

3GPP TSG RAN #94-e
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Source: 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

Agenda Item: 9.3.2.2
Document for: Decision

RAN4 specifications for NR NTN

Background



- The set of RAN4 specifications to be used for Rel-17 NR NTN needs to be decided for RAN4 to proceed with normative work.
- 3GPP TSG RAN should be able to provide a consistent set of specifications towards relevant external groups

Status of RAN4 specifications for NR NTN



- At RAN#92-e it was agreed to have the following new NTN TSs:
 - TS 38.108: This TS will include all NTN satellite BS core requirements.
 - All satellite bands should be listed in this TS.
 - TS 38.181: This TS will specify NTN satellite BS test procedures, test limits, ...
 - No satellite band should be listed in this TS.
- At RAN4#100-e the creation of new TSs for Satellite UE RF requirements and RRM requirements was discussed, without reaching agreement
- At RAN#93-e RAN4 specifications for satellite UE RF requirements and RRM requirements were discussed without reaching agreement.
- At RAN4#101-e titles of TS 38.108 and TS 38.181 were agreed
 - TS 38.108: NR; Satellite Access Node radio transmission and reception.
 - TS 38.181: NR; Satellite Access Node radio conformance testing.

Considerations for Satellite UE specifications



1. Satellite node is already separate new TS, it would be consistent to have new dedicated TS for UE as well.
 - It would be coherent to have new separate TS specifying Satellite UE types and bands requirements, and not spread Satellite UE requirements in existing NR UE TS and new Satellite UE TS.
 - This would also enable the possibility to separate RAN4 NTN specific specifications (from TN specs), for both UE and BS, in future 3GPP submissions to external orgs, as needed
2. TS 38.101-1 is already huge/complex document
 - Adding more UE satellite requirements will just make things worse.

Considerations for Satellite RRM specifications



For RRM requirements specification similar observations and considerations can be made

1. Satellite node is already separate new TS, it would be consistent to have new dedicated TS for UE and RRM as well.
2. TS 38.133 is already huge/complex document,
 - Adding more RRM satellite requirements will just make things worse.

Further observations and considerations



- Having separate RAN4 specs for TN and satellite does not imply that a device cannot support TN and satellite operation
 - In fact, it is quite common that devices conform to requirements of more than one spec
 - E.g., UEs supporting multi-RAT and/or FR1+FR2 all do that
- Separate RAN4 specs for TN and satellite makes it clear what pertains to what; both in 3GPP and in ITU-R
 - This is essential for adequate submissions to the ITU-R where satellite and terrestrial services and components are handled separately and by different groups.
 - With same spec one may accidentally apply additional/wrong requirements and assumptions
- With new specs all satellite UEs could be in same spec. Not feasible with current specifications

Proposed Way Forward for Satellite UE and RRM specifications



- 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

Conclusions and Proposals



- RAN4 needs a decision on specifications for Satellite UE and RRM requirements
- Separate specifications for Satellite UE and RRM requirements
 - enables more consistent/aligned approach between Satellite node, UE and RRM specs; and
 - is more future proof than mixing Satellite and TN requirements in the same UE and RRM specifications, e.g. to separate ITU submissions for TN or NTN radio technologies
 - prevents accidental application of additional requirements
 - does not prevent satellite UE from supporting operation in TN
- It is proposed to
 - 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



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