3GPP TSG-RAN WG2 Meeting #121 [R2-230xxx](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121/Docs/R2-2301902.zip)x

Athens, Greece, February-March, 2022

**Agenda item: 9.2**

**Source: Vice Chairman (Nokia)**

**Title: Report on LTE legacy, XR, QoE and MUSIM**

**Document for: Approval**

# Organizational

Rel-17 CR

- From R2 121, Rel-17 CRs are treated as normal (as Rel-16 Rel-15 etc), meaning that submitted CRs are agreed/not agreed individually.

- Chair Observation: As for Rel-16 Rel-15 rapporteurs may still do Rel-17 “rapporteur CRs” for miscellaneous small corrections. The work on Rapporteur CRs in normal maintenance phase is usually organized by TS rapporteurs (for maintenance in breakout sessions may alternatively be by WI rapporteur or other appointed).

Rel-17 UE capabilities

- Also for UE capabilities, normal CRs handling is planned, i.e. CRs should be per-WI and no planned merge into mega CRs. However, if it makes sense from some perspective, multi-WI CRs are not precluded (dec case by case).

Tdoc limitations

Tdoc limitations doesn’t apply to Rapporteur Input, i.e.

- Assigned summary rapporteur input of the summary.

- Email / offline discussions outcomes by discussion rapporteur,

- WI rapporteurs input for WI planning etc,

- TS rapporteur input for TS maintenance

- Contact Company of a LSin that triggers RAN2 action may submit one tdoc to facilitate the LS reply. This only applies to one of the contact companies in case there are several (default the first).

Tdoc limitations doesn’t apply to Input created at the meeting, revisions, assigned documents etc.

Tdoc limitations doesn’t apply to shadow / mirror CRs (Cat A), or In-Principle Agreed CRs.

Tdoc limitations applies to all other submitted tdocs (e.g. discussion tdoc and CR tdoc are counted as two).

**List of offline email discussions:**

**NOTE: the email discussion deadlines are meant to allow at least all regions to have one day to comment (other than weekend) and also give rapporteurs time to update their proposals before the meeting)**

**Email discussion deadlines**

**NOTE: No AT-meeting email discussion reports will be handled in sessions happening during Mon-Wed.**

**Deadline 1 (discussions for 1st week Thu online)**

* **Comment deadline:** Wednesday W1, 0700 UTC (for collecting views)
* **Rapporteur proposed outcome:** Wednesday W1, 1600 UTC (proposed outcome)
* **Document deadline:** 1h before session (discussion report)

**Deadline 2 (discussions for 2nd week Monday/Tuesday online)**

* **Comment deadline:** Friday W1, 0900 UTC (for collecting views)
* **Rapporteur proposed outcome:** Monday W2, 1000 UTC (proposed outcome)
* **Document deadline:** 1h before session (discussion report)

**Deadline 3 (discussions for 2nd week Wednesday online)**

* **Comment deadline:** Tuesday W2, 0800 UTC (for collecting views)
* **Rapporteur proposed outcome:** Tuesday W2, 1500 UTC (proposed outcome)
* **Document deadline:** 1h before session (discussion report)

**Deadline 4 (LS/CR approval via email):**

* **Comment deadline:** WednesdayW2, 0800 UTC (for wording proposals)
* **Rapporteur proposed outcome:** EOM (approved LS or agreed CR)

**Organizational**

* [AT121bis-e][200] Organizational – LTE legacy, XR, QoE and MUSIM (RAN2 VC)

Scope:

* + - Share plans for the meetings and list of ongoing email discussions for the sessions
		- Share meetings notes and agreements for review and endorsement
		- Flag LSs and in-principle agreed CRs for discussion

      Intended outcome:

* + - General information sharing about the sessions

      Deadline for flagging LSs:

* + - Deadline: Deadline 2

**Post-meeting email discussions**

**AT-meeting offline discussions (started at meeting start)**

* [AT121bis-e][210][XR] Retransmission-less CG for XR (Huawei)

 Scope: Discussion whether Rel-17 NTN solution for retransmission-less CG can work for XR (based on contributions to this meeting, e.g. [R2-2302584](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302584.zip)). Can also provide draftCR illustrating the changes.

 Intended outcome: Discussion report in [R2-2304391](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2304391.zip)

 Deadline: Deadline 1

* [AT121bis-e][220][QoE] SRB5 configuration and usage (China Unicom)

 Scope: Discuss how the SRB5 is configured by MN/SN, how does switching the reporting leg and QoE pause work. Attempt to provide proposal on agreeable details as well as details requiring further discussion.

 Intended outcome: Discussion report in [R2-2304395](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2304395.zip)

 Deadline: Deadline 2

* [AT121bis-e][230][MUSIM] UE capability restrictions (vivo)

 Scope: Discuss and attempt to converge on the set of UE capabilities allowed to be temporarily restricted for MUSIM.

 Intended outcome: Discussion report in [R2-2304397](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2304397.zip)

 Deadline: Deadline 2

**AT-meeting offline discussions (started after 1st week Monday online)**

* [AT121bis-e][211][XR] Running Stage-2 CR (Nokia)

 Scope: Collect comments for the Stage-2 CR based on [R2-2302718](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302718.zip) and SA2/SA4 agreements.

 Intended outcome: Discussion report in [R2-2304392](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2304392.zip) and (if possible) updated Stage-2 running CR in [R2-2304393](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2304393.zip).

 Deadline: Deadline 4

* [AT121bis-e][212][XR] BSR solutions (Qualcomm)

 Scope: Attempt to find out which among the BSR table solutions have most support and preclude those with least support (if possible). Should discuss pros and cons of each solution and determine which are acceptable to companies (and why). Can also discuss other general details (e.g. how the BSR tables are used).

 Intended outcome: Discussion report in [R2-2304394](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2304394.zip).

 Deadline: Deadline 2

**AT-meeting offline discussions (TBD – started only after relevant online session)**

* [AT121bis-e][221][QoE] LS replies to QoE (Huawei)

 Scope: Determine whether to send replies to LSs received from other groups (e.g. RAN3, SA4 and SA5) and attempt to provide RAN2 reply. If LS reply is agreeable, discussion should also determine what to reply and what the target groups are (for To and Cc).

 Intended outcome: LS out to SA4/SA5 in [R2-2304396](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2304396.zip)

 Deadline: Deadline 4

* [AT121bis-e][231][MUSIM] RAN4 aspects of MUSIM (Samsung)

 Scope: Discuss what to do for MUSIM gap priorities (based on RAN4 LS): Can UE indicate gap priority preference? Is the gap priority applicable to aperiodic gaps? Are there any RAN4 impacts on maximum UL power change?

 Intended outcome: Discussion report in [R2-2304398](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2304398.zip)

 Deadline: Deadline 2

**Dates and deadlines – Technical Meeting (see also RP-230050)**

March 31st Deadline for Long email discussions into R2 121.

April 3rd – 7th Inactive period, no email discussions.

April 7th 1000 UTC **Tdoc Submission Deadline**.

April 17th 0700 UTC **e-Meeting Start** (by email), Week 1
Rapporteurs in non-favourable time zones may kick off AT meeting offline / email discussions before meeting start (at most 12h before). It is assumed that participants starts paying attention to offline / email discussions after e-meeting start.

April 21st 1000 UTC **Weekend break**, Suspend decision making in email discussions (= no deadlines etc). It should be possible for a delegate to take the weekend off, rejoin and not miss decisions.

