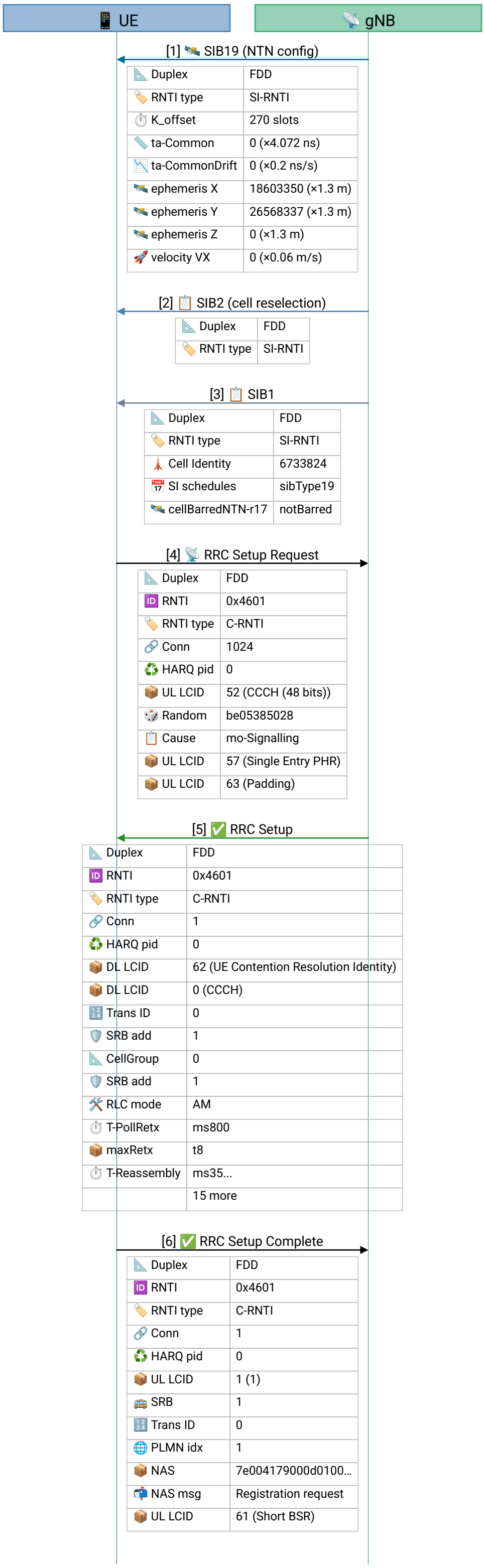


[Frame 1]

Phase 1: Same satellite, one setting changed

SIB19: the same geostationary satellite. The ephemeris is identical to the working run's: 42,164 km from Earth's center, over the equator, zero velocity. One NTN value differs: `cellSpecificKoffset-r17` is **270** here and 244 in the working run. That is 270 ms of scheduling offset at 15 kHz subcarrier spacing, against a round trip the srsRAN maintainer computed at 243.7 ms. In the issue thread the maintainer suggested 244 or 245. The working run, two days later, uses 244.

[Frame 2] SIB2. Cell-reselection thresholds, nothing NTN.

[Frame 3] SIB1. `cellBarredNTN-r17: notBarred`, the Release 17 access gate, and the same 10 ms response window and 64 ms contention-resolution timer as the working run. In NTN, TS 38.321 starts both one round trip late.

[Frame 4]

Phase 2: An attach that works

RRC Setup Request (Msg3), 109 s after the system information. The random-access response that came before it is in the source run, not this slice. There, Msg3 follows the RAR by 281 ms: this run's `K_offset` of 270 plus a few slots. In the working run the same gap was 255 ms. The offset is visible directly in the timestamps.

[Frame 5] RRC Setup. SRB1 in RLC acknowledged mode with `t-PollRetransmit: ms800`, sized for the satellite. Scheduling-request opportunities every 320 ms (`sl320`), 16 downlink HARQ processes: the same MAC setup as the working run.

[Frame 6] RRC Setup Complete, 454 ms later. Slower than the working run's 293 ms. Most replies in this attach take 299-319 ms; this one and the RRC Reconfiguration Complete (595 ms) are the outliers. With scheduling-request opportunities only every 320 ms, a UE that just missed one may wait for the next before it can send.

UE | gNB

BSR LCG0 idx	0
UL LCID	57 (Single Entry PHR)
UL LCID	63 (Padding)

[7] Timing Advance Command (TA=30)

Duplex	FDD
RNTI	0x4601
RNTI type	C-RNTI
Conn	1
HARQ pid	0
DL LCID	61 (Timing Advance Command)
TAG	0
DL LCID	1 (1)
DL LCID	63 (Padding)

[Frame 7] Timing Advance Command, TA = 30: one step below neutral (31), about -0.5 µs of closed-loop trim on top of the UE's own ephemeris-based advance.

[8] Authentication request

Duplex	FDD
RNTI	0x4601
RNTI type	C-RNTI
Conn	1
HARQ pid	0
DL LCID	1 (1)
SRB	1
DL Information Transfer	
DL LCID	63 (Padding)

[Frame 8]

Phase 3: Registration

Authentication Request.

[9] Timing Advance Command (TA=30)

Duplex	FDD
RNTI	0x4601
RNTI type	C-RNTI
Conn	1
HARQ pid	0
DL LCID	61 (Timing Advance Command)
TAG	0
DL LCID	63 (Padding)

[Frame 9] Timing Advance Command, TA = 30 again.

[10] Authentication response

Duplex	FDD
RNTI	0x4601
RNTI type	C-RNTI
Conn	1
HARQ pid	0
UL LCID	1 (1)
SRB	1
UL Information Transfer	
UL LCID	61 (Short BSR)
BSR LCG0 idx	0
UL LCID	57 (Single Entry PHR)
UL LCID	63 (Padding)

[Frame 10] Authentication Response, 305 ms after the request.

[11] RLC AM Status PDU

Duplex	FDD
RNTI	0x4601
RNTI type	C-RNTI
Conn	1
HARQ pid	0
DL LCID	1 (1)
RLC mode	Acknowledged
Bearer type	SRB
Bearer	1
RLC SN size	12-bit
ACK SN	2
E1	A set of NACK_SN, E1, E2 and E3 does not follow
DL LCID	63 (Padding)

[Frame 11] RLC status report on SRB1 (ACK_SN 1). Signaling is acknowledged promptly, one report per exchange.

UE | gNB

[12] ⬇️ Security mode command

📐 Duplex	FDD
🆔 RNTI	0x4601
🏷️ RNTI type	C-RNTI
🔗 Conn	1
♻️ HARQ pid	0
📦 DL LCID	1 (1)
🚌 SRB	1
📨 DL Information Transfer	
📦 DL LCID	63 (Padding)

[Frame 12] NAS Security Mode Command. `5G-EA0` (null ciphering) with `128-5G-IA2` integrity, so the NAS stays readable.

