

[94e-41-R17-NRNTN-RAN4Spec] - Version 0.0.4
RAN

3GPP TSG RAN Meeting #94-e

RP-213618

Electronic Meeting, December 06 - 17, 2021

Agenda Item: 9.3.2.2

Source: RAN Vice-Chair (AT&T)

Title: Moderator's summary of discussion [94e-41-R17-NRNTN-RAN4Spec]

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In this document, a summary for the email discussion [94e-41-R17-NRNTN-RAN4Spec] at RAN#94-e is provided.

1 Topic #1: NTN RAN4 Specification Handling

1.1 Proposed Objectives

Topic #1 will capture the outcome of the discussions on the following documents:

- 1) RP-212939 [1]
- 2) RP-213117 [2]
- 3) RP-213480 [4] (Revision of RP-213421 [3])

All documents present proposals for NTN RAN4 core specification handling for the NTN-NR WI for Rel-17.

1.2 Initial Round

1.2.1 Open Issues

The following covers the proposals listed in [1].

- Proposal 1: As approved in the NTN-NR Rel-17 WID, NTN RF specific requirements for UE operating in FR1 will be included in TS 38.101-1.
- Proposal 2: Handling of NTN specific requirements for UE operating in non-FR1 may be assessed in future release.

- Proposal 3: As approved in the NTN-NR Rel-17 WID, NTN RRM specific requirements will be included in TS 38.133.

The following covers the proposals listed in [2].

- Proposal 1: Decision on this matter by RAN#94-e meeting is needed.
- Proposal 2: NTN specific RF requirements should be incorporated in new separate RAN4 TS(s).
 - Either new specification e.g. 38.10x or new sub-part of existing specification e.g. 38.101-x.
- Proposal 3: NTN specific RRM and Demod requirements could be incorporated either in new RAN4 TS(s) or in existing RAN4 TS(s) with new dedicated clauses with suffixes.

The following covers the proposals listed in [4].

- Proposal 1: Create new separate TS specifying UE radio transmission and reception for satellite access, including satellite bands.
- Proposal 2: Create new separate TS specifying Radio resource management requirements for satellite access.

Based on the proposals presented, the moderator has identified the set of issues to resolve in the first round as identified in section 1.2.2. NTN specific requirements for future bands beyond FR1 will be handled in future releases and can be handled in the corresponding WID(s) at that time. There is no need to address that topic in this discussion.

1.2.2 Collection of company views

Issue 1.2-1: Should the NR NTN specific RF requirements for FR1 be incorporated in 38.101-1 or a new separate TS specifying UE radio transmission and reception for satellite access, including satellite bands? Please also provide reasoning/justification for position.

Feedback Form 1: Issue 1.2-1: Should the NR NTN specific RF requirements for FR1 be incorporated in 38.101-1 or a new separate TS specifying UE radio transmission and reception for satellite access, including satellite bands?

1 – Spark NZ Ltd

we believe that Separate RAN4 specs for TN and satellite makes it more clear what pertains to both in 3GPP and in ITU-R

2 – Samsung Electronics Co.

We prefer to have separate RAN4 UE RF spec even for FR1. We noticed that other frequency bands beyond FR1 will be introduced in the future release. Having dedicated specification for both ongoing FR1 bands in Rel-17 and future non-FR1 bands would ensure the consistency of the entire structure/framework in a self-contained manner and would make NTN TS(s) editorially friendly for its future development.

3 – Beijing Xiaomi Mobile Software

Considering the structure of current 101-1 spec is huge and complex (there are nine Clause suffix in the spec), we slightly prefer to have a dedicated TS for UE RF requirements to make the NTN spec more clear and more future proof. The dedicated TS can cover the RF requirements for all types of NTN UE.

4 – THALES

For the NTN specific requirements for FR1, we prefer to incorporate them in the existing TS 38.101-1 specification rather than in a new TS sub-part (e.g. TS 38.101-x). The reason is that ACLR, ACS, sensitivity, Tx power are unchanged compared to operation on terrestrial network, therefore this incorporation would require to add NTN frequency bands in approximately 10 tables of TS 38.101-1.

Furthermore the RAN decision on the handling of NR-NTN specific requirement shall not prevent common TN+NTN device implementations as well as common requirements compared to TN.

5 – ESA

As far as FR1 is concerned, we prefer to incorporate the changes in TS 38.101-1. As mentioned also by Thales, the current work done in RAN-4 has not change KPIs or FoM. In FR1, it will be possible to have TN/NTN terminals.

6 – HUGHES Network Systems Ltd

For the NTN specific requirements for FR1, we prefer to incorporate them in the existing TS 38.101-1 specification, as approved in the NTN-NR WID. The reason is that most of the NTN UE parameters are unchanged as compared to operation in terrestrial network. The incorporation on NTN specifics would only require to add NTN frequency bands, as typical of adding any new bands, onto the relevant tables of TS 38.101-1. We think RAN decision on the handling of NR-NTN specific requirement shall not move away from the intention of common TN+NTN device implementations and requirements.

7 – Omnispace

We support the position outlined by Hughes Network Systems and Thales along with the rationale they use to support their position

8 – HISPASAT SA

For the sake of clarity and facilitating the specification development, we agree on incorporating changes in the existing TS 38.101-1 specification, following the agreement in the NTN-NR WID.

9 – TELENOR ASA

We prefer to have separate RAN4 UE RF spec even for FR1.

10 – TELENOR ASA

We prefer to have separate RAN4 specs for TN and NTN.

11 – Ericsson LM

We prefer to create new separate RAN4 specifications for satellite UE RF, RRM and demod requirements.

We have strong concerns with using the existing specifications. We anticipate new requirements, a variety of UE types, new bands, etc and trying to cram all into the existing specifications would create both structural issues and increase specification complexity and size beyond what is justified or reasonable. There is also risk of accidental application of additional requirements. This is not a manageable or sustainable approach.

Furthermore, using the existing specifications would create additional problems and work with submissions to the ITU-R where satellite and terrestrial services are handled separately and by different groups.

A consistent approach and structure with new specifications for satellite Node, UE RF, RRM and demod requirements would address these aspects and be more future proof. It would seem also the only realistic approach to keeping satellite UE types in the same specification. Note that separate specs for TN and NTN do not prevent TN+NTN implementation in a single device.

Our view is therefore that new separate RAN4 specification is needed and should be created for satellite UE RF requirements and bands.

12 – AT&T GNS Belgium SPRL

The NR NTN specific RF requirements for FR1 should be captured in a new separate TS. We support the observations made in RP-213480 concerning ITU-R submissions, reducing impact to existing core specification complexity, and keeping consistency for specification handling between satellite access node and UE requirements. It also allows for a more future-proof approach as the NR NTN specific RF requirements are evolved in future releases. This approach also makes it easier to group the conformance testing in RAN5 accordingly.

13 – T-Mobile USA Inc.