April 24th 1000 UTC **Resume after weekend**. Resume decision making in email discussions, Week 2.

April 26th 1000 UTC **e-Meeting Stop**, no more technical comments for AT-meeting email discussions. Decision confirmations announced within 24h. Session notes for email checking.

April 28th 1000 UTC Deadline Short Email Discussions (limited possibility - for very short email discussions, if needed short email discussion can be started before e-meeting Stop). E.g. for LS outs, or other priority topics e.g. conclusion of R17 CRs.

May 1st – 5th Inactive period, no email discussions.

May 12th 1000 UTC Tdoc submission deadline RAN2 122 (next meeting).

 Very limited possibility for long email discussions.

**Web Conference Schedule (Apr 17- 26)**

Note that this schedule is indicative and can change. After Week 1 the schedule for Week 2 will be updated.

**WEEK 1**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Time ZoneUTC** | **Web Conference R2 - Main** | **Web Conference R2 - BO1** | **Web Conference R2 - BO2** | **Offline GTW Session** **(limited use, only specific issues if needed, need approval by session chair)** |
| **Monday** |  |  |  |  |
| 12:30-13:30 | NR18 Mobility Enh [2] (Johan) | NR18 XR [2] (Tero)- 7.5.1: Work plan ([R2-2302715](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302715.zip)), SA2/SA4 status ([R2-2302716](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302716.zip)/[R2-2302717](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302717.zip)), Stage-2 running CR ([R2-2302718](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302718.zip))- 7.5.4.1: BSR tables for XR (e.g.[R2-2302515](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302515.zip), [R2-2303862](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303862.zip), [R2-2302851](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302851.zip))- 7.5.2: TSCAI vs. PIN DB reporting (e.g. [R2-2303800](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303800.zip), [R2-2303986](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303986.zip)) | NR18 SL Relay [1.5] (Nathan)- 7.9.1 Organizational ([R2-2302442](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302442.zip), [R2-2302994](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302994.zip))- 7.9.4 Multi-path ([R2-2303857](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303857.zip), [R2-2302924](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302924.zip), aspects of [R2-2303342](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303342.zip)) |  |
| 13:30-14:30 | NR18 Mobile IAB [0.5] (Johan) | NR18 UAV [1] (Diana)7.8.1: LSs 7.8.2: Email discussion 3137.8.3: Email discussion 314 | NR18 Pos [2] (Nathan)- 7.2.1 Organizational ([R2-2302449](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302449.zip), [R2-2302738](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302738.zip) / [R2-2302739](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302739.zip))- 7.2.2 Sidelink positioning ([R2-2302740](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302740.zip), [R2-2304033](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2304033.zip), [R2-2304005](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2304005.zip)) |  |
| 14:30-15:30 | NR18 AIML [1] (Johan) | NR18 NCR [0.5] (Sasha)7.1.1 (LS from RAN1 and baseline CRs)7.1.2 (agenda item summary)7.1.3 ([R2-2303288](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303288.zip), [R2-2302788](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302788.zip), agenda item summary for issues not covered in 3288) | Maintenance Early items (Nathan Qianxi)Rel-17 relay:- 6.5.2 CP ([R2-2304189](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2304189.zip))- 6.5.3 UP ([R2-2304191](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2304191.zip))Rel-17 positioning:- 6.7.2 RRC ([R2-2302638](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302638.zip), [R2-2302992](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302992.zip))- 6.7.4 MAC ([R2-2302991](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302991.zip), [R2-2304049](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2304049.zip))- 6.7.5 UE cap ([R2-2302745](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302745.zip))- 6.7.3 LPP ([R2-2304192](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2304192.zip))R16 SL - 5.2: [R2-2303211](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303211.zip)/3212R17 SL:- 6.10.1: [R2-2302410](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302410.zip) (R1 LS reply on default CBR)- 6.10.3: [R2-2303744](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303744.zip)/3745 |  |
| **Tuesday** |  |  |  |  |
| 12:30-13:30 | NR18 LP WUS [0.5] (Johan)  | NR18 NTN enh [1] (Sergio) | NR18 SL evolution [1] (Qianxi)7.15.1, 7.15.2, 7.15.3 |  |
| 13:30-14:30 | NR18 Other [2] (Johan) | NR18 NTN enh [1] (Sergio) | NR18 SL evolution [1] (Qianxi)7.15.3 (cont.), 7.15.4 |  |
| 14:30-15:30 | NR18 Mobility Enh [2] (Johan) | Maintenance Early Items (Sergio, Tero)LTE legacy (Tero)- 4.1: [R2-2303818](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303818.zip) (+ [R2-2303821](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303821.zip), [R2-2303822](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303822.zip) - QoE configuration release) - 7.17.4: [R2-2302430](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302430.zip) (RAN4 LS for MUSIM gap priority) | NR18 SL evolution [1] (Qianxi)7.15.4 (cont.), 7.15.5, 7.15.6 |  |
| **Wednesday** |  |  |  |  |
| 12:30-13:30 | NR18 AIML [1] (Johan) | NR18 QoE [1] (Tero)- 7.14.1: Work plan ([R2-2304084](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2304084.zip)), LSs from RAN3/SA5 ([R2-2302425](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302425.zip), [R2-2302461](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302461.zip), [R2-2302463](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302463.zip)), running CRs ([R2-2303676](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303676.zip))- 7.14.2: RRC configuration and area scope (e.g. [R2-2303363](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303363.zip), [R2-2303596](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303596.zip), [R2-2303642](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303642.zip)), AS layer buffer size (e.g. [R2-2303677](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303677.zip), [R2-2302886](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302886.zip)) | NR18 SL Relay [1.5] (Nathan)- 7.9.2 U2U (summary in [R2-23xxxxx](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-23xxxxx.zip))- 7.9.3 Service continuity ([R2-2303110](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303110.zip) / [R2-2302923](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302923.zip), [R2-2303006](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303006.zip)) |  |
| 13:30-14:30 | – TBD (Johan) | NR18 Network Energy Saving [1] Early items (Diana)7.3.2: DTX/DRX email discussions 312, 311 | NR18 SL Relay [1.5] (Nathan)- 7.9.3 Service continuity (continued from above)- 7.24.2 TEI18 ([R2-2303746](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303746.zip))- 7.9.5 DRX (if time: [R2-2303488](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303488.zip)) |  |
| NR18 MBS UP [0.75] (Dawid)- Summary of [Post121][607][eMBS] |
| 14:30-15:30 | NR18 MBS UP/CP [0.75] (Dawid)- Summary of [Post121][607][eMBS], cont.- Summary of [Post121][606][eMBS] | NR18 URLLC [0.5] (Diana) | NR18 Pos [2] (Nathan)- 7.2.3 RAT-dependent integrity (summary in [R2-23xxxxx](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-23xxxxx.zip))- 7.2.4 LPHAP (start if time: summary in [R2-23xxxxx](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-23xxxxx.zip)) |  |
| **Thursday** |  |  |  |  |
| 03:30-04:30 | NR18 Other [2], NR18 TEI [1] (Johan) | NR18 XR [2] (Tero)- 7.5.3: DRX for XR (e.g. [R2-2303861](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303861.zip), [R2-2302514](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302514.zip), [R2-2303755](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303755.zip)) , SFN wrap-around (e.g. [R2-2302583](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302583.zip), [R2-2303302](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303302.zip))- 7.5.4.3: Report of [210] ([R2-2304391](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2304391.zip)) | LTE18 IoT NTN [1] (Sergio) - 7.6.1- 7.6.2.1 Report of [103]- 7.6.2.2 Report of [104] |  |
| 04:30-05:30 | NR18 Mobility Enh [2] (Johan) | NR18 XR [2] (Tero)- 7.5.2: UL assistance information for XR (e.g. [R2-2302909](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302909.zip), [R2-2302756](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302756.zip), [R2-2302513](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302513.zip), [R2-2302719](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302719.zip))- 7.5.4.2: Discard operation in XR (e.g. [R2-2303303](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303303.zip), [R2-2303722](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303722.zip)) | LTE18 IoT NTN [1] (Sergio) - 7.6.3.1 Report of [Post121][105]- 7.6.3.2- 7.6.4 |  |
| **Friday** |  |  |  |  |
| 03:30-04:30 | NR18 MIMO evo [0.5] (Erlin) | eRedcap [1] (Mattias)7.19.1 Organizational7.19.2 Enhanced eDRX in RRC\_INACTIVEIncl. AT-meeting email disc summary7.19.3 Further reduced UE complexity in FR1Incl. AT-meeting email disc summary | NR18 SONMDT [0.5] (HuNan) |  |
| 04:30-05:30 | NR18 fCovEnh [0.5] (Johan) | NR18 Pos [2] (Nathan)- 7.2.4 LPHAP (summary in [R2-23xxxxx](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-23xxxxx.zip))- 7.2.5 RAN1 topics ([R2-2302818](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302818.zip))- 7.24.1 TEI18 (if time: [R2-2302413](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302413.zip) / [R2-2303498](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303498.zip) / [R2-2303499](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303499.zip) / [R2-2303500](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303500.zip)) |  |

