

Top 3 things that happened on NTN and satellite direct-to-device at RAN1 #126-bis, RAN2 #135-bis and RAN4 #120-bis

THE VERDICT

1. For the 6GR NTN study, RAN1 agreed that UEs in different GNSS operation modes can operate in the same cell, with network control of access by mode. Which mode combinations are allowed remains FFS. (R1-2607315, chair notes, paragraph 70. R1-2607315, 3GPP TSG RAN WG1 #126-bis. https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_126b/Docs/R1-2607315.zip)
2. For Rel-20 GNSS resilience, RAN1 agreed a MAC RAR TAC field that can indicate positive or negative timing corrections, plus an optional SIB-configured TA offset. Connected-mode frequency adjustment uses a new MAC CE with accumulative adjustment as the baseline. (R1-2607310, chair notes, paragraph 126. R1-2607310, 3GPP TSG RAN WG1 #126-bis. https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_126b/Docs/R1-2607310.zip; R1-2607310, chair notes, paragraph 133. R1-2607310, 3GPP TSG RAN WG1 #126-bis. https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_126b/Docs/R1-2607310.zip)
3. For Rel-20 dual PRACH, the two transmissions in an RO pair count as one random-access attempt. RAN1 supports separate PRACH configurations for coexistence with legacy NTN UEs. (R1-2607310, chair notes, paragraph 175. R1-2607310, 3GPP TSG RAN WG1 #126-bis. https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_126b/Docs/R1-2607310.zip; R1-2607310, chair notes, paragraph 170. R1-2607310, 3GPP TSG RAN WG1 #126-bis. https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_126b/Docs/R1-2607310.zip)

WHAT WAS AGREED

6GR study: mixed GNSS modes in one cell. For the 6GR NTN study, UEs with different GNSS operation modes can operate simultaneously in one cell, and network functionality will control access by mode. Which mode combinations are allowed, and the details, are FFS.

AGREEMENT In 6GR NTN, it is supported that UEs with different GNSS operation modes can operate simultaneously in the same cell. [...] R1-2607315, chair notes, paragraph 70. R1-2607315, 3GPP TSG RAN WG1 #126-bis. https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_126b/Docs/R1-2607315.zip

6GR study: pre-compensation starting point. Solutions recommended for specification in TR 38.742 are the study starting point, with PRACH handled in the common agenda item. Adjustments may be proposed based on other 6GR decisions, and when a last known GNSS location is sufficiently valid is FFS.

AGREEMENT R1-2607315, chair notes, paragraph 79. R1-2607315, 3GPP TSG RAN WG1 #126-bis. https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_126b/Docs/R1-2607315.zip

Rel-20: initial-access timing correction. To handle TA over-compensation, RAN1 agreed a MAC RAR TAC field for positive or negative corrections and an optional SIB-configured TA offset that the UE applies to all uplink transmissions when configured. The offset's granularity, range and per-beam or per-cell configuration are FFS.

AGREEMENT For handling of TA over-compensation (i.e., the UE's signal arrives earlier than expected) in initial access for GNSS resilience operation, support the following: Introduce a [...] R1-2607310, chair notes, paragraph 126. R1-2607310, 3GPP TSG RAN WG1 #126-bis. https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_126b/Docs/R1-2607310.zip

Rel-20: connected-mode frequency control. Connected-mode FAC uses a new MAC CE, with its structure coordinated with RAN2 and accumulative adjustment as the closed-loop baseline. The relative FAC range in the MAC CE and state handling at a reference change or satellite handover are FFS.

AGREEMENT R1-2607310, chair notes, paragraph 133. R1-2607310, 3GPP TSG RAN WG1 #126-bis. https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_126b/Docs/R1-2607310.zip

Rel-20: dual-PRACH random access. Separate PRACH configurations keep Rel-20 GNSS-resilient access apart from legacy NTN UEs. The two transmissions in an RO pair count as one attempt with single counter increments, RAR timing follows the last RO, and no power ramping applies within the pair.

AGREEMENT R1-2607310, chair notes, paragraph 170. R1-2607310, 3GPP TSG RAN WG1 #126-bis. https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_126b/Docs/R1-2607310.zip

AGREEMENT R1-2607310, chair notes, paragraph 175. R1-2607310, 3GPP TSG RAN WG1 #126-bis. https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_126b/Docs/R1-2607310.zip

RAN4: higher-power-class draft CRs. The register records endorsed draft CRs for n254 PC2 from Apple with Amazon and Globalstar, n255 PC2/PC1 at 3 MHz, and band 253 NB1/NB2 PC1.5. These are not yet agreed CRs.

