above the proposals in 3190 are not consistent with the latest WF and doesn’t provide an actual workplan for the 3GPP RAN WGs. The ITU workplan can be found in the ITU documents.

Our SID revision just added one space and deleted a dot and a comma.

8 – VODAFONE Group Plc

A potential compromise SID is at https://www.3gpp.org/ftp/tsg_ran/TSG_RAN/TSGR_98e/Inbox/Drafts/%5B98e-04-ITU-AH%5D/RP-22xxxx%20SID%20IMT-2020%20Satellite%20update%20after%20IR-HW-VF.docx

9 – MediaTek Inc.

We added some clarifications to address our comments above on top of the HW version. We tried to minimize the changes. Please see here: https://www.3gpp.org/ftp/tsg_ran/TSG_RAN/TSGR_98e/Inbox/Drafts/%5B98e-04-ITU-AH%5D/RP-22xxxx%20SID%20IMT-2020%20Satellite%20update%20after%20IR-HW_MTK.docx.

10 – THALES

We do not support explicit reference to unmodified LTE and NR, for which we don't have any information in NTN context. the baseline configuration parameters that should be applied in analytical and simulation assessment of such a candidate satellite radio interface are not known /agreed in 3GPP

11 – Ericsson LM

It seems the controversial issues is how to capture proposal 1 from above in the SID. This can be discussed in the extended phase.

12 – MediaTek Inc.

We also disagree with the Vodafone additions, due to the reasons provided in the "Radio technologies to be included"

13 – NOVAMINT

We agree with the improvements and clarifications made by Ericsson, Huawei, MediaTek and ZTE on the SID. We would like to be added as supporting company on this basis.

We disagree with the Vodafone additions for the same reasons as MediaTek

14 – VODAFONE Group Plc

just to repeat, so that no one is confused:

Any SID needs to be clear that it does not exclude the study of unmodified LTE and NR. Otherwise it will be **unacceptable.**

15 – MediaTek Inc.

Added some meeting dates to the LS, apart from that fine: https://www.3gpp.org/ftp/tsg_ran/TSG_RAN/TSGR_98e/Inbox 04-ITU-AH%5D/draft%20RP-22xyz%20LS%20to%20PCG_QC_HW2_MTK.doc

16 – HUGHES Network Systems Ltd

We do not support explicit reference to unmodified LTE and NR to be considered for satellite component of IMT-2020. There is no valid study in 3GPP to support its candidacy.

17 – HUGHES Network Systems Ltd

We do not agree to changes made by Vodafone to the SID - "but may also include E-UTRA and NR without NTN related changes"

3.1.5 Summary of final round

The intermediate round did provide some progress on the text for the Study Item discussion and for the LS.

https://nwm-trial.etsi.org/#/documents/8400

Unfortunately there is still no agreement on the technologies to be considered for evaluation within the study.

As a moderator, I would like to still try to agree on the following compromise proposal in the extended round (note the change in bold with respect to the previous moderator's proposal):

- The **evaluation** is based on NR-NTN and NTN-IoT
    - Other 3GPP technologies are not excluded (contribution based)
- The submission is not compromised if the activity is not finalized for one or more of the technologies
    - The submission will be done if at least one technology is fully evaluated and passes the criteria established by WP4B

4 Extended round

4.1 Discussion and proposals

4.1.1 3GPP submission towards IMT-2020 Satellite

As a moderator, I would like to still try to agree on the following compromise proposal in the extended round (note the change in bold with respect to the previous moderator's proposal):

- The **evaluation** is based on NR-NTN and NTN-IoT
    - Other 3GPP technologies are not excluded (contribution based)
- The submission is not compromised if the activity is not finalized for one or more of the technologies
    - The submission will be done if at least one technology is fully evaluated and passes the criteria established by WP4B

Please provide your view on the proposal above. If acceptable, the compromise will be captured in the report and the Study Item Description will be modified accordingly.

The proponents are asked to upload a new draft SID and LS to PCG in Inbox / Drafts / [98e-04-ITU-AH] / extended round

Companies please provide text revisions to the files, adding your company in the title

Feedback Form 9: Is the moderator's compromise proposal acceptable

https://nwm-trial.etsi.org/#/documents/8400

1 – Qualcomm Incorporated

Thanks for the compromise proposal...unfortunately not acceptable for us.

We could agree on the following change/rewording:

- **The evaluation is based on Rel-17 NR-NTN and NTN-IoT**
    - **Other 3GPP submissions can be considered later, final decision to be taken in RAN#99 (contribution/consensus based)**

2 – THALES

We support QC suggested change/rewording.

3 – Lockheed Martin

We support QC's suggested change and rewording.

4 – Eutelsat S.A.

The Qualcomm proposal (above) is an acceptable way forward.

5 – Ericsson LM

Our preference is the same as Qualcomm, but can accept variants that make sure evaluation of NR NTN and IoT NTN can in Q1/23.

6 – Ericsson LM

Our preference is the same as Qualcomm, but can accept variants that make sure evaluation of NR NTN and IoT NTN can in Q1/23.