[13] ⬆️ Security mode complete

📐 Duplex	FDD
🆔 RNTI	0x4601
🏷️ RNTI type	C-RNTI
🔗 Conn	1
♻️ HARQ pid	0
📦 UL LCID	1 (1)
🚌 SRB	1
📨 UL Information Transfer	

[Frame 13] NAS Security Mode Complete, 310 ms later.

[14] 🔄 RLC AM Status PDU

📐 Duplex	FDD
🆔 RNTI	0x4601
🏷️ RNTI type	C-RNTI
🔗 Conn	1
♻️ HARQ pid	0
📦 DL LCID	1 (1)
🛠️ RLC mode	Acknowledged
🚌 Bearer type	SRB
🚌 Bearer	1
🔢 RLC SN size	12-bit
✅ ACK SN	3
🔗 E1	A set of NACK_SN, E1, E2 and E3 does not follow
📦 DL LCID	63 (Padding)

[Frame 14] RLC status report on SRB1.

[15] 🔐 Security Mode Command

📐 Duplex	FDD
🆔 RNTI	0x4601
🏷️ RNTI type	C-RNTI
🔗 Conn	1
♻️ HARQ pid	0
📦 DL LCID	1 (1)
🚌 SRB	1
🔢 Trans ID	1
🔒 Cipher	nea0
🛡️ Integrity	nia2
📦 DL LCID	63 (Padding)

[Frame 15] RRC Security Mode Command. `nea0` ciphering: radio-layer messages and user data stay readable.

[16] 🔐 Security Mode Complete

📐 Duplex	FDD
🆔 RNTI	0x4601
🏷️ RNTI type	C-RNTI
🔗 Conn	1
♻️ HARQ pid	0
📦 UL LCID	1 (1)
🚌 SRB	1
🔢 Trans ID	1
📦 UL LCID	61 (Short BSR)
📊 BSR LCG0 idx	0
📦 UL LCID	57 (Single Entry PHR)
📦 UL LCID	63 (Padding)

[Frame 16] RRC Security Mode Complete, 299 ms later.

[17] ❓ UE Capability Enquiry

📐 Duplex	FDD

[Frame 17] UE Capability Enquiry.

UE | gNB

RNTI	0x4601
RNTI type	C-RNTI
Conn	1
HARQ pid	0
DL LCID	1 (1)
SRB	1
Trans ID	2
RAT	nr
DL LCID	63 (Padding)

[18] UE Capability Information

Duplex	FDD
RNTI	0x4601
RNTI type	C-RNTI
Conn	1
HARQ pid	0
UL LCID	1 (1)
SRB	1
Trans ID	2
UL LCID	61 (Short BSR)
BSR LCG0 idx	0
UL LCID	57 (Single Entry PHR)
UL LCID	63 (Padding)

[Frame 18] UE Capability Information, 319 ms later. The same Release 17 NTN feature set as the working run: `nonTerrestrialNetwork-r17`, `harq-FeedbackDisabled-r17`, 32 HARQ processes, conditional handover by time and location. The UE is fully NTN-capable.

[19] RLC AM Status PDU

Duplex	FDD
RNTI	0x4601
RNTI type	C-RNTI
Conn	1
HARQ pid	0
DL LCID	1 (1)
RLC mode	Acknowledged
Bearer type	SRB
Bearer	1
RLC SN size	12-bit
ACK SN	5
E1	A set of NACK_SN, E1, E2 and E3 does not follow

[Frame 19] RLC status report on SRB1.

[20] Registration accept

Duplex	FDD
RNTI	0x4601
RNTI type	C-RNTI
Conn	1
HARQ pid	0
DL LCID	1 (1)
SRB	1
DL Information Transfer	
Reg result	3GPP access
DL LCID	63 (Padding)

[Frame 20] Registration Accept.

[21] Registration complete

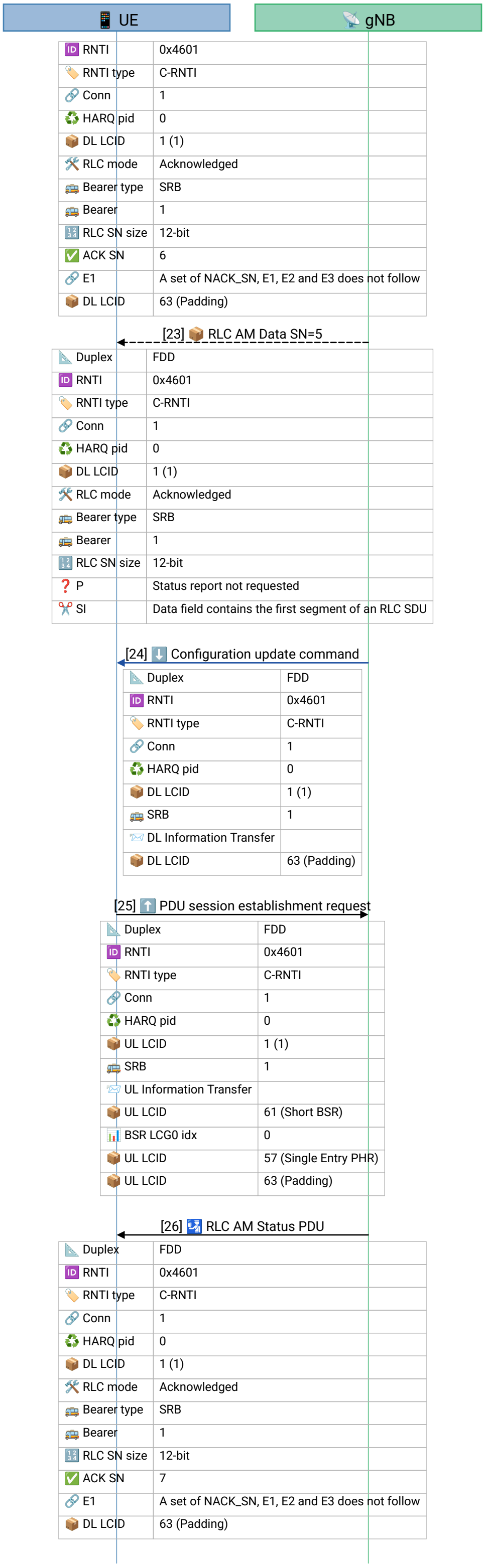
Duplex	FDD
RNTI	0x4601
RNTI type	C-RNTI
Conn	1
HARQ pid	0
UL LCID	1 (1)
SRB	1
UL Information Transfer	
UL LCID	61 (Short BSR)
BSR LCG0 idx	0
UL LCID	57 (Single Entry PHR)
UL LCID	63 (Padding)

[Frame 21] Registration Complete, 315 ms later.

[22] RLC AM Status PDU

Duplex	FDD

[Frame 22] RLC status report on SRB1. So far the attach is indistinguishable from the working run, apart from the timing outlier.