**WEEK 2**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Time ZoneUTC** | **Web Conference R2 - Main** | **Web Conference R2 - BO1** | **Web Conference R2 - BO2** | **Offline GTW Session****(limited use, only specific issues if needed, need approval by session chair)** |
| **Monday** |  |  |  |  |
| 12:30-13:30 | NR18 Mobility Enh [2] (Johan) | NR18 XR [2] (Tero)- Email discussion report(s) (if any)- Untreated topics from week 1IF time allows:- 7.5.4.3: Further discussion on CG for XR | NR18 Pos [2] (Nathan)- Email discussion checkpoint- 7.24.1 TEI18 (if not done Friday week 1)- 7.24.2 TEI18 (new proposals: [R2-2303123](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303123.zip), [R2-2304007](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2304007.zip)) |  |
| 13:30-14:30 | Maintenance CB (Johan) | NR18 MUSIM [0.5] (Tero)- 7.17.1: Running CRs ([R2-2303266](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303266.zip))- 7.17.2: Reactive/proactive mechanisms (e.g. [R2-2302781](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302781.zip), [R2-2303639](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303639.zip)), UE-initiated Scell/SCG (de)activation (e.g. [R2-2303455](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303455.zip), [R2-2303779](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303779.zip))IF time allows:- 7.17.3: Report of [230]: UE capability restrictions ([R2-2304397](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2304397.zip)) | NR18 UAV [1] (Diana)- 7.8.5. – BRID (AT meeting email 304)- 7.8.4 – subscription based aerial UE ID (if time permits) |  |
| 14:30-15:30 | Maintenance CB (Johan) | NR18 MUSIM CB (Tero)- 7.17.3: Report of [230]: UE capability restrictions ([R2-2304397](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2304397.zip))- 7.17.3: Report of [231]: RAN4 aspects of MUSIM ([R2-2304398](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2304398.zip))Maintenance CB (Sergio) | NR18 Network Energy Saving [1] (Diana)- continuation of email discussion 311 (if needed)- 7.3.5 Mobility (AT meeting email 303) |  |
| **Tuesday** |  |  |  |  |
| 12:30-13:30 | Maintenance CB (Johan) | NR18 QoE [1] (Tero)- 7.14.2: Report of [220]: SRB5 details ([R2-2304395](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2304395.zip))- 7.14.2: RVQoE in NR-DC (e.g. [R2-2303511](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303511.zip)) | Maintenance CB (Diana)- R15-17 UP - AT meeting email output and CRs (301) - R17 SDT related items – AT meeting email output and CRs (302) |  |
| 13:30-14:30 | NR18 CBs (Sasha) | NR18 NTN enh CBs (Sergio)- 7.7.2: Report of [105]- FFS | NR18 CB (Diana) |  |
| 14:30-15:30 | NR18 CBs | NR17/18 CBs (Dawid) | CBs (Qianxi) |  |
| **Wednesday** |  |  |  |  |
| 03:30-04:30 | NR18 CBs (All?) | NR18 CBs (Mattias?) | NR18 CBs (Nathan) |  |
| 04:30-05:30 | CB (All)  | LTE18 IoT NTN CBs CB (Sergio)- FFS | CB (Nathan?) |  |

**Offline Web Conference Schedule**

Number Title Day/Time Place Coordinator

# 4 EUTRA Rel-17 and earlier

Only essential corrections. No documents should be submitted to 4. Please submit to 4.x

## 4.1 EUTRA corrections Rel-17 and earlier

(NB\_IOTenh4\_LTE\_eMTC6-Core; leading WG: RAN1; REL-17; WID: RP-211340)

(UPIP\_EN-DC\_UE; leading WG: RAN3; REL-17; WID: RP‑213669)

(LTE TEI17)

Essential corrections to LTE Rel-17 topics not covered by other agenda items.

(NB\_IOTenh3-Core; leading WG: RAN1; REL-16; started: Jun 18; Completed: June 20; WID: RP-200293); REL-15 and Earlier NB-IoT WIs are in scope but not listed explicitly (long list).

(LTE\_eMTC5-Core; LTE\_eMTC5-Core; leading WG: RAN1; REL-16; started: Jun 18; Completed: June 20; WID: RP192875;), REL-15 and Earlier eMTC WIs are in scope but not listed explicitly (long list).

(LTE\_feMob-Core; leading WG: RAN2; REL-16; started: Jun 18; Completed: June 20; WID: RP-190921);

(LTE\_terr\_bcast-Core, LTE\_DL\_MIMO\_EE-Core, LTE\_high\_speed\_enh2-Core; LTE TEI16 Non-positioning);

REL-15 and Earlier EUTRA WIs are in scope but not listed explicitly (long list), Except V2X and Sidelink WIs and Positioning WIs, which are adressed by AIs below.

NOTE that LTE corrections related to NR WIs or Joint NR LTE WIs should be submitted to NR AIs below.

NOTE that LTE corrections which are the same as an NR correction should be submitted to the respective NR AI (so the NR CR and LTE CR can be treated together).