DRAFT CR ENDORSED (NOT YET AN AGREED CR); 38.741, REL-20 Introduction of the PC2 power class for the NTN band n254. R4-2620740 (Draft CR. Register status: endorsed at R4-120-bis.). R4-2620740, Apple, 3GPP TSG RAN WG4 #120-bis. © Apple.
https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_120bis/Docs/R4-2620740.zip

DRAFT CR ENDORSED (NOT YET AN AGREED CR); 38.101-5, REL-20 Introduction of PC2 and PC1 for n255 for channel BW of 3 MHz. R4-2621402 (Draft CR. Register status: endorsed at R4-120-bis.). R4-2621402, Viasat, 3GPP TSG RAN WG4 #120-bis. © Viasat.
https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_120bis/Docs/R4-2621402.zip

DRAFT CR ENDORSED (NOT YET AN AGREED CR); 36.102, REL-20 Updates to support PC1.5 for Band 253 NB1 and NB2 UEs. R4-2621399 (Draft CR. Register status: endorsed at R4-120-bis.). R4-2621399, Viasat, 3GPP TSG RAN WG4 #120-bis. © Viasat.
https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_120bis/Docs/R4-2621399.zip

WHO PUSHED WHAT

RAN2, agreements pending the session reports: how should mobility work without reliable GNSS location?

RAN2: agreements pending the session reports. Nokia proposes RRM-based operation as the baseline, Qualcomm asks RAN2 to consider a cell reference location in place of GNSS, and Huawei with HiSilicon proposes beam and elevation measurements.

Qualcomm Qualcomm asks RAN2 to consider using a provided cell reference location for location-based triggers, otherwise suspending them, and suspending location-dependent reporting whenever GNSS is not valid.

For GNSS-degraded or GNSS-less operation, consider: If the UE is provided with cell reference location, UE's GNSS location is replaced with the cell reference location [...]

R2-2607552, Proposal 3, paragraph 79. R2-2607552, Qualcomm, 3GPP TSG RAN WG2 #135-bis. © Qualcomm.
https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_135bis/Docs/R2-2607552.zip; register: available

Nokia Nokia proposes RRM-based operation as the baseline for GNSS-free mobility, with a configured RRM fallback whenever a location condition cannot be evaluated.

Proposal 5: RAN2 should adopt RRM-based operation as the baseline for GNSS-free mobility and measurement initiation, with the UE applying a configured RRM-based fallback whenever [...]

R2-2607138, Proposal 5, paragraph 53. R2-2607138, Nokia, 3GPP TSG RAN WG2 #135-bis. © Nokia.
https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_135bis/Docs/R2-2607138.zip; register: available

Huawei (with HiSilicon) Huawei with HiSilicon proposes SSB-beam information and elevation-angle measurements for GNSS-free mobility.

For GNSS-free/GNSS-degraded operation: SSB beam level information can be exploited for mobility and measurement, e.g., target cell selection based on serving SSB; [...]

R2-2607645, Proposal 3, paragraph 66. R2-2607645, Huawei, 3GPP TSG RAN WG2 #135-bis. © Huawei.
https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_135bis/Docs/R2-2607645.zip; register: available

RAN2, agreements pending the session reports: can UEs with different uplink-compensation behaviour share a downlink-compensated cell or carrier?

RAN2: agreements pending the session reports. vivo describes separate co-channel cells as the alternative existing specifications allow, and Apple asks RAN2 to consider barring changes if RAN1 finds coexistence feasible.

vivo vivo observes that existing specifications already support co-channel NTN and TN cells, which avoid same-cell sharing but duplicate broadcast and common-channel resources.

Observation 2: Existing specifications can support carrier-level coexistence through separate co-channel NTN and TN cells. [...]

R2-2606661, Observation 2, paragraph 27. R2-2606661, vivo, 3GPP TSG RAN WG2 #135-bis. © vivo.
https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_135bis/Docs/R2-2606661.zip; register: available

Apple If RAN1 finds coexistence feasible, Apple asks RAN2 to consider allowing MIB cellBarred = notBarred for DTC UEs, configuring cellBarredNTN-r17 = notBarred for Rel-17 NTN UEs, and possibly separate uplink resources.

If RAN1 concludes that coexistence is feasible, RAN2 considers the following: Update TS 38.331 to allow MIB cellBarred = notBarred for DTC UEs; [...]