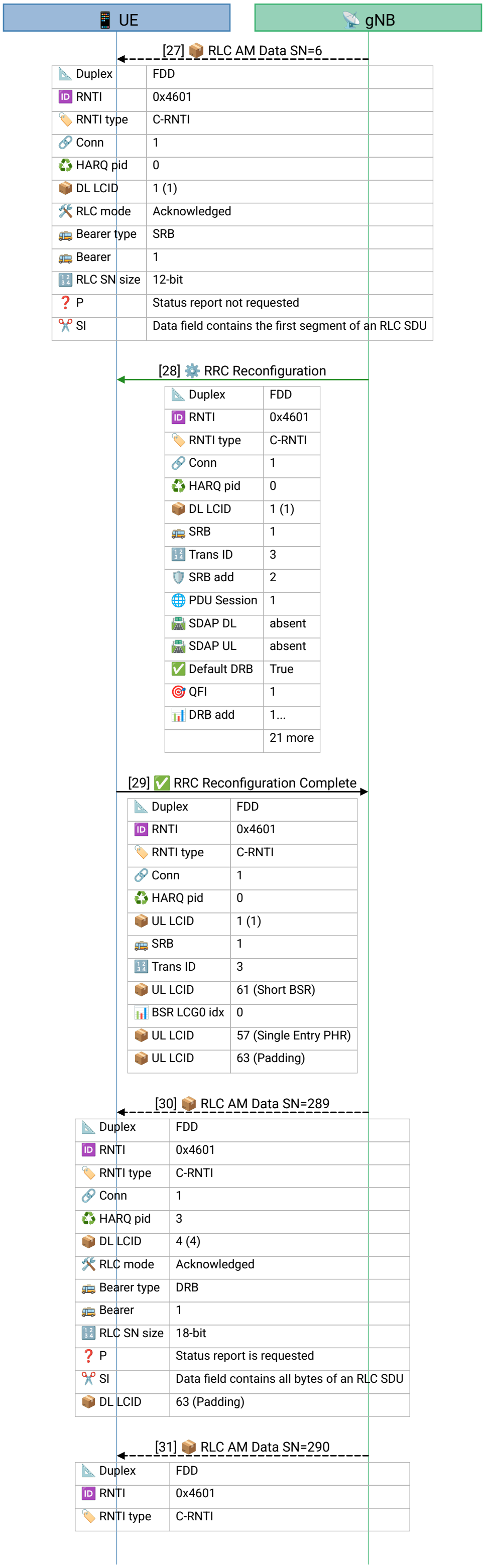


[Frame 23] RLC data, SN 5 on SRB1: carries the next NAS message.

[Frame 24] Configuration Update Command.

[Frame 25] PDU Session Establishment Request, 309 ms later.

[Frame 26] RLC status report on SRB1.



[Frame 27] RLC data, SN 6 on SRB1: the first segment of the RRC Reconfiguration.

[Frame 28]

Phase 4: The data bearer

RRC Reconfiguration: SRB2 and DRB1. The same RLC settings as the working run, SRB2 first and then DRB1:

Setting	SRB2	DRB1
`t-PollRetransmit`	ms800	ms100
`pollPDU`	infinity	p16
`maxRetxThreshold`	t8	t32

The data bearer's 100 ms poll timer is shorter than the round trip. Both runs share it, and the working run survives it, so it does not explain this failure on its own.

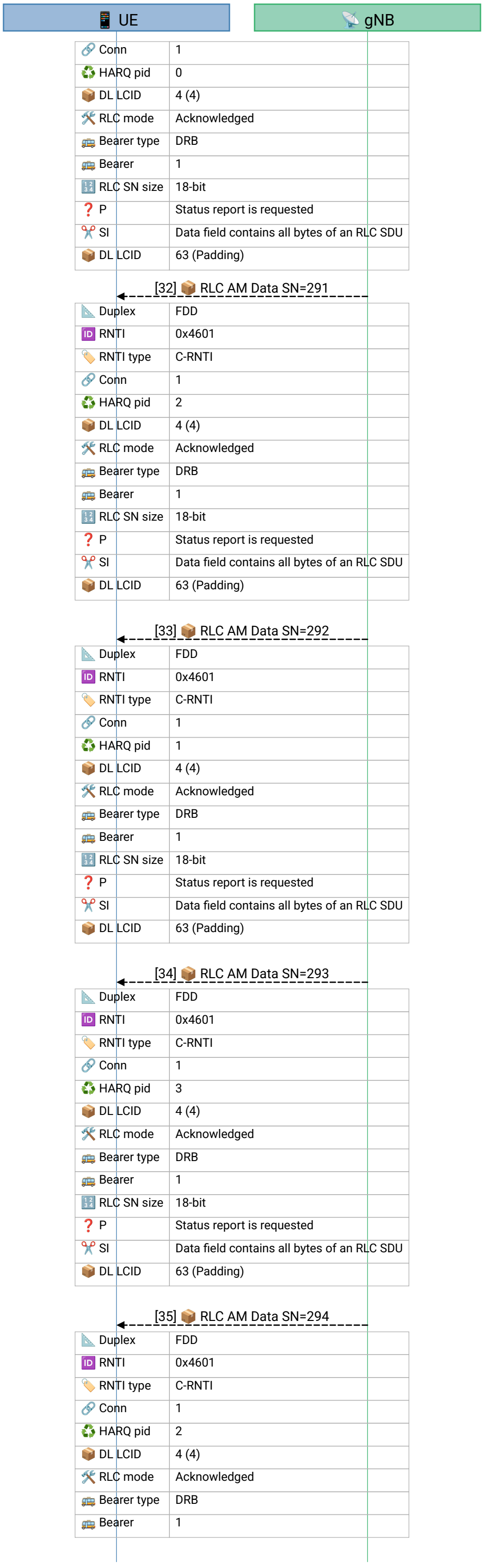
[Frame 29] RRC Reconfiguration Complete, 595 ms later. The bearer is up and downlink data starts 5 ms later.

[Frame 30]

Phase 5: Data flows, and the gNB gives up

The first sampled window, 0.3 s into the data phase. The slice starts at SN 289; SNs 0-288 went out in the first 0.3 s. The gNB sends one RLC PDU every 1-2 ms, about 750 per second, and nearly every PDU carries the poll bit (3,243 of 3,318 in the full run). The poll bit is set whenever the send buffer empties, and here the buffer empties after almost every PDU.

[Frame 31] RLC data, SN 290.

