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. In the 6GR NTN study, UEs in different GNSS operation modes can operate in the same cell, under network access control by mode. Allowed mode combinations and details remain 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 GNSS-resilient dual PRACH, two transmissions in a random-access occasion (RO) pair count as one attempt. Separate configurations support 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; R2-2607783, meeting or session report, paragraph 804. R2-2607783, 3GPP TSG RAN WG2 #135-bis. https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_135bis/Docs/R2-2607783.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)
3. RAN2 notes the specifications allow legacy NTN UEs and UEs without uplink pre-compensation in separate cells of one satellite and carrier. It leaves efficiency to RAN1 and assumes no change to its specifications is needed, including the existing barring procedure. (R2-2607784, meeting or session report, paragraph 564. R2-2607784, 3GPP TSG RAN WG2 #135-bis. https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_135bis/Docs/R2-2607784.zip; R2-2607784, meeting or session report, paragraph 532. R2-2607784, 3GPP TSG RAN WG2 #135-bis. https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_135bis/Docs/R2-2607784.zip)

WHAT WAS AGREED

6GR GNSS modes and pre-compensation. RAN1 agreed that UEs in different GNSS operation modes can operate in the same cell, with network control of access by mode. It took the TR 38.742 UE pre-compensation solutions as a study starting point.

> **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

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

Dual-PRACH access. Two transmissions in an RO pair form one random-access attempt, with no power ramping between them. RAR timing and RA-RNTI follow the last RO, and separate PRACH configurations support coexistence with legacy NTN UEs.

> **AGREEMENT** [...] the RAR window timing and the RA-RNTI calculation are based on the last of the two ROs in the pair. [...]
> 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

> **AGREEMENT** [...] The transmission of two PRACH sequences for GNSS-resilient initial access is treated as a single random access attempt, i.e. [...]
> R2-2607783, meeting or session report, paragraph 804. R2-2607783, 3GPP TSG RAN WG2 #135-bis. https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_135bis/Docs/R2-2607783.zip

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

Initial-access timing and frequency commands. RAN1 agreed a signed timing-advance command (TAC) in the MAC random-access response (RAR) plus a SIBx-configured offset applied to uplink transmissions. RAN2 will design a RAR carrying extended-range TAC and a frequency-adjustment command (FAC), pending RAN1 bit widths.

AGREEMENT 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

AGREEMENT R2-2607783, meeting or session report, paragraph 784. R2-2607783, 3GPP TSG RAN WG2 #135-bis. https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_135bis/Docs/R2-2607783.zip

Connected-mode frequency control. RAN1 agreed an explicit connected-mode FAC MAC control element. Accumulative relative adjustment is the baseline.

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

Downlink-compensated network access. Whether such UEs may share a cell, and in which bands, is handled outside RAN2. RAN2 notes the specifications allow them in separate cells of one carrier and assumes no change, including to the existing barring procedure, is needed.

> **AGREEMENT** RAN2 understands that specification allows R17/18/19 NR NTN UEs and UEs not performing uplink pre-compensation (i.e. [...]
> R2-2607784, meeting or session report, paragraph 564. R2-2607784, 3GPP TSG RAN WG2 #135-bis.
> https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_135bis/Docs/R2-2607784.zip

AGREEMENT R2-2607784, meeting or session report, paragraph 532. R2-2607784, 3GPP TSG RAN WG2 #135-bis.
https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_135bis/Docs/R2-2607784.zip

Band-specific power-class draft CRs. The register shows endorsed draft CRs for n254 PC2 from Apple with Amazon and Globalstar. Viasat's n255 3 MHz PC2 and PC1 and Band 253 NB1 and NB2 PC1.5 draft CRs were also endorsed, and none is yet an agreed CR.

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

What replaces location-based mobility when GNSS is unavailable?

Nokia proposes RRM-based operation as the baseline. Qualcomm proposes reference-location substitution, while Apple would withhold specified GNSS-free functions.

Nokia Nokia proposes an RRM baseline and configured fallback when location conditions fail.

> 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

Qualcomm Qualcomm proposes using a cell reference location, otherwise suspending location-based triggers.

> 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

Apple Apple proposes excluding PDD reporting and RACH-less mobility in GNSS-free operation.