R2-2607405, Proposal 2b, paragraph 48. R2-2607405, Apple, 3GPP TSG RAN WG2 #135-bis. © Apple.
https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_135bis/Docs/R2-2607405.zip; register: available

Thales Thales argues existing access rules prevent unmodified UEs and NTN UEs sharing an NTN cell. RAN1 recorded the same observation.

Based on the existing specification, UEs not supporting UL pre-compensation (TN UEs/Unmodified UEs) cannot access the NTN Cell and cannot co-exist with NTN UEs within [...]

R2-2607501, Observation 5, paragraph 52. R2-2607501, Thales, 3GPP TSG RAN WG2 #135-bis. © Thales.
https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_135bis/Docs/R2-2607501.zip; register: available

What TN UE antenna should coexistence evaluations assume?

ZTE with Sanecchips and Ericsson converge on a 0 dBi omni-directional or isotropic pattern, while OPPO uses -5 dB.

OPPO OPPO proposes -5 dB as the TN UE antenna gain, using the contribution's unit.

TN UE configurations are as above table, and -5dB is used as the TN UE antenna gain.

R4-2620404, Proposal 3, paragraph 20. R4-2620404, OPPO, 3GPP TSG RAN WG4 #120-bis. © OPPO.
https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_120bis/Docs/R4-2620404.zip; register: noted

ZTE (with Sanecchips) ZTE with Sanecchips proposes an omni-directional TN UE pattern at 0 dBi.

Proposal 3: To assume an omni-directional radiation pattern with antenna gain 0dBi for TN UE.

R4-2621026, Proposal 3, paragraph 17. R4-2621026, ZTE, 3GPP TSG RAN WG4 #120-bis. © ZTE.
https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_120bis/Docs/R4-2621026.zip; register: noted

Ericsson Ericsson proposes an isotropic TN UE pattern at 0 dBi, without beamforming.

Proposal 5 RAN4 to adopt an isotropic antenna pattern with 0 dBi gain and without beamforming for the TN UE antenna configuration.

R4-2621164, Proposal 5, paragraph 50. R4-2621164, Ericsson, 3GPP TSG RAN WG4 #120-bis. © Ericsson.
https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_120bis/Docs/R4-2621164.zip; register: noted

STILL OPEN

- Whether and how overlapping dual-PRACH and single-PRACH occasions are handled is FFS. (R1-2607310, chair notes, paragraph 172. R1-2607310, 3GPP TSG RAN WG1 #126-bis. https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_126b/Docs/R1-2607310.zip)
- Working assumptions set the RAR FAC range to at least ± 127.08 kHz for Ka band and the connected-mode FAC range to ± 60 kHz at least for 120 kHz SCS. Smaller ranges for other bands and SCS are FFS. (R1-2607310, chair notes, paragraph 163. R1-2607310, 3GPP TSG RAN WG1 #126-bis. https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_126b/Docs/R1-2607310.zip)
- The Msg2 TAC range is a working assumption covering at least $[-2903.6 \mu s .. +2 \times 2903.6 \mu s]$, and range reduction can be considered. (R1-2607310, chair notes, paragraph 160. R1-2607310, 3GPP TSG RAN WG1 #126-bis. https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_126b/Docs/R1-2607310.zip)
- The target number or range of 6G NTN HARQ processes needs further discussion. (R1-2607315, chair notes, paragraph 151. R1-2607315, 3GPP TSG RAN WG1 #126-bis. https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_126b/Docs/R1-2607315.zip)

WHAT TO WATCH NEXT MEETING

- Watch whether RAN2 acts on the barring obstacle that RAN1 recorded as an observation, with no decision, for UEs with and without uplink pre-compensation in one cell. (R1-2607311, chair notes, paragraph 57. R1-2607311, 3GPP TSG RAN WG1 #126-bis. https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_126b/Docs/R1-2607311.zip; Apple, R2-2607405, Proposal 2b, paragraph 48. R2-2607405, Apple, 3GPP TSG RAN WG2 #135-bis. © Apple. https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_135bis/Docs/R2-2607405.zip)
- Check whether the endorsed n254, n255 and band 253 power-class drafts become agreed CRs. (R4-2620740 (Draft CR. Register status: endorsed at R4-120-bis.). R4-2620740, Apple, 3GPP TSG RAN WG4 #120-bis. © Apple. https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_120bis/Docs/R4-2620740.zip; R4-2621402 (Draft CR. Register status: endorsed at R4-120-bis.). R4-2621402, Viasat, 3GPP TSG RAN WG4 #120-bis. © Viasat. https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_120bis/Docs/R4-2621402.zip; R4-2621399 (Draft CR. Register status: endorsed at R4-120-bis.). R4-2621399, Viasat, 3GPP TSG RAN WG4 #120-bis. © Viasat. https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_120bis/Docs/R4-2621399.zip)
- Follow the RAN1 and RAN2 coordination on the connected-mode FAC MAC CE structure. (R1-2607310, chair notes, paragraph 133. R1-2607310, 3GPP TSG RAN WG1 #126-bis. https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_126b/Docs/R1-2607310.zip)