7 – ESA

We fully support QCOM rewording.

8 – VODAFONE Group Plc

The Qualcomm proposal is not acceptable.

The moderator's proposal is a compromise that is OK. (I would prefer much different text, but I can accept the moderator's proposed compromise).

9 – Inmarsat

We think Qualcomm's proposal is a reasonable compromise, the interested companies should contribute scenarios and analysis to make the submission to ITU look credible.

10 – Qualcomm Incorporated

Here is one possible rewording compromise:

- **The evaluation will start based on Rel-17 NR-NTN and NTN-IoT**
    - **Other 3GPP technologies are not excluded, final decision to be taken in RAN#99**

One extra note: it is quite clear (based on ~20 companies concern) that we can not agree on adding other submissions/evaluations. at this plenary. We need a much clearer and detailed proposal (hopefully in the form of an input contribution), addressing some key technical and procedural issues, including what/how to evaluate (is it the IMT-2020 terrestrial RIT, or a non-3GPP variant of it), what specs to refer to & submit (3GPP / non-3GPP, a mix of them), which spectrum/bands, etc. We are open to discuss & clarify things until next March.

11 – HUGHES Network Systems Ltd

We support QC latest re-wording with small changes:

- **The evaluation will start based on Rel-17 NR-NTN and NTN-IoT**
    - **Other 3GPP technologies may be considered ~~are not excluded,~~ final decision *on this* to be taken in RAN#99**

12 – MediaTek Inc.

We would like to modify a bit the first bullet:

- **The evaluation will start based on Rel-17 NR-NTN and NTN-IoT, and both will be included in the submission**

13 – VODAFONE Group Plc

At the moment I have not seen anything other than the Moderator's proposal that is acceptable.

14 – HISPASAT SA

We do support QC proposal, with the modification made by Hughes and MTK.

On our understanding, this proposal is including the standard specifications that are already available, documented, approved and supported in this discussion by more than 20 representatives, and also lets the door open to additional proposals to be considered and decided in a specific timeframe. It is indeed a compromise, nothing is discarded or precluded.

At this stage we **will not accept** any additional proposal without knowing the details on implementation, architecture, feasible scenarios and implications, which is being challenged in the proposed wording to be closed in RAN#99

15 – NOVAMINT

We support Qualcomm proposal, with the modifications made by Hughes and MTK:

- **The evaluation will start based on Rel-17 NR-NTN and NTN-IoT, and both will be included in the submission**
  - **Other 3GPP technologies may be considered ~~are not excluded,~~ final decision *on this* to be taken in RAN#99**

16 – MediaTek Inc.

How about this as a compromise?

- **The evaluation and submission shall cover Rel-17 NR-NTN and NTN-IoT**
  - **Whether to include additional 3GPP submissions will be decided in RAN#99**

17 – Ligado Networks

We can support the moderator proposal with modifications from Hughes and MTK.

18 – Qualcomm Incorporated

Ok with Mediatek proposal

19 – ZTE Corporation

We are fine with MTK's changes. Regarding **Other 3GPP technologies,** it should be deprioritized in the current stage since there is no justification.

20 – TELECOM ITALIA S.p.A.

As moderator:

looking to the current discussion, the moderator suggest to go with the Qualcomm+Hughes+Mediatek text. It leaves open the door for further discussion, and hopefully it can be accepted by everyone. At this stage I do not see any other possible compromise.

- **The evaluation will start based on Rel-17 NR-NTN and NTN-IoT, and both will be included in the submission**
  - **Other 3GPP technologies may be considered ~~are not excluded,~~ final decision *on this* to be taken in RAN#99**

Please provide your feedbacks if this is acceptable. Otherwise, I will go to the GTW indicating support vs object and propose to take the majority view.

I also ask the proponents to update the WID and LS accordingly.

21 – MediaTek Inc.

It seems that there was already a comment that the above proposal from the moderator would not be acceptable. We also prefer not to use the term ”technologies”. We would prefer the following:

- **The evaluation and submission shall cover Rel-17 NR-NTN and NTN-IoT**
  - **Whether to include additional 3GPP submissions will be decided in RAN#99**

22 – MediaTek Inc.

Sorry, I was too polite... we cannot accept to use the term ”technologies”.

23 – Inmarsat

We support the latest text proposed by Mediatek. After all the work done on both NR NTN and IoT NTN, both must be unambiguously included.

24 – Nokia Corporation

The latest proposal from MediaTek is not accurate. There will be just one 3GPP submission, and the question is what that submission will be consisting of. If ”technologies” is somehow controversial (why?), then probably RIT is even more so. Would ”components” be acceptable?

- **The evaluation and submission shall cover Rel-17 NR-NTN and NTN-IoT**
  - **Whether to include additional 3GPP components will be decided in RAN#99**

25 – VODAFONE Group Plc

Sorry, but the moderator’s original compromise proposal was already a very significant compromise on my part.

The above proposals all go much further than that and remain **unacceptable.**

I do not believe that that original compromise proposal harms or hinders the work that you want to progress, however, I will not accept that the work needed for real, deployed satellite is blocked.