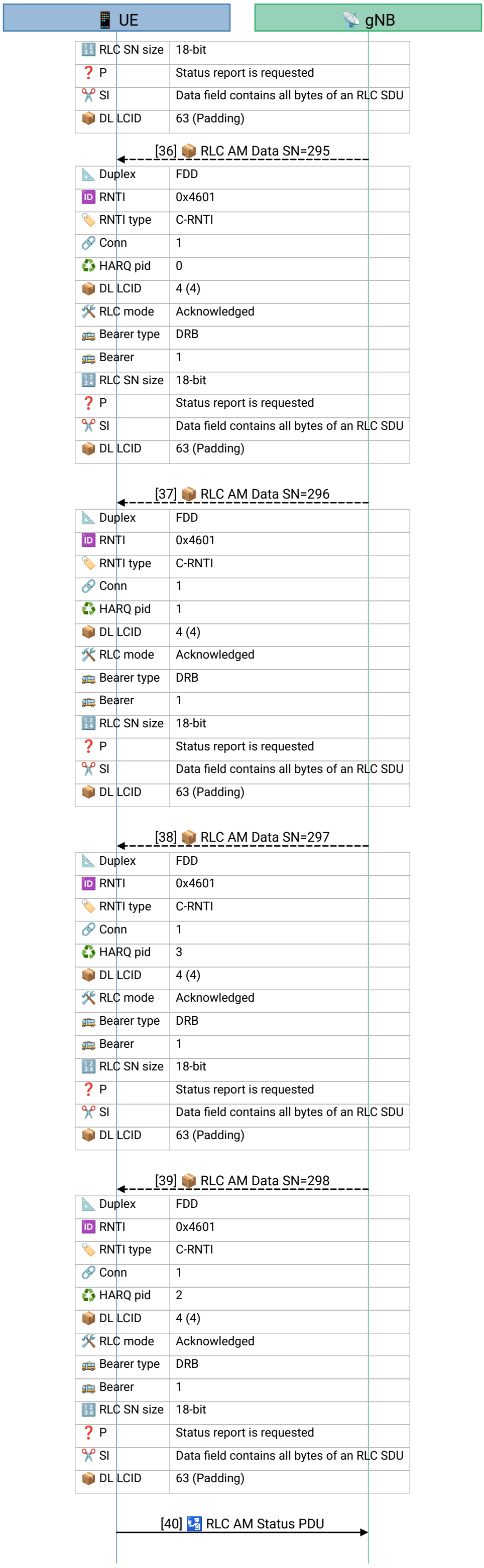


[Frame 32] RLC data, SN 291.

[Frame 33] RLC data, SN 292.

[Frame 34] RLC data, SN 293.

[Frame 35] RLC data, SN 294.



[Frame 36] RLC data, SN 295.

[Frame 37] RLC data, SN 296.

[Frame 38] RLC data, SN 297.

[Frame 39] RLC data, SN 298.

[Frame 40] First uplink status report: ACK_SN 287. It arrives 0.32 s into the data phase, exactly one scheduling-request period, and acknowledges 287 PDUs at once.

UE	gNB

📐 Duplex	FDD
🆔 RNTI	0x4601
🏷️ RNTI type	C-RNTI
🔗 Conn	1
♻️ HARQ pid	0
📦 UL LCID	4 (4)
🛠️ RLC mode	Acknowledged
🚌 Bearer type	DRB
🚌 Bearer	1
🔢 RLC SN size	18-bit
✅ ACK SN	287
🔗 E1	A set of NACK_SN, E1, E2 and E3 does not follow
📦 UL LCID	61 (Short BSR)
📊 BSR LCG0 idx	0
📦 UL LCID	57 (Single Entry PHR)...
	1 more

[41] 📦 RLC AM Data SN=299

[Frame 41] RLC data, SN 299.

📐 Duplex	FDD
🆔 RNTI	0x4601
🏷️ RNTI type	C-RNTI
🔗 Conn	1
♻️ HARQ pid	0
📦 DL LCID	4 (4)
🛠️ RLC mode	Acknowledged
🚌 Bearer type	DRB
🚌 Bearer	1
🔢 RLC SN size	18-bit
❓ P	Status report is requested
✂️ SI	Data field contains all bytes of an RLC SDU
📦 DL LCID	63 (Padding)

[42] 📦 RLC AM Data SN=300

[Frame 42] RLC data, SN 300.

📐 Duplex	FDD
🆔 RNTI	0x4601
🏷️ RNTI type	C-RNTI
🔗 Conn	1
♻️ HARQ pid	1
📦 DL LCID	4 (4)
🛠️ RLC mode	Acknowledged
🚌 Bearer type	DRB
🚌 Bearer	1
🔢 RLC SN size	18-bit
❓ P	Status report is requested
✂️ SI	Data field contains all bytes of an RLC SDU
📦 DL LCID	63 (Padding)

[43] 📦 RLC AM Data SN=763

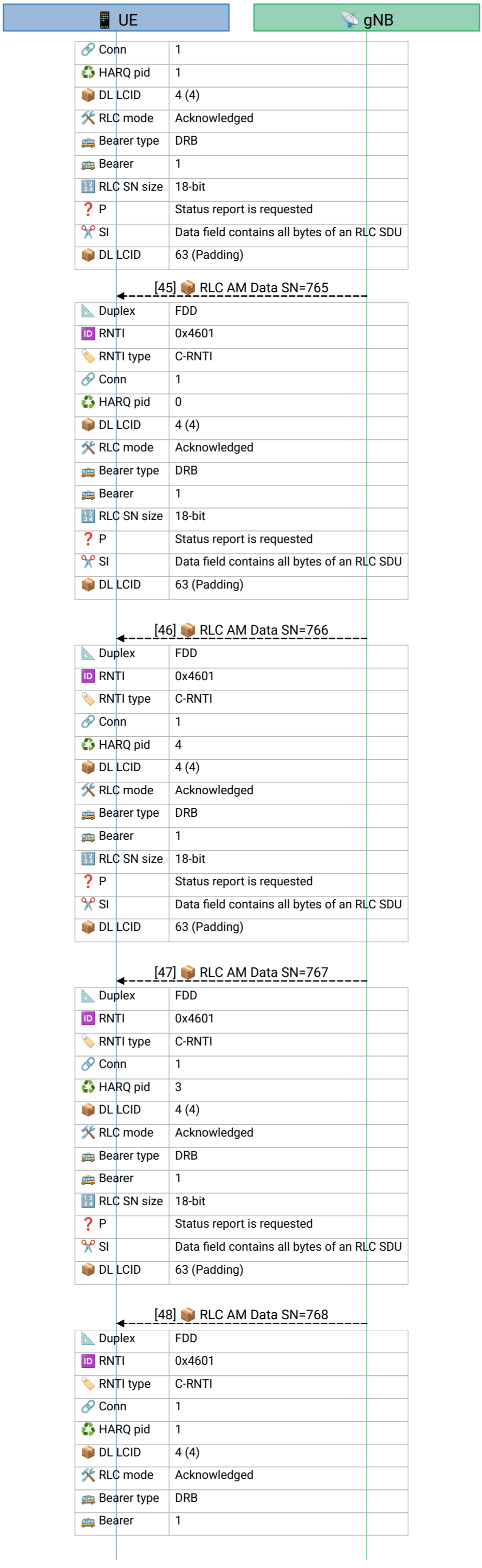
[Frame 43] SN 300 to SN 763. The slice skips about 0.63 s of continuous downlink with no uplink report.