SOURCES

- R1-2607315** Session Notes of AI 10.7 (NTN specific requirements and design). Session record; register lists Ericsson as editor. Chair notes. Register status: endorsed at R1-126-bis.
- R1-2607310** Session Notes of AI 9.4. Session record; register lists Ericsson as editor. Chair notes. Register status: endorsed at R1-126-bis.

- [R4-2620740](#) Introduction of the PC2 power class for the NTN band n254. Apple (with Amazon, Globalstar). Draft CR. Register status: endorsed at R4-120-bis.
- [R4-2621402](#) Introduction of PC2 and PC1 for n255 for channel BW of 3 MHz. Viasat. Draft CR. Register status: endorsed at R4-120-bis.
- [R4-2621399](#) Updates to support PC1.5 for Band 253 NB1 and NB2 UEs. Viasat. Draft CR. Register status: endorsed at R4-120-bis.
- [R2-2607552](#) Discussion on 6G NTN mobility. Qualcomm. Contribution. Register status: available at R2-135-bis. No decision recorded in the register.
- [R2-2607138](#) 6G NTN mobility and other aspects. Nokia. Contribution. Register status: available at R2-135-bis. No decision recorded in the register.
- [R2-2607645](#) Discussion on 6G NTN design. Huawei (with HiSilicon). Contribution. Register status: available at R2-135-bis. No decision recorded in the register.
- [R2-2606661](#) Considerations on NR NTN with DL Compensation. vivo. Contribution. Register status: available at R2-135-bis. No decision recorded in the register.
- [R2-2607405](#) Discussion on NR NTN using DL Compensation. Apple. Contribution. Register status: available at R2-135-bis. No decision recorded in the register.
- [R2-2607501](#) Considerations for NR NTN in systems using downlink compensation. Thales. Contribution. Register status: available at R2-135-bis. No decision recorded in the register.
- [R4-2620404](#) 6G coexist study for NTN DL to TN DL. OPPO. Contribution. Register status: noted at R4-120-bis.
- [R4-2621026](#) Discussion on NTN-TN coexistence aspects. ZTE (with Sanechips). Contribution. Register status: noted at R4-120-bis.
- [R4-2621164](#) On victim TN DL co-existence considerations. Ericsson. Contribution. Register status: noted at R4-120-bis.
- [R1-2607311](#) Session Notes of AI 9.5. Session record; register lists Ericsson as editor. Chair notes. Register status: endorsed at R1-126-bis.

Coverage: RAN1 #126-bis (South Korea, 2026-10-12 to 2026-10-16), agenda items 10.7.1, 9.4.1, 9.5; RAN2 #135-bis (South Korea, 2026-10-12 to 2026-10-16), agenda items 9.6, 8.11, 8.12; RAN4 #120-bis (South Korea, 2026-10-12 to 2026-10-16), agenda items 5.5.3, 5.5.4, 7.6.3, 8.4.3.2, 8.4.4, 4.6.1. Scout read 34 recorded decisions and 689 company positions or contribution passages on these agenda items (catalog synced 2026-10-18) and cites 14 decisions and 9 positions from 15 TDocs. Every quoted passage was matched verbatim against the TDoc text; the summaries around the quotes are Scout's reading. Register statuses are copied from the 3GPP TDoc register: not treated means a document was not handled on its own, though its content may have fed feature-lead summaries or merged revisions. Not covered: other agenda items and meetings, plenary TDocs and plenary decisions after the meeting, email discussions after the meeting, and anything not yet in the chair notes or register.

- RAN1 agreements come from the session notes marked final. Items tagged 6GR are study-phase agreements, and items tagged Rel-20 belong to the NR-NTN GNSS-resilience work item.
- RAN2: agreements pending the session reports. The RAN2 session reports on NTN were uploaded on 2026-10-18 but are not yet in Scout's decision record, so RAN2 contributions appear as company positions only.
- RAN4 agreements are recorded in the register. The meeting report is pending.
- The n254 PC2 register entry lists 38.741 as its target specification. That target was not independently verified against a cover page.
- The evidence on final MEO coexistence assumptions is insufficient to report an outcome.

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