This Agenda Item is treated in the EUTRA Breakout session

**Online (1st week Tuesday) – QoE configuration release (3)**

Release of QoE configuration/reporting at upper layers when UE moves to IDLE/INACTIVE:

[R2-2303818](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303818.zip) Correction on QoE configuration release Google CR Rel-15 36.331 15.20.0 4925 - F LTE\_QMC\_Streaming-Core

[R2-2303821](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303821.zip) Correction on QoE configuration release Google Inc. CR Rel-16 36.331 16.12.0 4926 - A LTE\_QMC\_Streaming-Core

[R2-2303822](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303822.zip) Correction on QoE configuration release Google CR Rel-17 36.331 17.4.0 4927 - A LTE\_QMC\_Streaming-Core

# 7 Rel-18

## 7.5 XR Enhancements for NR

(NR\_XR\_enh-Core; leading WG: RAN2; REL-18; WID: [RP-230786](https://www.3gpp.org/ftp/TSG_RAN/TSG_RAN/TSGR_99/Docs/RP-230786.zip))

Time budget: 2 TU

Tdoc Limitation: 5 Tdocs

### 7.5.1 Organizational

Including LSs and any rapporteur inputs (e.g. work plan, SA2/SA4 progress reports)

**Online (1st week Monday) – work plan (1)**

[R2-2302715](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302715.zip) Work Plan for Rel-18 WI on XR Enhancements for NR Nokia, Qualcomm (Rapporteurs) Work Plan Rel-18 NR\_XR\_enh-Core

* Endorsed

**Online (1st week Monday) – SA2/SA4 status (2)**

[R2-2302716](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302716.zip) SA2 Status for XR Nokia, Qualcomm (Rapporteurs) discussion Rel-18 NR\_XR\_enh-Core

- Ericsson thinks PDUs in QoS flow doesn’t matter to RAN2 because we only handle DRBs. Nokia clarifies this might impact the EOBI. Ericsson thinks that’s more configuration issue.

- LGE think there may be some impacts to PDCP from the QoS flow.

- Futurewei thinks NOTE in data burst is quite generic and note sure the it is applicable to all.

* Noted (SA2 agreements can be discussed as part of the running Stage-2 CR discussion)

[R2-2302717](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302717.zip) SA4 Status for XR Nokia, Qualcomm (Rapporteurs) discussion Rel-18 NR\_XR\_enh-Core

* Noted (SA4 agreements can be discussed as part of the running Stage-2 CR discussion)

**Online (1st week Monday) – Stage-2 CR (1)**

[R2-2302718](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302718.zip) Stage 2 Overview of XR Enhancements Nokia, Qualcomm (Rapporteurs) draftCR Rel-18 38.300 17.4.0 B NR\_XR\_enh-Core

- Nokia clarifies there will be temporary annex for agreements. Can also consider some XR definitions from the TR.

- Ericsson thinks Stage-2 doesn’t normally capture service parameters, which XR awareness now does. Could have a reference to SA2 instead.

- OPPO would like to clarify the EOBI is only for DL, not for UL.

- Vodafone wonders if we are talking about only GBR traffic since TSCAI is restricted to those at the moment? May need to consider whether this is really the case for all XR traffics. Nokia agrees this could be discussed.

- Huawei thinks we could capture some SI agreements in the Stage-2, e.g. PDU set discard etc.

- Futurewei would like to discuss the data burst definition.

* RAN2 can discuss if XR traffic is only about GBR or can also be non-GBR (this may require RAN3 views)
* AT-meeting discussion [211] to collect comments to the Stage-2 CR (Nokia). Companies are encouraged to provide comments on the CR to rapporteur(s).
* Rapporteur to provide updated version to RAN2#122 for endorsement.

**AT-meeting offline discussions (started after 1st week Monday online)**

* [AT121bis-e][211][XR] Running Stage-2 CR (Nokia)

 Scope: Collect comments for the Stage-2 CR based on [R2-2302718](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302718.zip) and SA2/SA4 agreements.

 Intended outcome: Discussion report in [R2-2304392](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2304392.zip) and (if possible) updated Stage-2 running CR in [R2-2304393](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2304393.zip).

 Deadline: Deadline 4

**By Email [211] or Online (2nd week Wednesday) – Report of [211] (1)**

[R2-2304392](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2304392.zip) Report of [AT121bis-e][211][XR] Running Stage-2 CR (Nokia) Nokia discussion Rel-18 NR\_XR\_enh-Core

[R2-2304393](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2304393.zip) Stage 2 Overview of XR Enhancements Nokia, Qualcomm (Rapporteurs) draftCR Rel-18 38.300 17.4.0 B NR\_XR\_enh-Core

### 7.5.2 XR awareness

Including discussion on XR traffic assistance information from UE to network (e.g. to support the tethering use case), e.g. periodicity, UL traffic arrival information

Including discussion on the use of PDU set information in RAN for DL and UL (e.g. PSI, PSIHI, PSER, PSDB, EDBI) and what (if anything) needs to be specified in RAN2.

**Online (1st week Thursday) – TSCAI vs. PIN DB reporting (2)**

Is TSCAI sufficient, or can e.g. PIN delay budget reporting be used for the UL jitter information in e.g. tethering use case?

[R2-2303800](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303800.zip) Considerations on PDU sets and Traffic assistance information for XR CMCC discussion Rel-18 NR\_XR\_enh-Core

*Observation 1. In case XR device is tethered to associated UE, jitter information of UL PDUs is useful to RAN, e.g. for configuring CG.*

*Proposal 1: PDU Set integrated QoS handling should be taken into considered, e.g. PSDB, PSER, when PSIHI is set, PDB otherwise.*

*Proposal 2: To support the usage of PSI in case of congestion, the PDU set with different PSI even with same QoS value will be set with different timers, and PSDB is the primary parameter for discard.*

*Proposal 3: TSCAI (Time Sensitive Communication Assistance Information) can be reused to provide the Application profile of traffic flow without PDU set, e.g. traffic periodicity and PDU size, to the RAN via NGAP-CP signaling.*

*Proposal 4: The UE is preferred to send UL assistance information to gNB for UL XR traffic.*

*Proposal 5: it is proposed to enable UE to report the PDU set information, e.g., buffer delay, buffer size, importance for the UL PDU set data buffered in the PDCP/RLC.*

* Focus on P3-5

[R2-2303986](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303986.zip) Discussion on UL jitter handling Samsung discussion Rel-18 NR\_XR\_enh-Core

*Observation 1. RAN2 assume that jitter for UL XR traffic may present for tethering use cases.*

*Observation 2. XR device’s tethering use case matches the architecture of Personal IoT Network (PIN) using non-3GPP access (e.g., WiFi, BT).*

*Observation 3. The non-3GPP delay can present UL jitter for XR where the delay occurs between PINE corresponding to a XR device and PEGC corresponding to a smartphone.*

*Observation 4. The non-3GPP delay budget may be requested between UE and 5GC using the UE requested PDU Session Establishment/modification procedure.*

*Proposal 1. RAN2 is kindly asked to discuss that the non-3GPP delay budget defined for Personal IoT Network (PIN) can be utilized for UL jitter for XR.*

*Proposal 2. RAN2 is kindly asked to discuss that the signalling procedure for UL jitter follows the non-3GPP delay budget request procedure between UE and 5GC for Personal IoT Network (PIN).*

* Focus on P1-2

Discussion (of both above)

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**Online (1st week Monday/Thursday) – UL assistance information for XR (3)**

[R2-2302909](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302909.zip) XR awareness enhancements in RAN Intel Corporation discussion Rel-18 NR\_XR\_enh-Core

*Observation 1. During Rel-18 XR SI phase, RAN2 informed SA2 and SA4 multiple times the assumption that PDU set concept is applicable to UL side and UE is able to identify the corresponding PDU set related information. By not responding to this, RAN2 understands that there is no concern/issue identified by SA2 and SA4 on this regard.*

*Observation 2. Legacy release preference information could be used by UE when it knows that the data burst is ending; UE could inform the network its preferred RRC state (i.e., idle, inactive, connected, outOfConnected).*

*The proposals captured are the following:*

*Proposal 1. RAN2 does not need to discuss how UE AS layer is aware of the PDU set related information for UL XR traffic understanding that this decision should be up to SA2/SA4. As previously agreed by RAN2, AS layer only need to assume that the same PDU set concept/information currently defined by SA2 for DL traffic is also visible. No need to inform SA2/SA4 again.*