📐 Duplex	FDD
🆔 RNTI	0x4601
🏷️ RNTI type	C-RNTI
🔗 Conn	1
♻️ HARQ pid	3
📦 DL LCID	4 (4)
🛠️ RLC mode	Acknowledged
🚌 Bearer type	DRB
🚌 Bearer	1
🔢 RLC SN size	18-bit
❓ P	Status report is requested
✂️ SI	Data field contains all bytes of an RLC SDU
📦 DL LCID	63 (Padding)

[44] 📦 RLC AM Data SN=764

[Frame 44] RLC data, SN 764.

📐 Duplex	FDD
🆔 RNTI	0x4601
🏷️ RNTI type	C-RNTI

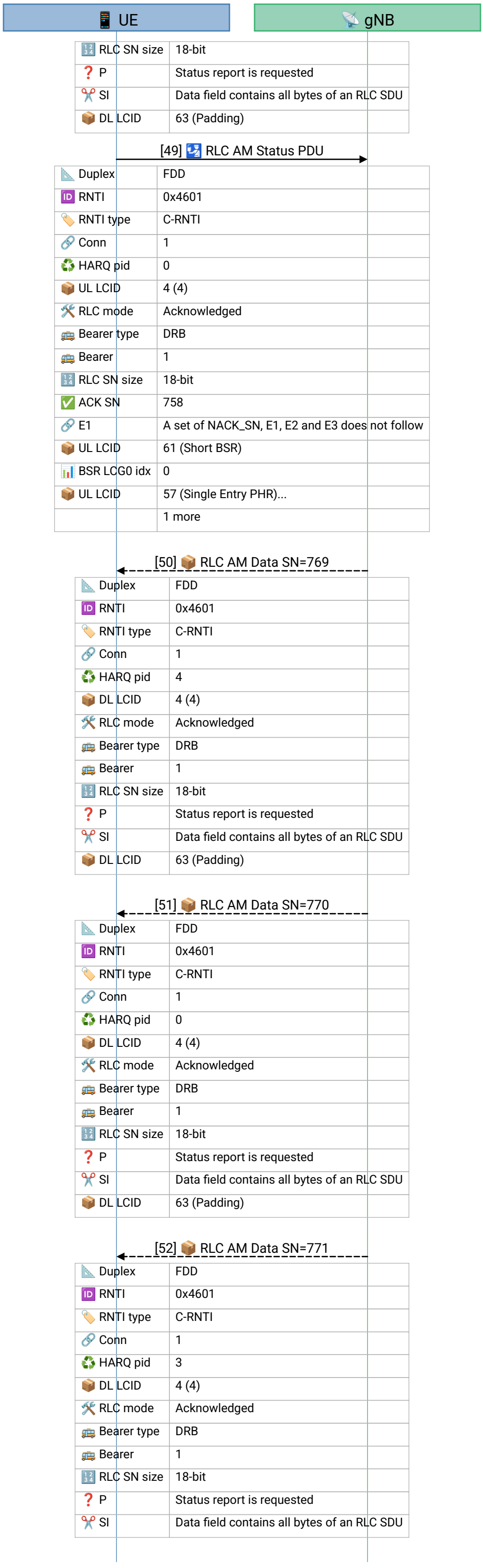


[Frame 45] RLC data, SN 765.

[Frame 46] RLC data, SN 766.

[Frame 47] RLC data, SN 767.

[Frame 48] RLC data, SN 768.

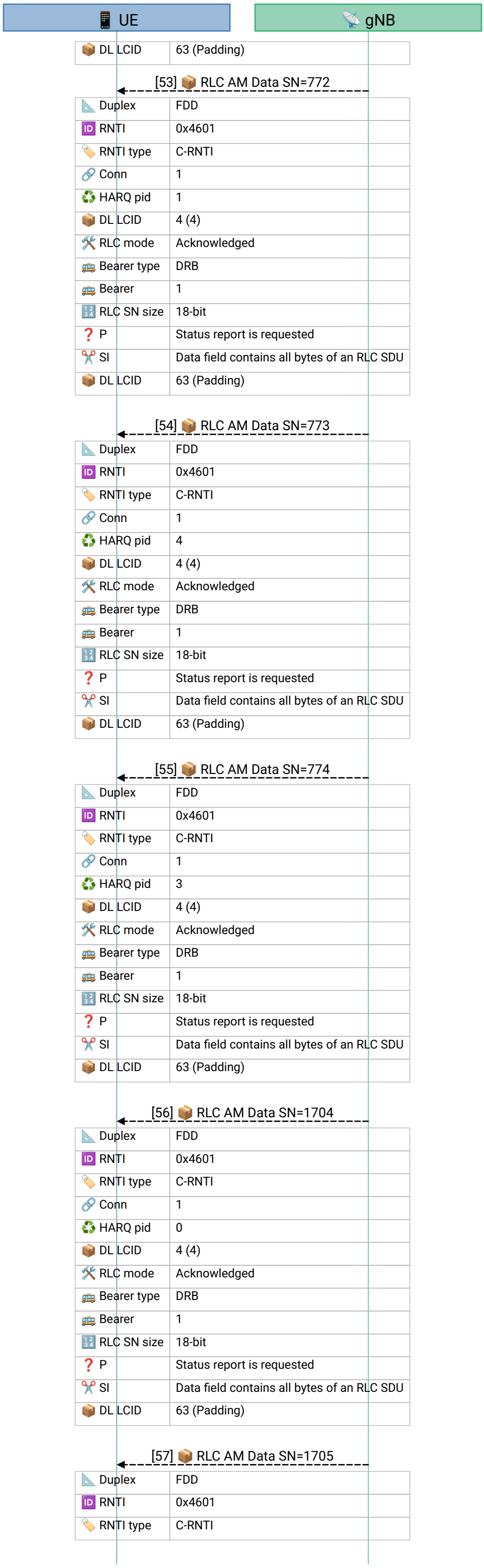


[Frame 49] Second status report: ACK_SN 758, 0.64 s after the first.

[Frame 50] RLC data, SN 769.

[Frame 51] RLC data, SN 770.

[Frame 52] RLC data, SN 771.