We prefer to have the satellite NTN UE RF specifications even for FR1 bands. For the ITU IMT submissions we think it is important to keep the satellite bands in different specifications from the terrestrial bands. There seems to be some concern from satellite companies that having the satellite NTN UE requirements in a separate spec would somehow cause problems with implementing TN+NTN implementations. Since we currently have 2G, 3G, 4G and 5G all from different specs incorporated in the same UEs, as well as NR FR1 (38.101-1) FR2 (38.101-2) and FR1+FR2 (38.101-3) in different specs, there should be no concerns that having the satellite NTN UE RF requirements in a different specs will have any impact on implementing TN + NTN in the same UEs.

14 – US Cellular Corporation

Concur with the views that recommend a delineation of TN and NTN category of specifications to allow for clarity in document organization and readability, while not altering the significance of either the TN or the NTN category of specifications.

15 – Apple Poland Sp. z.o.o.

Our understanding is that RAN WG4 has already made a number of key decisions to leverage existing solutions defined in TS 38.101-1. For instance, channel and the sync rasters are assumed to be the same as for FR1 bands, same channel bandwidths will be re-used with the same number of RBs, etc. If we instantiate a new specification for the NTN UE radio transmission/reception, then we will end up copying a lot of sections for no good reasons. The only technical aspect that could be different for NTN is the receiver ACS/blocking requirements and transmission requirements associated with MPR/A-MPR values, which is still under discussion in RAN WG4. However, existing TN ACS/blocking requirements are more stringent

<p>comparing to the existing L- and S-band regulations defined by FCC and ETSI, i.e. adopting TN requirements for NTN will not trigger any specification changes. On the other hand, if more relaxed ACS/blocking requirements will be agreed for NTN, then we will just create a corresponding sub-clause similar to what we already did for V2X and NR-U.</p>
<p>16 – CHTTL</p> <p>We support Ericsson's view.</p>
<p>17 – GLOBALSTAR Inc.</p> <p>We support the view that a new specification for NTN UE radio transmission / reception is unnecessary. Any required changes should be incorporated into the existing TS 38.101-1.</p>
<p>18 – China Telecom Corporation Ltd.</p> <p>We prefer to have separate RAN4 specs for NTN, and the suggestion to use 38.101-5 as suggested by RAN4 Chair can be a good compromise.</p>
<p>19 – ZTE Corporation</p> <p>Regarding the RF part, we share Ericsson's views and prefer to take it as a separate spec.</p>
<p>20 – Bell Mobility</p> <p>We support Ericsson's view</p>
<p>21 – Intelsat</p> <p>We suggest incorporating the NTN specific requirements for FR1, in the TS 38.101-1 specification. We believe that ACLR, ACS, sensitivity, Tx power are the same when compared to operation on terrestrial network. This will require the addition of NTN frequency bands in approximately the appropriate tables of TS 38.101-1.</p>
<p>22 – Samsung Electronics Co.</p> <p>If existing spec is used for NTN UE RF, no clear solution is observed that how to handle Ka bands in RE1-18 if introduced. We think RAN4 chairman's proposal in GTW session can be also considered as compromised solutions, i.e., 38.101-5 for UE RF and Demod (and 38.133 with dedicated sub-clause with suffix for RRM)</p>
<p>23 – LG Electronics Deutschland</p> <p>We support separate RF spec for FR1 that can accommodate the future Ka band which may not be included in the current FR2 range. For RRM/Demod we slightly prefer to also have separate spec but we can go with RAN4 chair's suggestion to have a separate sub-clause in the existing 38.133/38.101-4..</p>
<p>24 – vivo Communication Technology</p> <p>We also prefer the solution proposed by RAN4 Chair, i.e. 38.101-5 for UE RF and Demod.</p>
<p>25 – Telia Company AB</p> <p>We support view and reasoning from Ericsson. Separate RAN4 specifications for satellite UE RF requirements and bands would be more clear than to mix them together current terrestrial requirements and bands.</p>

26 – Huawei Technologies France

We prefer separate spec for UE RF and demod requirements. Since Ka band is only part of FR2, neither existing 38.101-2 nor 38.101-1 is appropriate to take the NTN requirements as it is foreseen bands other than L-band, S-band will be considered. On the other hand, ITU-R submission is another aspect to be considered. As only two meetings are left for RAN4, the decision should be made as soon as possible. As recommended by RAN4 chair, 38.101-5 seems a good choice for NTN UE RF and demod.

27 – NOVAMINT

We would prefer to incorporate the NTN specific requirements for FR1 in the existing TS 38.101-1 specification rather than in a new TS sub-part (e.g. TS 38.101-x).

28 – Sateliot

Given the reasoning expressed by Thales and also supported by other companies that modifications to existing TS 38.101-1 specifications are very limited and this avoids creating by the time being a separate specification for NTN terminals, we prefer to incorporate the NTN specific requirements for FR1 in the existing TS 38.101-1 specification.

29 – TURKCELL

We prefer to have separate NTN specific requirements. NTN specific specification prevents structural issues and decreases specification complexity. It will be editorially friendly.

30 – SoftBank Corp.

We prefer to separate these specs for satellite (not "NTN" including HAPS/ATG) considering proper ITU-R submissions.

LS to ITU-R according to this matter might be a one of the options.

31 – MediaTek Inc.

The main concern from our side regarding new UE RF specs for NTN would be the potential impact on the completion timeline, and the potential for new arguments it may bring when discussing requirements. If it was decided to go for new specs, in our view the following would also need to be agreed by 3GPP as part of that approach:

- 1) The implementation of separate specs for NTN shall not prevent common TN+NTN device implementations.
- 2) The implementation of separate specs for NTN shall not be used as an argument to justify different requirements compared to TN.
- 3) Reconfirm the target completion date of March 2022 for core requirements and Sept 2022 for performance requirements, and implementation of new specifications shall not impact the date of completion for core or performance requirements.
- 4) The structure, scope and initial content of the new spec shall be endorsed by the next RAN4 meeting (January 2022) at the latest.
- 5) The specification number to be provided by MCC at the current TSG-RAN#94-e meeting.
- 6) Also we would need to agree "how" those new specs would look (basic principles) at the current RAN#94-e meeting. We should aim to avoid duplication of text from 38.101-1 and refer to 38.101-1 for requirements that are the same as for TN.

32 – TELECOM ITALIA S.p.A.

We prefer to have separate specifications for the many reasons listed above. Last but not least is the size of current specs, which are practically not-manageable.

To Thales/Apple: to avoid misalignment with TN specs, simple references to TN specs could be used when the requirements are the same

33 – Skyworks Solutions Inc.

We prefer to have a separate spec for NTN even for FR1. for aspects that are common with bands in 38.101-1 it does not prevent that new spec makes explicit reference to 38-101-1 to limit the technical content to what is different.

34 – Skyworks Solutions Inc.

If the difference is only for a limited set of requirements and keeping in 38.101-1 is then an option can it be clarified by proponents if this means that NTN has a different suffix (like NRU) or treated as any other NR band but with NTN band specific aspects (under NS?)

35 – Catapult

We prefer the NR NTN specific RF requirements for FR1 to be incorporated in TS 38.101-1.

36 – Eutelsat S.A.

Eutelsat prefers NTN requirements to be combined within the existing 38.101-1 spec. We understand the additions are limited.

37 – Nokia France

We support the view that a separate spec should be used, for reasons including the size and complexity of the current document, facilitation of ITU submission handling, reuse of the unlicensed precedent, and efficiency of updates.