*Proposal 2. There is no RAN2 impact foreseen from SA2, SA4, CT1 and RAN3 specifications efforts to enable the signaling and mechanism to convey PDU set related information from CN to RAN. How is information is used by RAN, it is left up to network implementation. If this changes after upper layer’s specification of PDU set concept progresses, RAN2 can revisit this agreement.*

*Proposal 3. Define a new assistance information for UE to be able to report jitter information associated to UL XR traffic periodicity. How UE derives this jitter is left up to implementation (similarly as it is captured by SA2 for the jitter associated with the periodicity in DL.*

*Proposal 4. No need to define a new mechanism for UE to inform about the end of burst associated with UL XR traffic.*

* Focus on P2-4

[R2-2302756](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302756.zip) Enhancements for XR awareness CATT discussion Rel-18 NR\_XR\_enh-Core

*Observation 1: SA2 already concluded that the XR burst periodicity of a QoS flow is provided at QoS flow level in TSCAI/TSCAC for both DL and UL QoS flows.*

*Observation 2: UL jitter on encoded frames can be in the range 5ms at the encoder output, i.e. independently of tethering usecase.*

*Observation 3: Considering the UL Jitter range (5ms) such information is useful for the gNB to configure DRX and enhanced CGs.*

*Observation 4: In DL, gNB has all information to measure/monitor the actual PSER and set/adapt the DL BLER to meet the target PSER. No specification impact is foreseen.*

*Observation 5: RAN2 cannot assume that CN would use the “111” mapping alternative when in-order delivery is not required.*

*Observation 6: PSIHI can be set so that RAN only delivers complete PDU Sets over Uu, but it does not mean late (but complete) PDU Sets should not be delivered.*

*Observation 7: PSIHI does not control if a PDU Set can be discarded if it exceeds its PSDB.*

*Observation 8: PSDB can be useful to RAN for other purpose but the discarding operation (e.g. scheduler and/or remaining time reporting) and so cannot be considered as the only parameter controlling the discard operation.*

*Proposal 1: For each configured periodicity of UL XR video bursts, the UL jitter on packets arrival times is measured by the UE (by implementation) and reported to gNB as UAI.*

*Proposal 2: As a baseline, RAN2 reuses the same Jitter Information characterization as SA2, whenever concluded.*

*Proposal 3: UE should maintain the UL PSER measurement and feedback this information to gNB.*

*Proposal 4: RAN2 discusses UE autonomously triggering PDCP duplication upon reporting PSER above a threshold.*

*Proposal 5: RAN2 expresses the need to SA2/SA4 for a new parameter indicating when in-order delivery is not required for a QoS flow.*

*Proposal 6: RAN2 expresses the need to SA2/SA4 for a new parameter, e.g. discardOutdatedPDU-Set, to control whether to discard or not PDU Sets exceeding the PSDB outside congestion.*

*Proposal 7: Similar to the 5QI PDB, SA2 should provide a mean for RAN to convert the PSDB into the equivalent delay budget over the air-interface (AN PSDB).*

* Focus on P1-3, 7

[R2-2302513](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302513.zip) Discussion on XR awareness Qualcomm Incorporated discussion Rel-18 NR\_XR\_enh-Core

*Observation 1. End of burst indication by UE can help network determine whether to terminate DRX active time early and thus saves UE more power.*

*Proposal 1. Introduce uplink end of burst indication by UE.*

*Proposal 2. UE can include UL traffic periodicity of a logical channel in its assistance information to RAN. This information is a complement, not a replacement, to the traffic periodicity provided by CN to RAN.*

*Proposal 3. UE can include its preferred start offset for a CG in its assistance information to RAN.*

*Proposal 4. UE can include average and/or range of jitter in UL traffic associated with a logical channel in its assistance information to RAN.*

*Proposal 5. The assistance information in Proposal 2~4 can be signaled via the RRC message UE Assistance Information.*

* Focus on P1-4

[R2-2302719](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302719.zip) PDU Set and Data Burst Information Nokia, Nokia Shanghai Bell discussion Rel-18 NR\_XR\_enh-Core

*Observation 1: In TR 26.926, statistical properties of P-traces are measured before the XR Server sends them on the network connection. Therefore, statistical properties of V/S/P-traces including size and jitter are independent on the device that hosts the XR server and direction of the data connection.*

*Observation 2: the tethering use case includes a volatile wireless link on the UL path of the XR application, which can contribute to both fixed delay but also additional jitter for on the Uu interface.*

*Observation 3: both delay and jitter information can be useful to RAN for RRM and scheduling decisions.*

*Observation 4: in the tethering use case the added tethering link delay/jitter can further constrain scheduling.*

*Observation 5: The most appropriate information between EOB indicator, End PDU of the PDU Set, PDU Set size, and other PDU Set information depends on the RAN functionality and its implementation.*

*And proposed the following:*

*Proposal 1: UL jitter should be informed to the gNB.*

*Proposal 2: PDU Set information like EOB indicator, End PDU of the PDU Set, PDU Set size is all useful and its use should be left to implementation.*

*Proposal 3: Consider PSER when PSIHI is set, PER otherwise. In other words, the PER criteria should ignore the lost PDUs due to discard triggered by PSIHI.*

*Proposal 4: Consider PSDB when PSIHI is set, PDB otherwise.*

* Focus on P3-4

[R2-2303358](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303358.zip) Views on Enhancements for XR-Awareness Apple discussion Rel-18 NR\_XR\_enh-Core

[R2-2303301](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303301.zip) RAN awareness of XR characteristics MediaTek Inc. discussion Rel-18 NR\_XR\_enh

[R2-2302850](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302850.zip) XR Awareness ZTE Corporation, Sanechips discussion

[R2-2302895](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302895.zip) XR awareness InterDigital discussion Rel-18 NR\_XR\_enh-Core

[R2-2302938](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302938.zip) Discussion on XR awareness Futurewei discussion Rel-18 NR\_XR\_enh-Core

[R2-2302950](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302950.zip) Considerations on XR awareness NEC discussion Rel-18 NR\_XR\_enh-Core

[R2-2302996](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302996.zip) Considerations on delay reporting and UL traffic arrival information KDDI Corporation discussion

[R2-2303081](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303081.zip) Considerations on XR PDU prioritization Sony discussion Rel-18 NR\_XR\_enh-Core

[R2-2303082](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303082.zip) Some considerations on PDU set information and UL traffic arrival information Sony discussion Rel-18 NR\_XR\_enh-Core

[R2-2303124](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303124.zip) Discussion on XR awareness TCL Communication discussion Rel-18

[R2-2303226](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303226.zip) Discussion on PDU sets awareness in RAN Lenovo discussion Rel-18

[R2-2303312](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303312.zip) Discussion on XR awareness OPPO discussion Rel-18 NR\_XR\_enh-Core

[R2-2303578](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303578.zip) Discussion on XR awareness Spreadtrum Communications discussion Rel-18

[R2-2303719](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303719.zip) Discussion on XR awareness Ericsson discussion Rel-18 NR\_XR\_enh

[R2-2303741](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303741.zip) On XR awareness Google Inc. discussion

[R2-2303786](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303786.zip) Discussion on XR-awareness NTT DOCOMO, INC. discussion

[R2-2303930](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303930.zip) Discussion on PDU Set Information on UL for UE ASUSTeK discussion Rel-18 NR\_XR\_enh-Core

[R2-2303998](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303998.zip) Discussion on PDCP duplication based on PDU set importance LG Electronics Inc. discussion NR\_XR\_enh-Core

[R2-2302711](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302711.zip) Discussion on XR awareness Xiaomi Communications discussion

[R2-2302810](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302810.zip) Discussion on XR awareness vivo discussion Rel-18 NR\_XR\_enh-Core

[R2-2303595](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303595.zip) Discussion on UL assistance information for XR traffic Huawei, HiSilicon discussion Rel-18 NR\_XR\_enh-Core

### 7.5.3 XR-specific power saving

Including discussion on solutions for DRX cycles with XR and the potential impacts to RAN1/4 specification (if any).