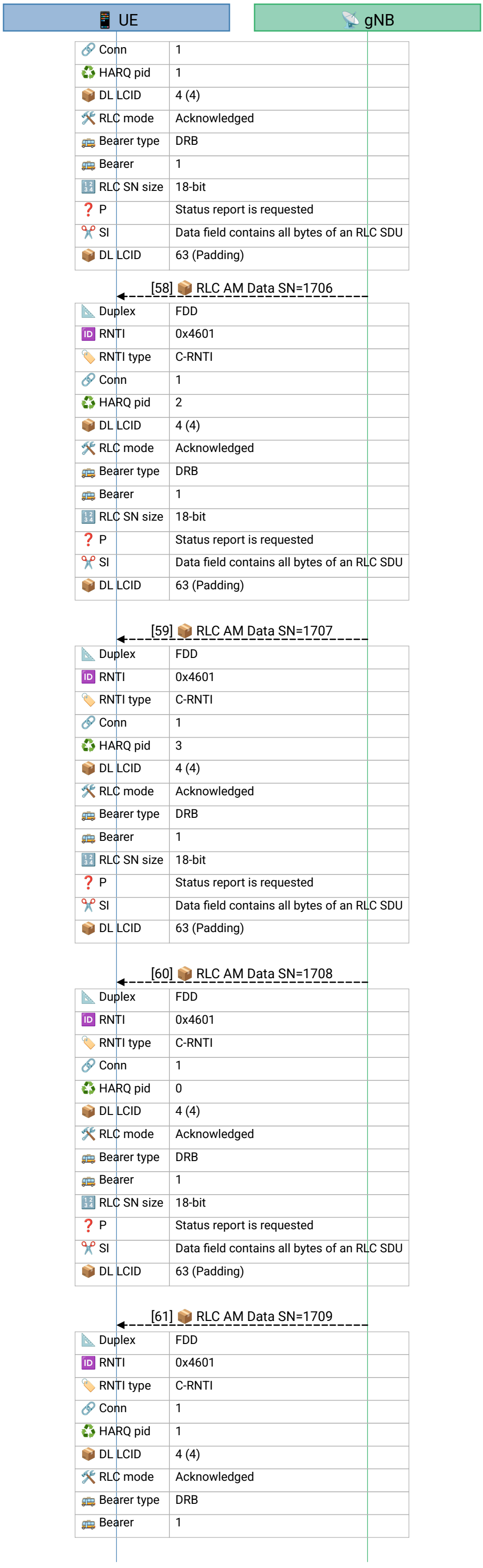
[Frame 53] RLC data, SN 772.

[Frame 54] RLC data, SN 773.

[Frame 55] RLC data, SN 774.

[Frame 56] SN 774 to SN 1704: another 1.27 s without an uplink report.

[Frame 57] RLC data, SN 1705.

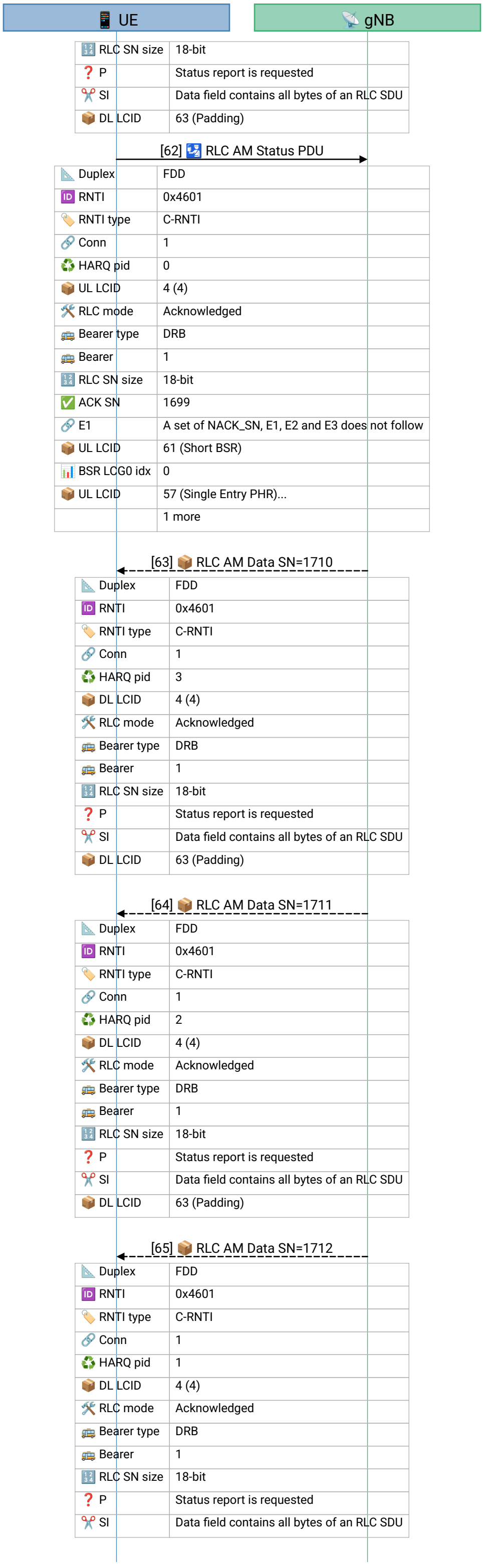


[Frame 58] RLC data, SN 1706.

[Frame 59] RLC data, SN 1707.

[Frame 60] RLC data, SN 1708.

[Frame 61] RLC data, SN 1709.



[Frame 62] Third status report: ACK_SN 1699, 1.28 s after the second.

Every gap between reports, in this run and the working one, is an exact multiple of 320 ms, the scheduling-request period. The UE carries no uplink traffic of its own (the iperf test runs downlink), so it seems to transmit only after asking for capacity at one of those opportunities. Every report shown so far confirms complete delivery.

[Frame 63] RLC data, SN 1710.

[Frame 64] RLC data, SN 1711.

[Frame 65] RLC data, SN 1712.

UE	gNB

📦 DL LCID	63 (Padding)

[66] 📦 RLC AM Data SN=1713

[Frame 66] RLC data, SN 1713.

📐 Duplex	FDD
🆔 RNTI	0x4601
🏷️ RNTI type	C-RNTI
🔗 Conn	1
♻️ HARQ pid	0
📦 DL LCID	4 (4)
🛠️ RLC mode	Acknowledged
🚌 Bearer type	DRB
🚌 Bearer	1
🔢 RLC SN size	18-bit
❓ P	Status report is requested
✂️ SI	Data field contains all bytes of an RLC SDU
📦 DL LCID	63 (Padding)

[67] 📦 RLC AM Data SN=1714

[Frame 67] RLC data, SN 1714.

📐 Duplex	FDD
🆔 RNTI	0x4601
🏷️ RNTI type	C-RNTI
🔗 Conn	1
♻️ HARQ pid	3
📦 DL LCID	4 (4)
🛠️ RLC mode	Acknowledged
🚌 Bearer type	DRB
🚌 Bearer	1
🔢 RLC SN size	18-bit
❓ P	Status report is requested
✂️ SI	Data field contains all bytes of an RLC SDU
📦 DL LCID	63 (Padding)

[68] 📦 RLC AM Data SN=1715

[Frame 68] RLC data, SN 1715.