We note the comment from Thales and other that some requirements may be the same as in the terrestrial spec; for this, simple cross-referencing can be used.

We also note that the use of separate specifications in no way prevents common TN+NTN device implementations, as is already clear from LAA and EN-DC, for example; hence we believe this concern to be based on a mis-understanding.

Issue 1.2-2: Should the NR NTN specific RRM requirements for FR1 be incorporated in 38.133 or a new separate TS specifying Radio resource management requirements for satellite access? Please also provide reasoning/justification for position.

Feedback Form 2: Issue 1.2-2: Should the NR NTN specific RRM requirements for FR1 be incorporated in 38.133 or a new separate TS specifying Radio resource management requirements for satellite access?

1 – Spark NZ Ltd

we believe that separate there is a need to create new separate TS specifying Radio resource management requirements for satellite access

<p>2 – Samsung Electronics Co.</p> <p>For RRM, it is OK to incorporate these requirements in either new or existing TSs. But for existing TS 38.133, such requirements should be contained in dedicated sub-clauses with suffixes in corresponding TSs (e.g. TS 38.133) given the experience in previous practices (e.g. V2X, unlicensed)</p>
<p>3 – Beijing Xiaomi Mobile Software</p> <p>Share same view with Samsung, either way is ok for us</p>
<p>4 – THALES</p> <p>We recommend to have the FR1 related NTN specific requirements incorporated in the existing TS 38.133 in a dedicated clause in line with previous practices (e.g. as for V2X)</p>
<p>5 – ESA</p> <p>Again, in FR1 it is not necessary to generate a new TS. As mentioned by Samsung/Thales, it has been common practice for other use-case (e.g., V2X, Unlicensed).</p>
<p>6 – HUGHES Network Systems Ltd</p> <p>We prefer to keep the FR1 related NTN specific requirements incorporated in the existing TS 38.133 in a dedicated clause in line with previous practices (e.g. as for V2X)</p>
<p>7 – HISPASAT SA</p> <p>We share the same view on maintaining same strategy as in previous practices. We support keeping FR1 NTN related requirements in the existing TS 38.133.</p>
<p>8 – MediaTek Inc.</p> <p>There will likely (at least eventually) be RRM requirements for where UE measures TN from NTN and vice versa (so it seems easier to include in 38.133 in that sense). Also there is very little in the way of band-specific requirements in 38.133, so should be able to be extracted quite easily, e.g. with a reference to the bands in the UE RF spec where NTN bands are defined (whichever approach is taken for that).</p>
<p>9 – MediaTek Inc.</p> <p>Forgot to add that also separate sub-clauses seems ok.</p>
<p>10 – TELENOR ASA</p> <p>Separate specs.</p>
<p>11 – Ericsson LM</p> <p>See FF1. In addition, w r t RRM requirements we note that TS 38.133 is already more than 2800 pages long (3GPPs largest spec?) and it would not be constructive to make it even larger. NR-U in 133 is not a reason for not defining a more consistent and manageable specification structure for satellite access.</p> <p>Our view is therefore that new separate RAN4 specification is needed and should be created for satellite RRM requirements.</p>

<p>12 – AT&T GNS Belgium SPRL</p> <p>The NR NTN specific RRM requirements for FR1 should be captured in a new separate TS. We support the observations made in RP-213480 concerning reducing impact to existing core specification complexity and keeping consistency for specification handling between satellite access node and UE requirements. It also allows for a more future-proof approach as the NR NTN specific RRM requirements are evolved in future releases. This approach also makes it easier to group the conformance testing in RAN5 accordingly.</p>
<p>13 – T-Mobile USA Inc.</p> <p>We support Ericsson’s position that a new separate specification would be best.</p>
<p>14 – Apple Poland Sp. z.o.o.</p> <p>we support to incorporate NTN RRM part into the existing 38.133, and new dedicated section could be created for NTN RRM in TS38.133, like V2X.</p>
<p>15 – CHTTL</p> <p>We support Ericsson’s view</p>
<p>16 – GLOBALSTAR Inc.</p> <p>We believe that NTN RRM can be incorporated into TS 38.133. As mentioned by others, NTN specific requirements may be integrated via sub-clauses / sections in 38.133.</p>
<p>17 – ZTE Corporation</p> <p>For the RRM part, we are open to keeping it in 38.133 as a new clause.</p>
<p>18 – China Telecom Corporation Ltd.</p> <p>Share Ericsson’s view.</p>
<p>19 – Intelsat</p> <p>We suggest to have the NTN specific requirements incorporated for FR1 in TS 38.133 in a dedicated clause in line.</p>
<p>20 – Samsung Electronics Co.</p> <p>we prefer to have separate specifications but also open to reuse existing 38.133 with dedicated sub-clause</p>
<p>21 – LG Electronics Deutschland</p> <p>We prefer the separate RRM spec. considering the potentially large amount of NTN RRM requirements (e.g. Idle, HO, measurement etc.) but can go with incorporating the existing 38.133 with a dedicated sub-clause as a compromise.</p>
<p>22 – vivo Communication Technology</p> <p>For RRM, we prefer to reuse existing 38.133 with new suffixes.</p>

<p>23 – Telia Company AB</p> <p>New separate RAN4 specification is needed for satellite RRM requirements.</p>
<p>24 – NOVAMINT</p> <p>We share same views as Samsung/Thales that it is not necessary to generate a new TS in FR1 as it has been a common practice for other use-case (V2X, Unlicensed...).</p>
<p>25 – TURKCELL</p> <p>We support a new separate TS specifying radio resource management requirements for satellite access. NTN specific RRM requirements. Impacts on the existing core specification will be less.</p>
<p>26 – SoftBank Corp.</p> <p>We prefer to separate same as FF1.</p>
<p>27 – Sateliot</p> <p>Same view as Samsung/Thales/ESA that RRM requirements for NTN could be placed in the existing 38.133 specification under specific clauses as done for other use-cases. Also support the additional consideration raised by MTK that keeping a common specification could facilitate the specification of requirements involving TN and NTN measures.</p>
<p>28 – MediaTek Inc.</p> <p>Please note that the 38.133 spec is a zip file already containing multiple word documents. I am not fully convinced that adding one more word document for NTN specific aspects would structurally break the spec, especially if this can also simplify things (as we mentioned above), especially when referring to cross-TN/NTN mobility scenarios.</p>
<p>29 – Catapult</p> <p>We share the same view as Thales.</p>
<p>30 – Gatehouse Satcom A/S</p> <p>We share the views of Thales, Novamint, Samsung, others : We recommend to have the FR1 related NTN specific requirements incorporated in the existing TS 38.133.</p>
<p>31 – Nokia France</p> <p>We share the view that a separate spec should be used, for the same reasons as for the first feedback form.</p>

Issue 1.2-3: Should the NR NTN specific Demod requirements for FR1 be incorporated in 38.101-4 with new dedicated clauses with suffixes or a new separate TS specifying Performance requirements for satellite access? Please also provide reasoning/justification for position.

Feedback Form 3: Issue 1.2-3: Should the NR NTN specific Demod requirements for FR1 be incorporated in 38.101-4 with new dedicated clauses with suffixes or a new separate TS specifying Performance requirements for satellite access?