Including discussion on solutions for SFN wrap-around with XR and the potential impacts to RAN1/4 specification (if any).

**Online (1st week Thursday) – DRX for XR (3)**

Integer DRX cycles with drift adjustments:

[R2-2303861](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303861.zip) DRX cycle alignment for XR Nokia, Nokia Shanghai Bell, CMCC, China Unicom, DENSO CORPORATION, Ericsson, Intel, Google Inc., Huawei, HiSilicon, Samsung, Xiaomi discussion Rel-18 NR\_XR\_enh-Core

*Observation 1: all the solutions have no impact in RAN1 foreseen.*

*Observation 2: Option 1 with non-integer DRX cycle length is more complex from implementation point of view and numerical error remains even though the specification change is small.*

*Observation 3: For the variation of option 2 category with integer DRX cycle length, they differ mainly on the implementation/modelling, but they all result in the same OnDuration waking up pattern.*

*Observation 4: Option 3 with multiple active DRX cycle is more complex from procedure point of view and less power efficient, which defeats the purpose.*

*Proposal 1: Option 1 with non-integer DRX cycle values and option 3 with multiple active configurations are not considered further.*

*Proposal 2: Option 2 based on RRC configuration with integer DRX cycle value(s) is used for the UE to compensate the accumulated drift due to the misalignment of XR and DRX periodicities, considering e.g., adjusting the value of the start offset and/or DRX cycle is changed.*

*Proposal 3: Detailed RRC parameters to be introduced and how/if it would impact the formula in MAC depends on the modelling details with the different sub-options, which can be discussed further in the coming meetings.*

Rational number DRX cycles:

[R2-2302514](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302514.zip) DRX enhancements for XR Qualcomm Incorporated, MediaTek, CATT, vivo, NEC discussion Rel-18 NR\_XR\_enh-Core

*Observation 1. Options that necessitate multiple DRX cycles or multiple on durations within a DRX cycle have non-trivial impacts on RAN1/4 specs but do not offer better performance (e.g. delay, power savings) than others.*

*Proposal 1. Deprioritize options that require multiple DRX cycles or multiple on durations within a DRX cycle.*

*Observation 2. For the option with uniform DRX cycle expressed as a rational number, there are methods to implement modulo operation on rational numbers without rounding errors.*

*Observation 3. The option with uniform DRX cycle expressed as a rational number consistently introduces less amount of mismatch between the start of traffic and DRX cycles across various frame rates than the option with periodic adjustment of drx-StartOffset.*

*Observation 4. The option with uniform DRX cycle expressed as a rational number has much less impact on the legacy DRX formula than the option with periodic adjustments of drx-StartOffset.*

*Observation 5. There is no forward compatibility issue with the option with uniform DRX cycle expressed as a rational number, if the ASN.1 signaling for new DRX cycles is properly designed.*

*Proposal 2. Adopt the option with uniform DRX cycle expressed as a rational number.*

Multiple DRX cycles with integer lengths:

[R2-2303755](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303755.zip) Multiple DRX configuration for XR power saving LG Electronics Inc., InterDigital, NEC, ZTE discussion Rel-18 NR\_XR\_enh-Core

*Observation 1. Multiple active DRX configurations can support non-integer periodicity without high specification impact.*

*Observation 2. Multiple active DRX configurations are beneficial to support multiple flows for XR power saving.*

*Proposal 1. RAN2 support multiple active DRX configurations to resolve non-integer periodicity issue and to support power saving for multiple flows in XR.*

[R2-2303359](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303359.zip) C-DRX enhancements for XR Apple discussion Rel-18 NR\_XR\_enh-Core

**Online (1st week Thursday) – SFN wrap-around issue (2)**

SFN wrap-around:

[R2-2302583](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302583.zip) Discussion on the SFN wrap-around problem for XR Huawei, HiSilicon, Nokia, Nokia Shanghai Bell, Qualcomm Incorporated discussion Rel-18 NR\_XR\_enh

*Observation1: Mismatch will emerge when DRX periodicities are non-divisors of 10240ms at SFN wrap-around.*

*Proposal1: Adopt the Rel-16 IIoT CG enhancement to address the issue of DRX cycle mismatch due to SFN wrap-around.*

* Introduce a sequential variable of DRX cycle for the formula calculating DRX cycles*

* Introduce a reference SFN indicator for DRX configuration*

[R2-2303302](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303302.zip) SFN wrap-around solution for XR DRX MediaTek Inc., CATT, LGE, Ericsson, NEC, DENSO discussion Rel-18 NR\_XR\_enh

*Observation 1: If C-DRX cycle values that are not factors of 10240 ms are introduced in XR, with legacy C-DRX formulas, DRX on-duration will go out of sync with XR traffic after the SFN wrap-around.*

*Observation 2: Extending the legacy DRX formulas by adding a term with a new counter has minimal impact on RAN2 specifications and is mostly aligned with the existing DRX mechanism.*

*Proposal 1: Resolve the SFN wrap-around issue for XR DRX by introducing a new counter in the C-DRX formula which is incremented every time SFN wraps around.*

[R2-2302599](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302599.zip) Discussion on power saving aspects for XR Continental Automotive discussion

[R2-2302710](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302710.zip) Discussing on XR-specific C-DRX enhancements Xiaomi Communications discussion

[R2-2302793](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302793.zip) XR-specific power saving enhancement Google Inc. discussion

[R2-2302811](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302811.zip) Discussion on DRX enhancements for XR Power Saving vivo discussion Rel-18 NR\_XR\_enh-Core

[R2-2302853](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302853.zip) XR-specific power saving ZTE Corporation, Sanechips discussion

[R2-2302896](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302896.zip) XR-specific power saving InterDigital discussion Rel-18 NR\_XR\_enh-Core

[R2-2302910](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302910.zip) Summary of DRX enhancements for XR traffic Intel Corporation, Sony discussion Rel-18 NR\_XR\_enh-Core

[R2-2303132](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303132.zip) Discussion on C-DRX enhancement for XR NEC Corporation discussion Rel-18 NR\_XR\_enh-Core

[R2-2303227](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303227.zip) Discussion of DRX enhancement Lenovo discussion Rel-18

[R2-2303544](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303544.zip) Discussion on DRX enhancements CMCC discussion Rel-18 NR\_XR\_enh-Core

[R2-2303720](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303720.zip) Discussion on XR-specific power saving Ericsson discussion Rel-18 NR\_XR\_enh

[R2-2303867](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303867.zip) Discussion on power saving scheme for XR Samsung discussion Rel-18 NR\_XR\_enh

[R2-2303892](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303892.zip) Discussion on various frame rates supported for XR-specific power saving III discussion

[R2-2304172](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2304172.zip) C-DRX enhancements for XR-specific power saving DENSO CORPORATION discussion Rel-18 NR\_XR\_enh-Core

### 7.5.4 XR-specific capacity improvements

No documents should be submitted to 7.5.4. Please submit to 7.5.4.x

#### 7.5.4.1 BSR enhancements for XR

Including discussion on details of new BSR table(s): Are they fixed or semi-static? Is linear or exponential stepping used? Will there be one or more new tables? Will a new BSR table be per LCH or per LCG? How will the delay/remaining time reporting work?