📐 Duplex	FDD
🆔 RNTI	0x4601
🏷️ RNTI type	C-RNTI
🔗 Conn	1
♻️ HARQ pid	2
📦 DL LCID	4 (4)
🛠️ RLC mode	Acknowledged
🚌 Bearer type	DRB
🚌 Bearer	1
🔢 RLC SN size	18-bit
❓ P	Status report is requested
✂️ SI	Data field contains all bytes of an RLC SDU
📦 DL LCID	63 (Padding)

[69] 📦 RLC AM Data SN=2645

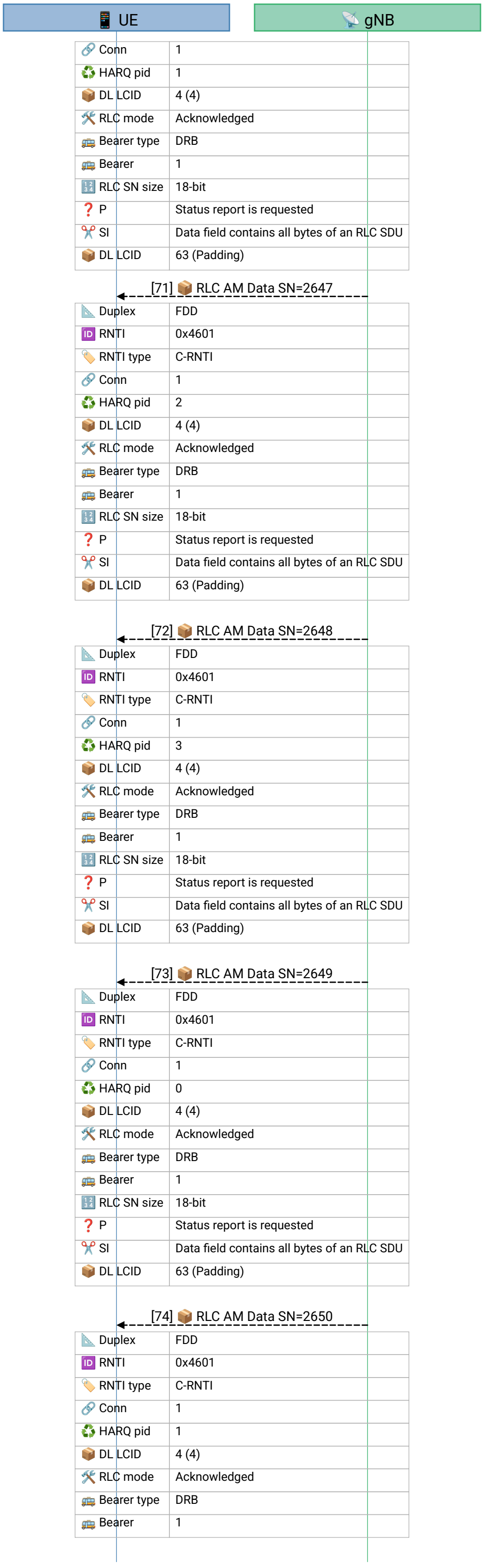
[Frame 69] SN 1715 to SN 2645: another 1.27 s gap.

📐 Duplex	FDD
🆔 RNTI	0x4601
🏷️ RNTI type	C-RNTI
🔗 Conn	1
♻️ HARQ pid	0
📦 DL LCID	4 (4)
🛠️ RLC mode	Acknowledged
🚌 Bearer type	DRB
🚌 Bearer	1
🔢 RLC SN size	18-bit
❓ P	Status report is requested
✂️ SI	Data field contains all bytes of an RLC SDU
📦 DL LCID	63 (Padding)

[70] 📦 RLC AM Data SN=2646

[Frame 70] RLC data, SN 2646.

📐 Duplex	FDD
🆔 RNTI	0x4601
🏷️ RNTI type	C-RNTI

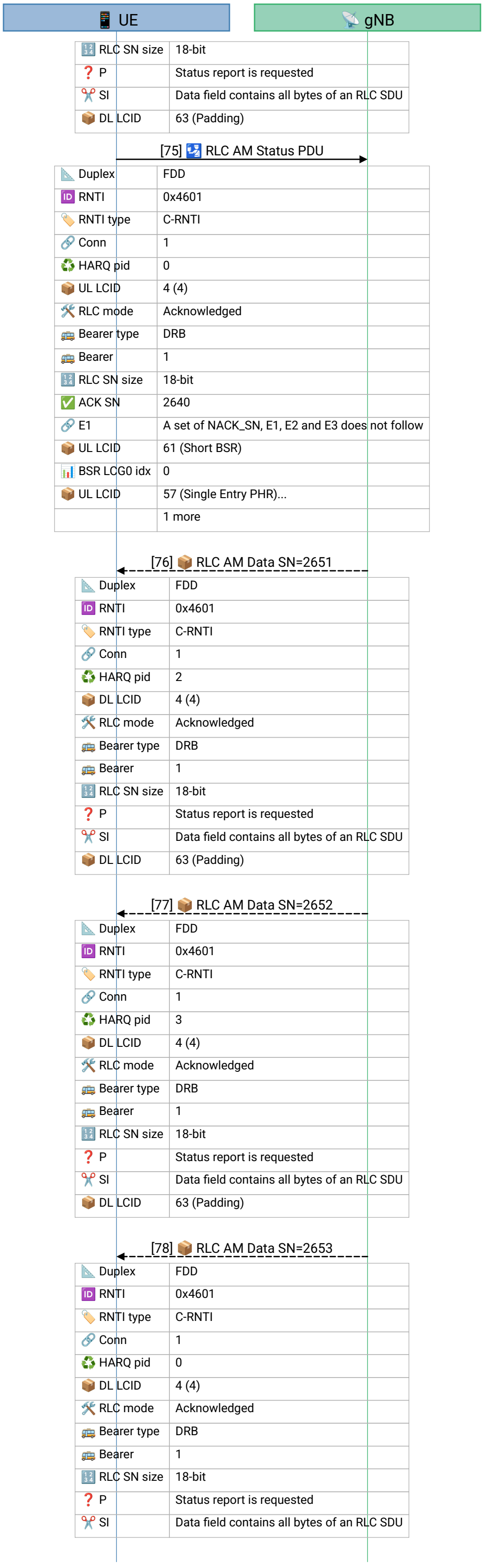


[Frame 71] RLC data, SN 2647.

[Frame 72] RLC data, SN 2648.

[Frame 73] RLC data, SN 2649.

[Frame 74] RLC data, SN 2650.



[Frame 75] Fourth status report: ACK_SN 2640, 1.28 s after the third. It is the last report before the release.

[Frame 76] RLC data, SN 2651.

[Frame 77] RLC data, SN 2652.

[Frame 78] RLC data, SN 2653.