> In GNSS-free operation, following features are not supported: PDD report, RACH-less HO, RACH-less satellite switch with resync, location based SMTC selection.

R2-2607412, Proposal 1, paragraph 31. R2-2607412, Apple, 3GPP TSG RAN WG2 #135-bis. © Apple.
https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_135bis/Docs/R2-2607412.zip; register: available

Can UEs with different uplink compensation share satellite capacity?

Apple proposes conditional access-control changes if RAN1 finds coexistence feasible. Thales describes current access limits, while vivo describes separate cells on one carrier.

Apple Apple proposes conditional barring changes and potentially 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 observes that current specifications prevent UEs without uplink pre-compensation from accessing an NTN cell.

> 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

vivo vivo describes separate co-channel cells, with duplicated 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

What TN device antenna gain should coexistence evaluations assume?

ZTE with Sanechips and Ericsson each propose 0 dBi. OPPO proposes -5 dB.

ZTE (with Sanechips) ZTE with Sanechips proposes a 0 dBi omnidirectional TN UE pattern.

> 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 a 0 dBi isotropic TN UE pattern 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

OPPO OPPO proposes -5 dB TN UE antenna gain.

> 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

STILL OPEN

- Whether and how to handle dual-PRACH ROs that overlap single-PRACH ROs in time and frequency remains 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 assumption: RAR FAC should cover at least ±127.08 kHz, at least for Ka band, and connected-mode FAC ±60 kHz, at least with 120 kHz SCS. (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)
- RAN1 and RAN4 have yet to define validity for a last-known location used for uplink transmission. (R2-2607783, meeting or session report, paragraph 847. R2-2607783, 3GPP TSG RAN WG2 #135-bis. https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_135bis/Docs/R2-2607783.zip)
- How to keep legacy UEs from receiving the extended RAR remains FFS. (R2-2607783, meeting or session report, paragraph 865. R2-2607783, 3GPP TSG RAN WG2 #135-bis. https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_135bis/Docs/R2-2607783.zip)

WHAT TO WATCH NEXT MEETING

- The next RAN1 meeting is set to collect more 6GR NTN link-budget results and discuss their aggregation, after two email discussions. (R1-2607315, chair notes, paragraph 120. R1-2607315, 3GPP TSG RAN WG1 #126-bis. https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_126b/Docs/R1-2607315.zip)
- Watch the down-selection of a root-pairing mechanism for dual PRACH. (R1-2607310, chair notes, paragraph 62. R1-2607310, 3GPP TSG RAN WG1 #126-bis. https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_126b/Docs/R1-2607310.zip)
- Watch whether the endorsed n254, n255 and Band 253 power-class draft CRs progress beyond endorsement. (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)

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.
- R2-2607783 Report from session on MIMO, AIPHY, CovEnh, NTN and other topics. Session record; register lists CATT as editor. Meeting report. Register status: available at R2-135-bis. No decision recorded in the register.
- R2-2607784 Report from session on NR NTN and IoT NTN. Session record; register lists ZTE as editor. Meeting report. Register status: available at R2-135-bis. No decision recorded in the register.
- 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.
- R2-2607138 6G NTN mobility and other aspects. Nokia. Contribution. Register status: available at R2-135-bis. No decision recorded in the register.
- R2-2607552 Discussion on 6G NTN mobility. Qualcomm. Contribution. Register status: available at R2-135-bis. No decision recorded in the register.
- R2-2607412 Views on 6G NTN. Apple. 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.
- R2-2606661 Considerations on NR NTN with DL Compensation. vivo. Contribution. Register status: available at R2-135-bis. No decision recorded in the register.
- 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.
- R4-2620404 6G coexist study for NTN DL to TN DL. OPPO. Contribution. Register status: noted at R4-120-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 47 recorded decisions and 691 company positions or contribution passages on these agenda items (catalog synced 2026-10-19) and cites 19 decisions and 9 positions from 16 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.

- The RAN2 session reports record no 6G NTN agreement under agenda item 9.6 in Scout's record. Company mobility views there remain proposals.
- RAN4 power-class endorsements come from the register. No RAN4 meeting report was provided in this pack.
- The register target specification for the n254 PC2 draft CR could not be cross-checked against its CR cover page.
- The register noted the cited antenna contributions. This pack records no RAN4 antenna-pattern agreement.

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