<p>1 – Spark NZ Ltd</p> <p>We are of the view to create new separate TS specifying UE radio transmission and reception for satellite access, including satellite bands</p>
<p>2 – Samsung Electronics Co.</p> <p>For Demod, we are open to discussion on either of incorporated in existing 38.101-4 or new specifications.</p>
<p>3 – Beijing Xiaomi Mobile Software</p> <p>Share same view with Samsung, either way is ok for us</p>
<p>4 – THALES</p> <p>For the NTN specific requirements for FR1, we prefer to incorporate them in the existing TS 38.101-4 rather than in a new TS sub-part (e.g. TS 38.101-x)</p>
<p>5 – ESA</p> <p>We prefer 38.101-4.</p>
<p>6 – HUGHES Network Systems Ltd</p> <p>For the NTN specific requirements for FR1, we prefer to incorporate them in the existing TS 38.101-4 rather than in a new TS sub-part (e.g. TS 38.101-x)</p>
<p>7 – Omnispace</p> <p>We support maintaining the specifications in the existing 38.101-4 document</p>
<p>8 – HISPASAT SA</p> <p>We support keeping FR1 NTN related requirements in the existing TS 38.101-4.</p>
<p>9 – TELENOR ASA</p> <p>We prefer separate specs for TN and NTN.</p>
<p>10 – Ericsson LM</p> <p>See FF1 and FF2. We believe that the consistent and future proof way forward is to create new RAN4 specification for satellite UE demod requirements. If considered beneficial it could be grouped with a new TS for satellite UE RF requirements.</p>

<p>11 – AT&T GNS Belgium SPRL</p> <p>The NR NTN specific Demod requirements for FR1 should be captured in a new separate TS. It make sense to keep all of the core and performance requirements in separate specifications for consistency. It also allows for a more future-proof approach as the NR NTN performance requirements are evolved in future releases. This approach also makes it easier to group the conformance testing in RAN5 accordingly.</p>
<p>12 – T-Mobile USA Inc.</p> <p>We support a new separate spec.</p>
<p>13 – Apple Poland Sp. z.o.o.</p> <p>We support to incorporate NTN demod part into the existing 38.101-4, and new dedicated section could be created for NTN demod in TS38.101-4.</p>
<p>14 – CHTTL</p> <p>We support Ericsson’s view</p>
<p>15 – GLOBALSTAR Inc.</p> <p>We support incorporation into the existing TS 38.101-4.</p>
<p>16 – ZTE Corporation</p> <p>For the demo requirement, taking it as a spec seems more reasonable since the potential assumption for evaluation in the NTN case may be different.</p>
<p>17 – China Telecom Corporation Ltd.</p> <p>To define UE RF and demod requirements for NTN in 38.101-5 as suggested by RAN4 Chair.</p>
<p>18 – Bell Mobility</p> <p>We support a new separate TS</p>
<p>19 – Intelsat</p> <p>We suggest having the NTN specific demod requirements for FR1 incorporated in TS 38.101-4 in dedicated clauses with suffixes.</p>
<p>20 – LG Electronics Deutschland</p> <p>We prefer the separate Demod spec. for better readability but can go with incorporating the existing 38.101-4 with a dedicated sub-clause as a compromise.</p>
<p>21 – Telia Company AB</p> <p>New separate specification needed for RAN4 specification for NR NTN UE demodulation requirements.</p>
<p>22 – Huawei Technologies France</p> <p>Demod requirements can be considered together with UE RF for NTN in a new spec.</p>

23 – NOVAMINT
We support keeping FR1 NTN related requirements in the existing TS 38.101-4.
24 – TURKCELL
We prefer a new separate TS.
25 – SoftBank Corp.
We prefer to separate same as FF1 and FF2.
26 – Sateliot
We support incorporation into the existing TS 38.101-4.
27 – MediaTek Inc.
If 3GPP agreed to use a new RF spec we could incorporate demod reqs there (and the new spec could be 38.101-x). If 3GPP agreed to use existing RF spec we could incorporate into 38.101-4.
28 – Catapult
We support the incorporation of Demod requirements for FR1 in the existing 38.101-4.
29 – Gatehouse Satcom A/S
We support keeping FR1 NTN related requirements in the existing TS 38.101-4.
30 – Eutelsat S.A.
We support keeping NTN related requirements within the existing 38.101-4.
31 – Nokia France
We share the view that a separate spec should be used; it could be combined with the UE RF NTN spec.

1.2.3 Summary and recommendation for further discussion

Thanks for the comments during the initial round. Concerning the issues presented related to the handling of the NTN RAN4 UE RF, RRM, and Demod specifications, the company views did not vary much from previous positions.

There is no clear majority view as to which option to take. The only differentiation noted in the feedback forms for the RRM and Demod specifications is that some of the companies proposing a separate UE RF specification were willing to consider using the same RRM and Demod specifications as long as such requirements are contained in dedicated sub-clauses with suffixes in the corresponding TSs given the previous practices in RAN4 (e.g. V2X, unlicensed) since there are very limited band-specific requirements in the RRM and Demod specifications.

As 3GPP is at the onset of NR NTN work, some companies also expressed the view that having separate dedicated UE specifications would be more future-proof and also allow for the addition of frequency ranges beyond FR1 in the same NTN specific UE specification. This approach would also greatly simplify the work

with submissions to ITU-R where satellite and terrestrial services are handled separately and by different groups.

The moderator also takes note from RAN4 experts that the existing UE specifications are already quite large and complex. If the decision is to integrate the UE specifications, there will need to be a commitment to update the specifications to include some kind of document splitting in order to maintain workable copies for delegates and the public.

Based on the initial round views, the moderator proposes to go with the RAN4 Chair's proposal during the Monday GTW session as a compromise solution with the following clarifications. The proposal would include the following:

- A new NR NTN TS specifying UE radio transmission and reception and Performance requirements for satellite access , i.e., 38.101-5.
 - Final confirmation of the specification number to be determined at RAN#94e
 - Addition of bands beyond FR1 could be considered to be handled in this new NR NTN TS.
- Integrate the NR NTN RRM requirements in TS 38.133 with dedicated sub-clause suffix

1.3 Intermediate Round

The intermediate round will be used to collect feedback on the moderator proposed way forward presented above which is based on the RAN4 Chair's proposal during the Monday GTW session.

In addition, the RAN Chair provided guidance that the revised WID in RP-212821 [5] should be added to this thread to handle the flag from Huawei that indicated that new specs for UE RF/RRM requirements could be added, depending on the discussion in this RAN meeting. The moderator has added the revised WID to the reference documents as well as an open issue to collect company views on the proposed revision to the WID concerning the specification titles for TS 38.108 and TS 38.181. The moderator will add the proposed way forward for the flag once the decision on the FR1 UE specifications is clear.