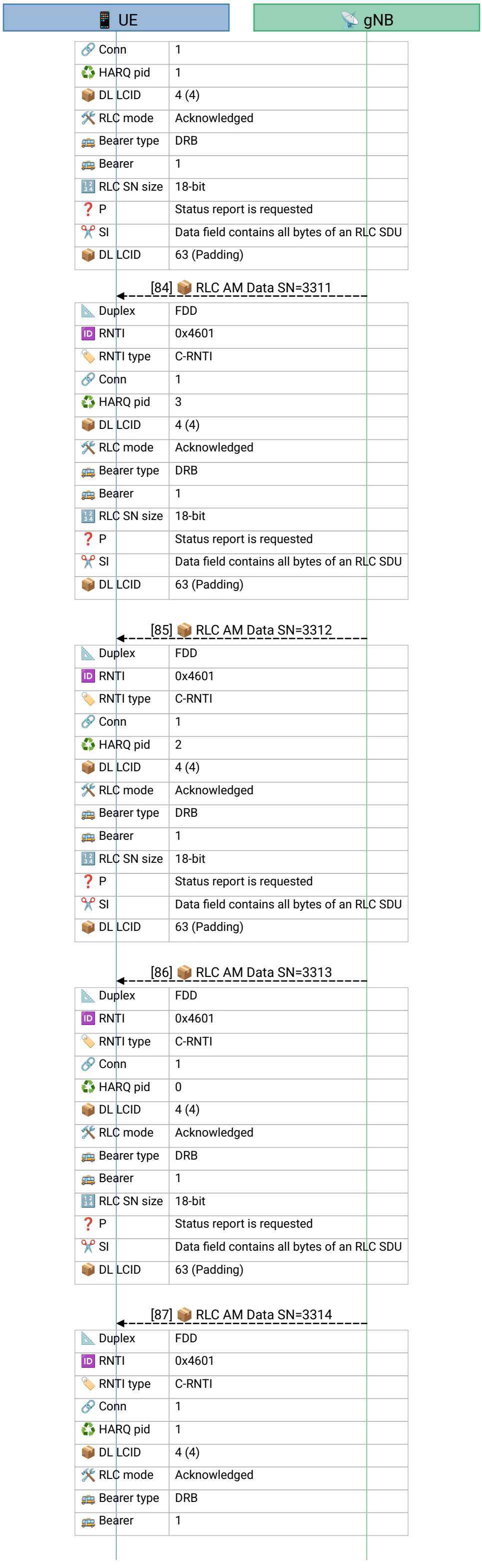
[Frame 79] RLC data, SN 2654.

[Frame 80] RLC data, SN 2655.

[Frame 81] RLC data, SN 2656.

[Frame 82] SN 2656 to SN 3309: the last data window. The gNB is still sending.

[Frame 83] RLC data, SN 3310.

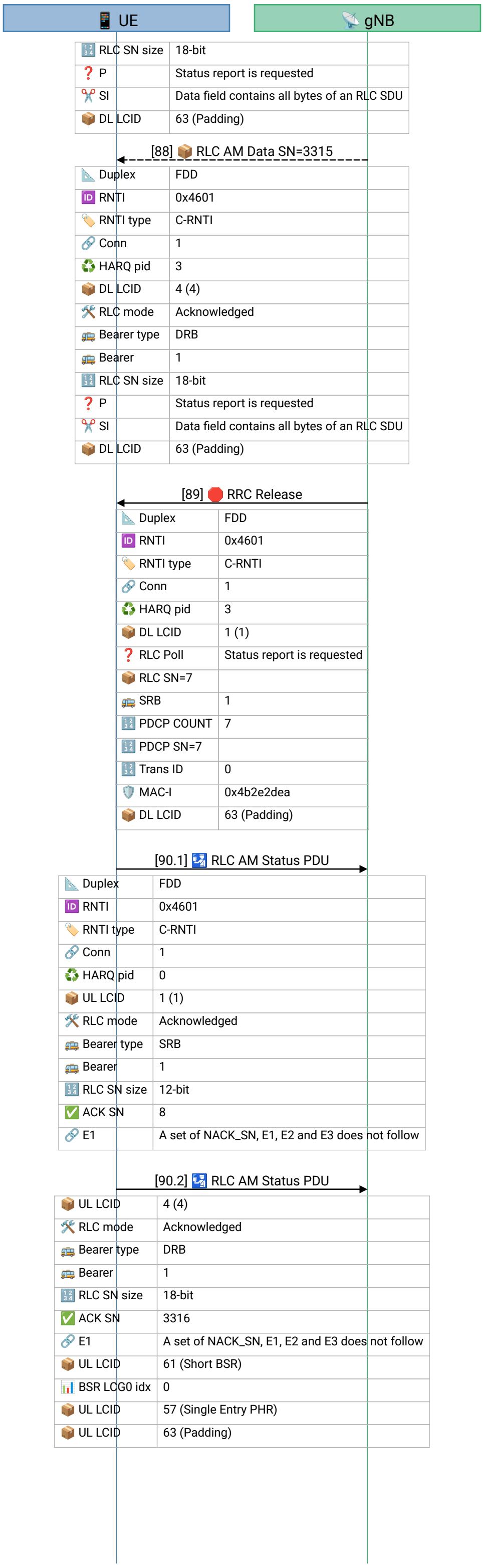


[Frame 84] RLC data, SN 3311.

[Frame 85] RLC data, SN 3312.

[Frame 86] RLC data, SN 3313.

[Frame 87] RLC data, SN 3314.



[Frame 88] RLC data, SN 3315.

[Frame 89] RRC Release, 4.4 s after the data started. The gNB ends the connection. On the core-facing NG interface (the companion NGAP capture), it sent `UEContextReleaseRequest` with cause `radio-connection-with-ue-lost` 6 ms earlier. A `PDUSessionResourceSetupRequest` then crossed the release and drew an `ErrorIndication` (`interaction-with-other-procedure`).

The capture does not record why the gNB decided the UE was lost. For an earlier run the reporter posted the srsRAN log: "RLF detected. Cause: 100 consecutive HARQ-ACK KOs", followed by a 4,000 ms timer before release. HARQ acknowledgements travel on the physical uplink control channel, below what this capture records. If this run behaved the same way, the gNB declared the radio link failed (RLF) about 0.4 s into the data and kept sending until the timer ran out.

[Frame 90.1] The UE was there all along. 50 ms after the release, the UE's status report for SRB1 arrives (`ACK_SN` 8, acknowledging the release itself).

[Frame 90.2] And its data-bearer report: ACK_SN 3316. The UE received every one of the 3,316 PDUs. There is no NACK and no RLC retransmission anywhere in the full run.

That is the finding. The bearer did not lose data. The gNB declared the radio link lost while the data was arriving intact. The capture pins down what the two runs share (the satellite, the RLC timers, the 320 ms scheduling-request period) and the one NTN setting that differs, `K_offset` 270 against 244. Whether that difference is the cause cannot be proven from these captures. The reporter later wrote that failures continued at 244, and the srsRAN maintainers changed some timeouts to account for the NTN round trip in a later release.