**Online (1st week Monday) – BSR table solutions (2-3)**

*BSR table: Semi-static or fixed, linear or exponential, how many tables?*

[R2-2302515](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302515.zip) BSR enhancements for XR Qualcomm Incorporated discussion Rel-18 NR\_XR\_enh-Core

*New BSR table*

*Observation 1. The range of a new BSR table can be determined by considering the size range of a XR video frame, which can be determined beforehand based on its encoding rate and frame rate.*

*Observation 2. Only a limited number of new BSR tables (e.g. 12) need to be defined. Each of them can be completely specified by up to 4 parameters.*

*Observation 3. The legacy number of code points can provide sufficiently accurate quantization for anticipated range of new BSR tables.*

*Observation 4. Keeping the number of code points in the new BSR tables the same as in the legacy one can help keep the format of the enhanced BSR MAC CE simple.*

*Observation 5. Parameters and formula used to generate a new BSR table should be defined in a way that different UE implementations can produce the same table.*

*Proposal 1. To reduce UE implementation and testing efforts, pre-define a basic set of new BSR tables in the specification.*

*Proposal 2. To provide more flexibility for network, additional new BSR tables can be generated on demand based on parameters configured by RRC.*

*Proposal 3. All new BSR tables have the same number of code points as in the legacy BSR table.*

*Proposal 4. For UE to generate a new BSR table, network configures minimum buffer size Bmin, whether step size is linear or exponential, and step size factor p.*

*Proposal 5. Buffer size Bk can be generated according to the following formula: B1 = Bmin, and Bk = Bk-1 + floor(BS x p), for k=2, …, N, where BS = Bmin if step sizes are linear and BS = Bk-1 if step sizes are exponential.*

*Proposal 6. Network can configure which BSR table(s) an LCG should use.*

*Proposal 7. An LCG uses its configured new BSR table for reporting if its buffer size is within the range of that BSR table. Otherwise, it uses the legacy BSR table for reporting.*

*Delay status reporting*

*Observation 6. It is not necessary for UE to report delay status of every QoS flow, e.g. those without stringent delay requirements.*

*Proposal 8. Network can configure which LCG(s) should report its delay status.*

*Proposal 9. UE triggers a DSR when an LCG configured for reporting and its associated L2 buffer has data whose remaining time drops below a configured triggering threshold.*

*Proposal 10. The remaining time that triggers a DSR is defined as the duration from the current time/slot till the delay deadline, where*

*- the delay deadline for a PDU in a PDU Set is defined as the time of the first received PDU in the PDU Set plus the PSDB of the associated QoS flow;*

*- the delay deadline for other PDUs is defined as the arrival time of a PDU plus PDB of its associated QoS flow.*

*Proposal 11. Network can also configure an LCG to periodically report its delay status.*

*Proposal 12. Network can configure one or more reporting thresholds for an LCG. For each reporting threshold, UE reports the amount of data whose remaining time is below that threshold.*

*Proposal 13. The remaining time reported in a DSR is the duration between the time when the DSR is transmitted and the delay deadline of the corresponding data (as defined in Proposal 10).*

* Focus on P1-7

- MTK wonders what the compromise here is? QC clarifies this offers benefits of two approaches that were discussed before. Thinks the RRC generation can address particular applications.

- CMCC wonders for P3, do we still use also 5-bit BSR? QC explains this can be clarified after the framework is agreed.

- vivo wonders how this new BSR is used with legacy BSR? Does UE only use the new one or is it in addition with legacy BSR? QC clarifies P7 handles this.

- Xiaomi wonders if we need 12 new BSR tables? QC thinks the number can be discussed and maybe 12 is a lot. Some frame rates are close to each other.

[R2-2303862](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303862.zip) BSR enhancements for XR Nokia, Nokia Shanghai Bell discussion Rel-18 NR\_XR\_enh-Core

*Proposal 1: define a new reference XR BS table in MAC based reference values for video and frame rates, and apply RRC configured scaling factor on top for different data and frame rates.*

*Proposal 2: the scaling factor with the new reference table could be configured per LCG; otherwise if not configured, the LCG uses legacy table.*

*Proposal 3: the new 8-bit BS reference table can be used even if there is only one LCG with data available for transmission.*

*Proposal 4: when the remaining data for the LCG configured with new table falls out of the range of the new table, it falls back to use legacy BSR table, i.e., a LCG configured to use new table can be reported in legacy MAC CE as well.*

*Proposal 5: the MAC CE with new BSR table and the legacy BSR table are identified with different LCIDs, thus the NW knows reported LCGs used legacy table or the new table without other explicit indication.*

*Proposal 6: Define new BSR format to report remaining time information per LCG.*

*Proposal 7: the shortest remaining time of data buffered is reported as the remaining time for the LCG.*

*Proposal 8: both independent PDUs or PDUs conforming a PDU set are supported.*

* Focus on P1-4

[R2-2302851](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302851.zip) BSR enhancements for XR ZTE Corporation, Sanechips discussion

*- BSR format and remaining-time reporting*

*Observation 1: The network can map uplink traffic with a similar characteristics to a given logical channel and further group the logical channels with similar characteristics into an LCG*

*Observation 2: An LCG can also have a single logical channel if XR traffic with unique characteristics (e.g. PSDB) is mapped to this LC (i.e. no other PDU Sets have similar QoS requirements)*

*Observation 3: Current mechanism to use per LCG based BSR reporting has enough flexibility to cater for XR traffic.*

 *- BSR quantization error and multiple BSR tables*

*Observation 4: The amount of over reported buffer data increases with the higher BSR indices (i.e., the error is larger when there is large amount of buffered data at the UE) because the BSR code points towards the higher BSR values are sparser.*

*Observation 5: With just one additional BSR included for the same logical channel, the quantization error for BSR reporting is significantly reduced (even with existing BSR tables)*

*Observation 6: The quantization error is fairly negligible at low values of BSR and hence the gains with the 2nd BSR being included for such small BSR values is also negligible.*

*- BSR format and remaining-time reporting*

*Proposal 1: For XR, the existing BSR reporting mechanism using per LCG based buffer size is reused*

*Proposal 2: The remaining-time for buffered data in UL is reported per LCG by the UE*

*Proposal 3: When more than one LC is mapped to an LCG, then the remaining-time reported by the UE corresponds to the data from the LC that has the shortest remaining-time left for the buffered data in UL*

*Proposal 4: In order to eliminate the uncertainty in the reported value of the remaining-time due to scheduling delays etc, the UE shall include an absolute time reference (e.g. SFN) as the remaining-time reference point*

*- BSR quantization error and multiple BSR tables*

*Proposal 5: UE can include up to 2 BSR indices for the same LCG to reduce the quantization errors for BSR (the first index indicating a coarse value for buffer size and the second index indicating a finer value on top of the value indicated by the first index)*

*Proposal 6: The UE should include the 2nd BSR index only if the quantization error is larger than a threshold that is configured by the network*

*Proposal 7: When two BSR indices per LCG are included (per P5 above), RAN2 should discuss if both the BSR indices should be from the same BSR table or not*

- vivo wonders for P6, does NW provide the threshold and UE determines the table? If so, how does NW know which table UE has used? ZTE clarifies that the inclusion of the 2nd index costs bits, so P6 tries to save the extra bits when they are not needed. Table issue is in P7.