1.3.1 Open Issues

Issue 1.3-1:

The moderator proposes to go with the RAN4 Chair's proposal during the Monday GTW session as a compromise solution with the following clarifications. The proposal would include the following:

- A new NR NTN TS specifying UE radio transmission and reception and Performance requirements for satellite access , i.e., 38.101-5.
 - Final confirmation of the specification number to be determined at RAN#94e
 - Addition of bands beyond FR1 could be considered to be handled in this new NR NTN TS.
- Integrate the NR NTN RRM requirements in TS 38.133 with dedicated sub-clause suffix

Issue 1.3-2:

The revised WID in in RP-212821 [5] proposes updated specification titles for TS 38.108 and TS 38.181 to change “Satellite Node” to “Satellite Access Node”.

1.3.2 Collection of company views

Issue 1.3-1: Is the moderator way forward concerning the NTN RAN4 specification handling based on RAN4 Chair proposal acceptable?

Feedback Form 4: Issue 1.3-1: Is the moderator way forward concerning the NTN RAN4 specification handling based on RAN4 Chair proposal acceptable?

1 – Qualcomm Incorporated

The proposed WF is acceptable to us, with some suggested rewording:

- "A new NR NTN TS specifying UE radio transmission and reception and Performance requirements for satellite access , including NTN bands i.e., 38.101-5."
- Remove 2nd sub-bullet: Addition of bands beyond FR1 could be considered to be handled in this new NR NTN TS.

2 – T-Mobile USA Inc.

We support the proposal from the moderator. We agree with the proposed change from Qualcomm above, but we would add the word "satellite" as follows:

- "A new NR NTN TS specifying UE radio transmission and reception and Performance requirements for satellite access , including satellite NTN bands i.e., 38.101-5."

3 – Apple Poland Sp. z o.o.

Our understanding is that RAN WG4 has already made a number of key decisions to leverage existing solutions defined in TS 38.101-1. For instance, channel and the sync rasters are assumed to be the same as for FR1 bands, same channel bandwidths will be re-used with the same number of RBs, etc. If we instantiate a new specification for the NTN UE radio transmission/reception, then we will end up copying a lot of sections for no good reasons. The only technical aspect that could be different for NTN is the receiver ACS/blocking requirements and transmission requirements associated with MPR/A-MPR values, which is still under discussion in RAN WG4. However, existing TN ACS/blocking requirements are more stringent comparing to the existing L- and S-band regulations defined by FCC and ETSI. Thus, if we adopt existing TN requirements as proposed by several companies, then there will be no difference comparing to TS 38.101-1. If different ACS/blocking requirements will be agreed for NTN, then we will just create a corresponding sub-clause similar to what we already did for V2X and NR-U.

Regarding demod, we still think it would be better to incorporate NTN demod part into the existing 38.101-4, and new dedicated section could be created for NTN demod in TS38.101-4. We don't understand why in RAN4 companies wanted to separate NTN and TN in different specs but in RAN1/2 TN and NTN are in the same spec.

<p>4 – T-Mobile USA Inc.</p> <p>Also, once the decision is final on the UE specification numbers the WID should be revised if needed.</p>
<p>5 – Samsung Electronics Co.</p> <p>We agree with Moderator proposals. Also, once the decision is made, both the Rel-17 and Rel-18 NTN WID has to be updated accordingly.</p>
<p>6 – ZTE Corporation</p> <p>We also agree with Moderator proposals and updates of WID are needed based on the consensus.</p>
<p>7 – China Telecom Corporation Ltd.</p> <p>We support the moderator’s proposal with the wording updates from Qualcomm. To make decision in this week, this is the compromise the group can go with.</p>
<p>8 – vivo Communication Technology</p> <p>We support the proposal from moderator.</p>
<p>9 – Huawei Technologies France</p> <p>We agree with the moderator’s proposal. As we already flagged the NTN revised WID, if consensus is reached for the new spec, the WID should be updated accordingly.</p>
<p>10 – LG Electronics Deutschland</p> <p>We support the moderator’s proposal of separating RF/performance spec. to a new TS. For RRM, we are fine to add NTN RRM into the existing 38.133 but are open to having a separate RRM spec.</p>
<p>11 – MediaTek Inc.</p> <p>We do not agree with the beyond FR1 consideration here (see further below). However, the Moderator proposal for new spec and Qualcomm addition of ”NTN bands” to title could be acceptable, but in order to avoid any negative consequences and to make some progress to allow RAN4 to focus on technical work, we would also like to agree on the following at this meeting:</p> <ul style="list-style-type: none"> - This shall not prevent dual mode TN+NTN UE implementations. - This shall not be used as a means to justify different NTN requirements compared to TN. - Implementation of new specifications shall not impact the target or actual completion date for core or performance requirements of Rel-17 NR-NTN-solutions WI. - The spec number is to be assigned by MCC at RAN#94-e. - The structure, scope and initial content of the new spec shall be endorsed by the next RAN4 meeting (January 2022). - The spec should refer to 38.101-1 wherever possible, and avoid duplication, so where NTN follows TN requirements, 38.101-1 shall be referenced. - NTN spec will focus on explicitly documenting ”NTN band-specific” requirements and ”generic NTN requirements that are different to TN requirements”.

We also do not agree to have any discussion on reuse of this spec for "beyond FR1" requirements at this stage, because we have no idea yet what those requirements would be, it is not part of the existing WI, and expanding such discussion has the risk of delaying the completion of the existing NTN work item.

12 – Ericsson LM

We generally prefer new separate specifications for the reasons already given. Thus, a new TS for UE RF requirements and bands is ok to us. The number can be discussed in the final round. W r t including Demod requirements in the same specification, this is not ideal for spec size and future proofness reasons, but using TS 38.101-4 seems worse.

Regarding using TS 38.133 for RRM requirements for satellite access we remain concerned however. In the discussion we have heard few reasons for including RRM requirements for satellite access in the existing TN specification other than company preferences and perceived lower initial effort. The problems of managing/working with an even larger TS than the already huge TS 38.133 (2800+ pages), how to ensure that additional requirements are not accidentally applied and how to handle IMT submissions have not been addressed.

It is also not clear why TS 38.133 could not be referenced from another specification where beneficial. Dividing a specification into multiple files in one zip should be a last resort and not a first choice. Here we see a better and cleaner possibility to create a separate specification for RRM requirements for satellite access. It would improve consistency and avoid several issues associated with using the existing TS 38.133.

As already mentioned specifying RRM requirements for satellite access in TS 38.133 will make an already unwieldy specification even more difficult to work with. It is important to note that this will affect not only work on satellite access related RRM requirements but essentially work on all aspects of that specification; i.e., also work on non-NTN related parts.

We need to consider the big picture including future proofness and impact on other work. For instance, ITU-R IMT submission and Rel-18 are both around the corner. We know how to create new specifications and we don't see a show-stopper to do that in Rel-17 for NR RRM requirements for satellite access.

So before agreeing to do something else, we would like to understand if the consequences of using TS 38.133 are clear and acceptable to all. If not, it may be difficult to agree/approve CRs to TS 38.133.

13 – THALES

We would still prefer to incorporate NTN specific requirements in existing specifications for simplicity (we believe that the impacts are very limited: addition of NTN bands in a few tables) and in line with what has been done in other RAN WG.