26 – Omnispace

Omnispace supports the latest proposal text from MediaTek:

- **The evaluation and submission shall cover Rel-17 NR-NTN and NTN-IoT**
  - **Whether to include additional 3GPP submissions will be decided in RAN#99**

27 – Huawei Tech.(UK) Co.. Ltd

We think that the formulation revised by Nokia is the most accurate, and we support it. In our understanding, that formulation doesn't prevent discussing a component consisting of unmodified LTE or NR, although at this time we don't see the justification for such component.

We would like to point out that the satellite component of IMT-Advanced, which was not submitted by 3GPP, does not simply consist of unmodified LTE. That submission included enhancements for satellites, which were not specified by 3GPP at that time.

28 – MediaTek Inc.

Here is another try:

- **The evaluation and submission shall cover Rel-17 NR-NTN and NTN-IoT**
  - **Whether to include additional components to the 3GPP submission~~s~~ will be decided in RAN#99**

29 – NOVAMINT

We are ok with the latest suggestion from MediaTek

30 – HISPASAT SA

We support the suggestions from Nokia and final wording from Mediatek. It clearly includes the base scope on NTN and do not block any additional possibility, like those from deployed satellite(s).

31 – TELECOM ITALIA S.p.A.

As Moderator

I still prefer the version from Nokia.

To Vodafone: I recognize your concerns, but at this stage I can only conclude that the majority has a position and there is no consensus. The issue will be discussed in the GTW today.

Please note that at 12:00 UTC sharp I will close the discussion, since the topic will e the first in the agenda today

32 – MediaTek Inc.

We believe that the latest MediaTek proposal is more aligned with the previous proposal where we said "submissions". "3GPP components" is somewhat ambiguous.

33 – Telstra Limited

We preferred the original wording from the moderator and in the spirit of compromise, we are ok with Nokia's suggestion with a small change that should not be controversial

- **Whether to ~~include~~ *exclude* additional 3GPP components will be decided in RAN#99**

https://nwm-trial.etsi.org/#/documents/8400

34 – HUGHES Network Systems Ltd

We also support the latest version proposed by MediaTek

- **The evaluation and submission shall cover Rel-17 NR-NTN and NTN-IoT**
    - **Whether to include additional components to the 3GPP submissions will be decided in RAN#99**

35 – TELECOM ITALIA S.p.A.

as moderator:

a last comment before closing the thread.

I do not understand the latest Mediatek proposal. At this stage we need to do the self-evaluation, not the submission. The proposal is misleading in my opinion.

I will propose the Nokia working in the GTW, and let's try to converge quickly (at least from the people who want to restrict to NTN NR and IoT)

4.2 Summary of extended round

There is no consensus on the 3GPP components to be evaluated and submitted for inclusion in the new ITU-R Recommendation on IMT-2020 Satellite Radio Interface Technologies

Clear majority:

- Approve the Study Item and LS to SA, PCG and 3GPP OPs with the following agreement
    - The evaluation and submission shall cover Rel-17 NR-NTN and Rel-17 NTN-IoT
    - Open to consider the following addition
        - Whether to include additional 3GPP components will be decided in RAN#99

Two companies would like to allow the evaluation and submission of NR and LTE pre-Rel 17

Moderator's proposal

- Note 3420 (ITU-R Circular Letter 4/LCCE/134) and 3190 (3GPP submission towards IMT-2020 Satellite)
- Approve the SID in RP-223510 based on the majority view
- Approve the LS in RP-223498

5 Conclusions

The moderator would like to thank the companies for the discussion.

The Chair indicated the following documents falls under this mail discussion: RP-222704, 2722, 2723, 3389, 3422, 3190, 3191, 3420, 3390, 3391, 3392, 3428

Conclusions:

- LSin RP-223390 is noted, used as basis for LSout agreed in RP-223439
- LSin RP-223391 noted, used as basis for LSout agreed in RP-223440
- LSin RP-223392 noted, used as basis for LSout agreed RP-223441
- RP-222704, 2722, 2723, 3389, 3422, 3428 are noted

Open issues:

- IMT-2020 Satellite

IMT-2020 Satellite

There is no consensus on the 3GPP components to be evaluated and submitted for inclusion in the new ITU-R Recommendation on IMT-2020 Satellite Radio Interface Technologies

Clear majority:

- Approve the Study Item and LS to SA, PCG and 3GPP OPs with the following agreement
    - The evaluation and submission shall cover Rel-17 NR-NTN and NTN-IoT
    - Open to consider the following addition
        - Whether to include additional 3GPP components will be decided in RAN#99

Two companies would allow the evaluation and submission of NR and LTE pre-Rel 17

Moderator's proposal

- Note 3420 (ITU-R Circular Letter 4/LCCE/134) and 3190 (3GPP submission towards IMT-2020 Satellite)
- RP-223191 is revised in 3510. Approve the SID in RP-223510 based on the majority view
- Approve the LS to SA, PCG and 3GPP OPs in RP-223498

https://nwm-trial.etsi.org/#/documents/8400