However if not possible to agree on this, we may consider the moderator's proposal:

- Creation of a new NR NTN TS specifying UE radio transmission and reception and Performance requirements for satellite access, as sub part of TS 38.101 i.e., 38.101-5
- Integrate the NR NTN RRM requirements in TS 38.133 with dedicated sub-clause

On the basis of the following conditions (to be captured in the RAN chair's minutes):

1/ Key requirements to avoid delays and negative consequences:

- RAN shall reconfirm the target completion date of March 2022 for core requirements and Sept 2022 for performance requirements, and implementation of new specifications shall not impact the date of completion for core or performance requirements of Rel-17 NR-NTN-solutions WI.
- MCC shall provide the suffix number of the specification sub-part (38.101-x) at the current TSG-RAN meeting (RAN#94-e).

- RAN4 shall
- ensure that the implementation of separate specs for NTN shall not prevent NTN capable UE to also support Terrestrial Network.
- ensure that the implementation of separate specs for NTN shall not be used as a mean to justify different requirements compared to TN.
- endorse the structure, scope and initial content of the new spec by the next RAN4 meeting (January 2022).
- minimise unnecessary duplication of text from 38.101-1, in a bid to minimise maintenance work

2/ How to implement in specs:

- Band specific requirements to be explicitly highlighted in the new RAN4 38.101-x spec.
- Any NTN generic requirements that do not reuse TN requirement could be explicitly included in new 38.101-x spec.
- Other generic requirements that follow existing 38.101-1 requirements can just refer to 38.101-1.
- NTN specific Demodulation performance is added in a dedicated clause of the existing 38.101-4 spec
- NTN RRM specific requirements is added in the existing TS 38.133 as specific clause

14 – TELECOM ITALIA S.p.A.

We generally agree with the moderator's proposal with the Qualcomm's revision.

We also support the statement from Mediatek: *The spec should refer to 38.101-1 wherever possible, and avoid duplication, so where NTN follows TN requirements, 38.101-1 shall be referenced.*

On a note (not blocking), it could be better to split 38.133 (based on the same principle for 38-101) in 38.133-1 for TN and 38.133-2 for NTN and refer to 38-133-1 wherever possible in 38-133-2. The reason is that 38-133 is another mega spec and it could be worth trying to simplify its structure.

15 – MediaTek Inc.

@Ericsson: We already have separate word documents for TS38.133 today. We do not see any particular issue if we need to add one more word document, and believe that this would be a reasonable compromise considering the different views provided in the first round.

16 – SoftBank Corp.

For UE specification, we support moderator proposal or T-Mobile USA modified one, not using "NTN bands".

- "A new NR NTN TS specifying UE radio transmission and reception and Performance requirements for satellite access , including satellite NTN bands i.e., 38.101-5."

17 – ESA

In order to facilitate an agreement, we support moderator's proposal along with the inclusion of the conditions proposed by Thales.

18 – HISPASAT SA

As a compromise solution, we support Thales proposal.

19 – Telia Company AB

We agree with Ericsson view and especially the point regarding "big picture including future proofness and impact on other work."

20 – HUGHES Network Systems Ltd

We thank the moderator for this effort.

We still prefer the use of the existing specs TS 38.101-1 for NTN UE, as originally planned in the WID. It would be better to have a common set of specifications for which we can leverage existing TN specifications. Additionally, we think the "new spec" approach will create more problems. Companies will end up debating which TN specifications can be re-used and what can be different than TN specs. This will potentially delay the work even further than the original plan for same specification.

However, if we really have to compromise and support the moderator's proposal (e.g. TS 38.101-5 as suggested by RAN4 Chair), we have to agree to the sets of conditions and principles as outlined by Thales and MediaTek.

We do not agree to having any discussion on reuse of this spec for "beyond FR1" requirements at this stage
Thank you.

21 – TURKCELL

We agree with Ericsson and Telia Company AB. We prefer new separate specifications.

22 – Inmarsat

We thank the moderator for attempting a compromise proposal, but we still agree with concerns voiced by Apple, Telecom Italia, Hughes and others that reusing the same specs would be preferred and would actually make more sense.

In the current spec there are multiple UE types so it's unclear why NTN support has to be separated. Seems very arbitrary.

We share same position as Hughes.

IF the only solution is to compromise and accept the moderator's proposal based on RAN4 chair suggestion, we also must incorporate suggestions put forward by Thales and Mediatek.

In our view absolutely no justifiable arguments put forth other than "the document is big" (which is not really a good argument in our opinion) to separate the specs.

23 – Airbus

We fully agree with the statement by Hughes Network Systems Ltd and would see that as the most suitable compromise solution, i.e. if necessary have a separate specification, but with the conditions and principles outlined by Thales and MediaTek to have as much reuse as possible for a speedy completion and efficient maintenance and have a good alignment and possibly dual mode UE implementation between TN and NTN.

Issue 1.3-2: Do you agree to update the specification titles for TS 38.108 and TS 38.181 to change "Satellite Node" to "Satellite Access Node"?

Feedback Form 5: Issue 1.3-2: Do you agree to update the specification titles for TS 38.108 and TS 38.181 to change “Satellite Node” to “Satellite Access Node”?

1 – THALES
We do agree with these changes
2 – ZTE Corporation
The change is fine to us since it's more aligned with the transparent payload.
3 – Huawei Technologies France
We are ok with the proposed change, which is based on agreement in last RAN4 meeting.
4 – ESA
We do agree
5 – HISPASAT SA
We agree
6 – HUGHES Network Systems Ltd
We do agree with these changes
7 – Airbus
We do agree
8 – Inmarsat
This is agreeable

1.3.3 Summary and recommendation for further discussion

Thanks for the discussion in the intermediate round and for working towards a compromise on this difficult topic. Please find the moderator summary and recommended way forward as follows.

Issue 1.3-1: Is the moderator way forward concerning the NTN RAN4 specification handling based on RAN4 Chair proposal acceptable?

The majority of companies agreed with the moderator's way forward with some revisions to remove the bands above FR1 sub-bullet and to clarify that the NTN satellite bands would be also be included in the new specification.

There were concerns from Ericsson, Telia Company, and Turkcell related to utilizing the same specification for RRM in 38.133 with a dedicated sub-clause suffix. Given the vast majority of companies are willing to consider the way forward presented, the moderator proposes to go with the majority view. Further discussion can be held to consider options related to specification management to minimize the impact such as Word document splitting, etc.

There were concerns raised by Apple, Thales, Hughes, Inmarsat, and Airbus concerning using any new specifications. However, all companies except for Apple further commented that the moderator way forward could be acceptable based on conditions.

The moderator takes the set of conditions from the MediaTek proposal (similar set of conditions was presented by Thales) to capture as the understanding in order to avoid any negative consequences and to allow RAN4 to focus on technical work. This list seems reasonable given the short period of time to complete the RAN4 core work. The following items should be agreed at this RAN#94e meeting.

- This shall not prevent dual mode TN+NTN UE implementations.
- This shall not be used as a means to justify different NTN requirements compared to TN.
- Implementation of new specifications shall not impact the target or actual completion date for core or performance requirements of Rel-17 NR-NTN-solutions WI.
- The spec number is to be assigned by MCC at RAN#94-e.
- The structure, scope and initial content of the new spec shall be endorsed by the next RAN4 meeting (January 2022).
- The spec should refer to 38.101-1 wherever possible, and avoid duplication, so where NTN follows TN requirements, 38.101-1 shall be referenced.
- NTN spec will focus on explicitly documenting "NTN band-specific" requirements and "generic NTN requirements that are different to TN requirements"

The 2nd sub-bullet concerning "Addition of bands beyond FR1 could be considered to be handled in this new NR NTN TS." is removed from the way forward since this aspect can be further discussed as part of the Rel-18 WID.

Moderator Proposal:

- Creation of a new NR NTN TS specifying UE radio transmission and reception and Performance requirements for satellite access, including satellite NTN bands, i.e., 38.101-5.
 - Final confirmation of the specification number to be determined at RAN#94e
- Integrate the NR NTN RRM requirements in TS 38.133 with dedicated sub-clause suffix

This proposal is based on the following set of conditions being agreed at this RAN#94e meeting:

- This shall not prevent dual mode TN+NTN UE implementations.
- This shall not be used as a means to justify different NTN requirements compared to TN.
- Implementation of new specifications shall not impact the target or actual completion date for core or performance requirements of Rel-17 NR-NTN-solutions WI.
- The spec number is to be assigned by MCC at RAN#94-e.
- The structure, scope and initial content of the new spec shall be endorsed by the next RAN4 meeting (January 2022).

- The spec should refer to 38.101-1 wherever possible, and avoid duplication, so where NTN follows TN requirements, 38.101-1 shall be referenced.
- NTN spec will focus on explicitly documenting "NTN band-specific" requirements and "generic NTN requirements that are different to TN requirements"

Issue 1.3-2: Do you agree to update the specification titles for TS 38.108 and TS 38.181 to change "Satellite Node" to "Satellite Access Node"?

All companies that commented agreed to update the specification titles. The moderator proposes to close this issue and to note that the update to the specification titles as proposed in the revised WID in RP-212821 [5] is acceptable. Further revisions to the WID will be required to align with the final agreement on the NTN RAN4 specification handling.

1.4 Final Round

1.4.1 Open Issues

Issue 1.4-1: Is the moderator proposal concerning the NTN RAN4 specification handling acceptable based on the conditions set forth?

1.4.2 Collection of company views

Issue 1.4-1: Is the moderator proposal concerning the NTN RAN4 specification handling acceptable based on the conditions set forth?

Feedback Form 6: Issue 1.4-1: Is the moderator proposal concerning the NTN RAN4 specification handling acceptable based on the conditions set forth?

1 – Ericsson LM

With the list of conditions, we don't believe a long list of detailed and strict conditions is helpful. It is not nice and may even be harmful as it may actually hinder work and making the right decisions.

In particular, it is our view that

- RAN should not micromanage how RAN4 writes their specifications and implements requirements in the spec (bullets 2, 6, and 7). This can and should be left to RAN4.
- RAN does not need to and should not second guess RAN4 rationales for potential differences in requirements for satellite and TN accesses (bullet 2).

That would be harmful for the working climate in RAN4. It makes it difficult for RAN4 and RAN4 delegates to focus on work without worrying about being accused of wrong motives or intentions. We should trust RAN4 to do the right thing. They are the experts.

Regarding NTN UEs supporting also TN (bullet 1), in our view this has been the basic assumption throughout all the NTN work in 3GPP, and we see no reason why separate specs should prevent this.

With completion (bullet 3) it is difficult to give any more guarantee than for any other WI. That would simply not be fair to other work. We could however note that creation of a new specification is not intended to to

delay RAN4.

Considering the above, we think it would be more balanced and constructive to capture that:

"The creation of a separate specification for UE radio transmission and reception and Performance requirements for satellite access, including satellite bands is not intended to:

- *prevent dual mode TN+NTN UE implementations.*
- *create unjustified differences in requirements compared to TN.*
- *delay RAN4 work*

It is expected that the rapporteur will organize the work on the new specification so that structure, scope and initial content can be provided from next RAN4 meeting."

Hope this can be a way forward

2 – THALES

We do thank the moderator for his proposal and for Ericsson suggestion

Based on their recommendations, we suggest the following proposal including our suggestions

- *Creation of a new NR NTN TS specifying UE radio transmission and reception and Performance requirements for satellite access, including satellite NTN bands, **in a sub-part of TS 38.101** i.e., 38.101-5.*
 - *Final confirmation of the specification number to be determined at RAN#94e*
- *Integrate the NR NTN RRM requirements in TS 38.133 ~~with in a~~ dedicated sub-clause ~~suffix~~*
- *The creation of a separate **sub-part of TS 38.101-5** specification for UE radio transmission and reception and Performance requirements for satellite access, including satellite bands is not intended to:*
 - *prevent dual mode TN+NTN UE implementations.*
 - *create unjustified differences in requirements compared to TN.*
 - *delay RAN4 work*
- *"The **new sub-part of TS 38.101** ~~spec~~ should refer to 38.101-1 (respectively 38.101-4 for performance part) wherever possible, and avoid duplication, so where NTN follows TN requirements, 38.101-1 (respectively 38.101-4 for performance part) shall be referenced.*
- *It is expected that the rapporteur will organize the work on the new **TS 38.101 sub-part specification** so that structure, scope and initial content can be provided from next RAN4 meeting.*

3 – Apple Poland Sp. z.o.o.

Even though we prefer using existing specs to capture NTN part for RF/RRM/demod (instantiation of a new spec would need much more works than using existing ones), to move forward we could also compromise to the moderator proposal with the set of conditions listed by moderator.

4 – China Telecom Corporation Ltd.

We support the proposal from moderator and the conditions reworded by Ericsson.

Considering the revision of the proposal from THALES:

- “in a sub-part of TS 38.101” might not be accurate, since TS 38.101 has already been withdrawn as seen in the link: <https://www.3gpp.org/DynaReport/38-series.htm>.
- It would be better to keep “suffix”, so that it is more convenient for the readers to find the NTN-related requirements.

5 – Intelsat

Thank you to the moderator for the proposal. We support the suggestions provided by Thales.

6 – Gatehouse Satcom A/S

We support this objective, by following the suggested rephrasing of Thales.

7 – Eutelsat S.A.

We support the suggestions provided by Thales (for both TS 38.101 and TS 38.133). Furthermore, we very much like that the specifications should not impede (not just prevent) a dual mode TN+NTN terminal or device.

We support the Ericsson wording in this regard with the following change to emphasis.

- *The creation of a separate **sub-part of TS 38.101-5** specification for UE radio transmission and reception and Performance requirements for satellite access, including satellite bands is not intended to:*
 - o ***impede** dual mode TN+NTN UE implementations.*
 - o *create unjustified differences in requirements compared to TN.*
 - o *delay RAN4 work*

8 – THALES

@China Telecom

TS 38.101 is a multi part document (-1, -2, -3 and -4). Our understanding is that the intent would be to create a new part e.g. TS 38.101-5

9 – MediaTek Inc.

We support either the original proposal from the moderator or the updated version of the Ericsson text proposed by Thales.

The point (in the original and added here by Thales) about referring to existing specs and avoiding unnecessary duplication is important to add to ensure efficient CR maintenance of the UE specs moving forward. So we would like to see that retained.

10 – Avanti

In general we support either the original proposal from the moderator or the updated version of the Ericsson text proposed by Thales with a preference for the latter.

11 – Telia Company AB

Thank you moderator for the proposal. We support Ericsson short and clear changes proposed.

12 – TURKCELL

We're fine with Ericsson's text proposal.

13 – Ericsson LM

Thank you to Thales for proposing updates. We agree with China Telecom w r t TS 38.101 and sub-parts. We also think it is very important to not obscure the fact that the new separate specification for new specification for UE radio transmission and reception and Performance requirements for satellite access, including satellite bands is a separate specification. To avoid misconception of the work to be done we prefer to refer to it as the "new specification" or "separate specification". As we understand it this was also the whole point for asking for clarification about the intentions not to prevent TN+NTN UE implementations etc.

Regarding possible integration into TS 38.133 we understood the suggestion by the moderator and other companies was to use sub-clauses with suffix. We see no benefit with one dedicated clause/sub-clause compared to a separate specification. A separate specification would be cleaner and better.

W r t references to TS 38.101-1 and/or TS 38.101-4, this would be ok with us in principle, i.e., where relevant and suitable, but would also seem prudent to leave to RAN4. We note that the second part of the sentence is essentially a duplicate of the first although they are a bit inconsistent; e.g., shall vs should.

Furthermore we consider P1 to be a package and assume that any agreement will include the creation of separate TS for UE radio transmission and reception and Performance requirements for satellite access, including satellite bands.

Updated text:

- Creation of a new **separate** NR NTN TS specifying UE radio transmission and reception and Performance requirements for satellite access, including satellite **NTN** bands, ~~in a sub-part of TS 38.101~~ i.e., 38.101-5.
- Final confirmation of the specification number to be determined at RAN#94e
- Integrate the NR NTN RRM requirements in TS 38.133 ~~with in a~~ **with** dedicated sub-clauses **with suffix** ~~suffix~~
- The creation of a separate ~~sub-part of TS 38.101-5~~ specification for UE radio transmission and reception and Performance requirements for satellite access, including satellite bands is not intended to:
 - prevent dual mode TN+NTN UE implementations.
 - create unjustified differences in requirements compared to TN.
 - delay RAN4 work
- The ~~new sub-part of TS 38.101 spec~~ **TS** should refer to 38.101-1 (respectively 38.101-4 for performance part) ~~wherever possible relevant and suitable~~, and avoid duplication, ~~so where NTN follows TN requirements, 38.101-1 (respectively 38.101-4 for performance part) shall be referenced.~~
- It is expected that the rapporteur will organize the work on the new **TS 38.101 sub-part specification** so that structure, scope and initial content can be provided from next RAN4 meeting.

<p>14 – HISPASAT SA</p> <p>With the aim of supporting this objective, we agree with the proposal of Thales.</p>
<p>15 – HUGHES Network Systems Ltd</p> <p>We thank you to the moderator for the proposal. We support the suggestions provided by Thales, and comments made by MediaTek.</p> <p>Thank you</p>
<p>16 – Nokia France</p> <p>We support the latest updates to the wording proposed by Ericsson, which seem to capture correctly the situation regarding the documents (a quick look at https://portal.3gpp.org/Specifications.aspx?q=1&series=45 will confirm).</p> <p>We can also accept the change of "prevent" -> "impede" proposed by Eutelsat.</p> <p>Thank you.</p>

1.4.3 Summary and final recommendation

Thanks for the discussion in the final round and for supporting the core aspects of the moderator proposal in the intermediate round. Based on the comments received, please find the moderator summary and recommended way forward as follows.

Issue 1.4-1: Is the moderator proposal concerning the NTN RAN4 specification handling acceptable based on the conditions set forth?

Ericsson expressed concerns with a number of the conditions as listed since some of them were attempts to micro-manage the RAN4 work and RAN4 should be able to make the right decisions to complete the work on time.

Thales provided suggested edits related to identifying the new TS as a sub-part for TS 38.101 in multiple locations in the text. The moderator has provided a modified version to address this by expanding on the introduction of a new part for 38.101-5 as opposed to repeating that the new TS is a sub-part every time that it is referenced. The comment related to the RRM specification to remove the suffix aspect seems to contradict with the way forward proposed on the Monday GTW. Utilization of a defined suffix is meant to provide a convenient way to include the NTN aspects in the existing 38.133 specification while keeping the items clearly differentiated.

Further comments were posted by Ericsson to try to merge the suggested updates from Thales as well as comments from Eutelsat asked to modify "prevent" to "impede". MediaTek wanted to ensure that the way forward should make it clear that duplication of work needs to be avoided. The moderator has taken the comments received and provided a modified proposal attempting to merge the aspects as shown in the final conclusions.

2 Final Conclusions

The moderator proposes to endorse the moderator proposal below.

Moderator Proposal:

- Creation of a new separate NR NTN TS specifying UE radio transmission and reception and Performance requirements for satellite access, including satellite bands, i.e., create new part for 38.101 in 38.101-5.
 - Final confirmation of the specification number to be determined at RAN#94e
- Integrate the NR NTN RRM requirements in TS 38.133 with dedicated sub-clauses with suffix

This proposal is based on the following set of conditions being agreed at this RAN#94e meeting:

- The creation of a new separate specification for UE radio transmission and reception and Performance requirements for satellite access, including satellite bands is not intended to:
 - impede dual mode TN+NTN UE implementations.
 - create unjustified differences in requirements compared to TN.
 - delay RAN4 work
- The new TS should refer to 38.101-1 for radio transmission and reception part and to 38.101-4 for performance part where relevant and suitable, and avoid duplication.
- It is expected that the rapporteur will organize the work on the new TS so that structure, scope, and initial content can be provided from next RAN4 meeting (January 2022).

Based on this approval, the Moderator (RAN Vice-Chair, AT&T) recommendations for the documents provided is as follows:

- 1) RP-212939 [1] can be Noted.
- 2) RP-213117 [2] can be Noted.
- 3) RP-213480 [2] can be Noted.
- 4) RP-212821 [5] should be revised to align the WID with this agreed way forward on NTN RAN4 specification handling.

3 References

[1] RP-212939: NTN specific requirements in RAN4 NR related TS; Thales, Hughes Network Systems, Intelsat, Inmarsat, ESA, Sateliot, Leonardo, Omnispace

[2] RP-213117: Views on NTN RAN4 specifications; Samsung

[3] RP-213421: RAN4 specifications for NR NTN; Ericsson, Deutsche Telekom, Nokia, Nokia Shanghai Bell, Telecom Italia, T-Mobile USA, US Cellular

[4] RP-213480: RAN4 specifications for NR NTN; Ericsson, Deutsche Telekom, Nokia, Nokia Shanghai Bell, Telecom Italia, T-Mobile USA, US Cellular, Telia Company, Spark NZ Ltd, KT Corp., CHTTL, Telefonica, Bell Mobility, AT&T, Telus, CMCC, Verizon, China Telecom, Telstra, NTT DOCOMO, China Unicom, Telenor

[5] RP-212821: Solutions for NR to support non-terrestrial networks (NTN)