- Samsung thinks there are two ways to include the BSR fields – which is preferred? ZTE explains they have no strong view and this can be discussed in Stage-3.

- LGE wonders if P6 means that this applies for LC or LCGs? ZTE clarifies they would prefer to stick to per-LCG operation.

* Focus on P5-7

Overall discussion (of all above)

- Ericsson has some simulation results with new tables in [R2-2303721](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303721.zip). Would like to clarify the transmission sizes are also impacted by the BSRs. Also thinks the multiple indexes is more complex and doing the semi-static tables is better.

- CATT has sympathy with QC approach but thinks UE will have many tables, and static could just be the legacy one. Can discuss how to do reporting later on.

- Apple wonders whether the current table is sufficient? Is fine with generated table but thinks UE input is needed to make it more accurate.

- Lenovo has some sympathy with ZTE solution since it could reduce overhead.

- Huawei would prefer compromise between QC and ZTE: Use legacy for static and pre-configure new table for XR. Can consider additional indexes for refinement as ZTE proposed to reduce quantization error.

- Intel thinks we should consider the actual values we use, and the number of new tables. Is the maximum size same as legacy etc.?

- ZTE thinks it’s wrong to optimize for the application-generated packet sizes. What’s important also how much is scheduled and how much is pending. Ericsson thinks it’s not random and simulations show otherwise. Thinks multiple indexes will still have higher errors with the large values.

- Vodafone wonders if ZTE solution needs new tables? ZTE clarifies it is not necessary but can work with those. Google thinks ZTE solution would be good.

- Nokia agrees with Ericsson that we could decide on the new table first and then whether we need another BSR reporting on top we can consider after that. Thinks QC proposal does not help UE implementation since they will have to implement both.’

- MTK agrees with Nokia that having both mechanisms doesn’t help UE implementation. Thinks picking one mechanism such as generating table would be useful. Thinks pre-configured table might have issues later on when codecs are updated, and wouldn’t want to generate more tables every released. Lenovo agrees.

- QC thinks the solution with preset tables is reducing UE computation effort. Most cases would use fixed tables.

- LGE thinks it would be good to make common ground on the new BSR table: Do we introduce it only for XR, or also for non-XR UEs? ZTE wonders this is a more general question and we normally don’t make MAC functionalities service-specific.

* Support of new BSR table(s) is based on NW configuration and UE capability. FFS whether the UE capability can apply to non-XR UEs.
* AT-meeting email [212] (QC) to discuss pros and cons of all solutions on the table. Aim to preclude least-supported solution(s). Determine the support level of solutions.

**AT-meeting offline discussions (started after 1st week Monday online)**

* [AT121bis-e][212][XR] BSR solutions (Qualcomm)

 Scope: Attempt to find out which among the BSR table solutions have most support and preclude those with least support (if possible). Should discuss pros and cons of each solution and determine which are acceptable to companies (and why). Can also discuss other general details (e.g. how the BSR tables are used).

 Intended outcome: Discussion report in [R2-2304394](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2304394.zip).

 Deadline: Deadline 2

**Online (2nd week Monday) – Report of [212] (1)**

[R2-2304394](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2304394.zip) Report of [AT121bis-e][212][XR] BSR solutions (Qualcomm) Qualcomm discussion Rel-18 NR\_XR\_enh-Core

[R2-2303114](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303114.zip) Discussion on BSR enhancement for delay information report NEC Corporation discussion Rel-18 NR\_XR\_enh-Core

[R2-2303328](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303328.zip) New BS table(s) and BSR trigger(s) NEC discussion Rel-18 FS\_NR\_XR\_enh

[R2-2303721](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303721.zip) Discussion on BSR enhancements for XR Ericsson discussion Rel-18 NR\_XR\_enh

[R2-2303826](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303826.zip) Discussion on MAC enhancements for XR-specific capacity improvement Huawei, HiSilicon discussion Rel-18 NR\_XR\_enh

[R2-2302757](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302757.zip) New BSR tables and delay report CATT, Dell Technologies discussion Rel-18 NR\_XR\_enh-Core

[R2-2302758](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302758.zip) PDU set BSR CATT, Dell Technologies discussion Rel-18 NR\_XR\_enh-Core

[R2-2303982](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303982.zip) Discussion on BSR enhancements for XR Samsung discussion Rel-18 FS\_NR\_XR\_enh

[R2-2302998](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302998.zip) Considerations on XR capacity improvements KDDI Corporation discussion NR\_XR\_enh-Core [R2-2300641](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2300641.zip)

*(moved from 7.5.4)*

[R2-2303530](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303530.zip) Consideration on BSR enhancement for XR CMCC discussion Rel-18 NR\_XR\_enh-Core

[R2-2304043](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2304043.zip) Discussion on BSR enhancements for XR Google Inc. discussion Rel-18 NR\_XR\_enh-Core

[R2-2304089](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2304089.zip) Discussion on residual resource allocation for XR Google Inc. discussion NR\_XR\_enh-Core

[R2-2303701](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303701.zip) Discussion on BSR Enhancements and Delay Information Meta discussion Rel-18 NR\_XR\_enh-Core

[R2-2302615](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302615.zip) BSR enhancements for XR MediaTek Inc. discussion Rel-18

[R2-2302527](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302527.zip) Discussion on BSR enhancements for XR Futurewei discussion Rel-18 NR\_XR\_enh-Core

[R2-2302709](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302709.zip) Discussing on BSR enhancements for XR capacity Xiaomi Communications discussion

[R2-2302812](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302812.zip) Discussion on BSR enhancements for XR vivo discussion Rel-18 NR\_XR\_enh-Core

[R2-2302911](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302911.zip) BSR enhancements for XR Intel Corporation discussion Rel-18 NR\_XR\_enh-Core

[R2-2302972](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302972.zip) Discussion on BSR enhancements for XR TCL Communication Ltd. Discussion

[R2-2303203](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303203.zip) Discussion on UE Feedback enhancements Lenovo discussion Rel-18 NR\_XR\_enh-Core

[R2-2303313](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303313.zip) Discussion on BSR enhancement for XR OPPO discussion Rel-18 NR\_XR\_enh-Core

[R2-2303343](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303343.zip) Considerations on new buffer status report table FGI discussion

[R2-2303360](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303360.zip) Views on BSR Enhancements for XR Apple discussion Rel-18 NR\_XR\_enh-Core

[R2-2303584](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303584.zip) BSR enhancement on XR Spreadtrum Communications discussion Rel-18

[R2-2303629](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303629.zip) BSR enhancements for XR Interdigital Inc. discussion Rel-18 NR\_XR\_enh-Core

[R2-2304008](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2304008.zip) Discussion on BSR enhancement and delay information report LG Electronics Inc. discussion Rel-18 NR\_XR\_enh-Core

[R2-2303010](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303010.zip) Discussions on delay information reporting Fujitsu discussion Rel-18 NR\_XR\_enh-Core

[R2-2303083](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303083.zip) Considerations on XR UL PDU set information Sony discussion Rel-18 NR\_XR\_enh-Core

[R2-2303889](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303889.zip) Discussion on BSR enhancements for XR III discussion NR\_XR\_enh-Core

#### 7.5.4.2 Discard operation for XR

Including discussion how to achieve PDU-set based discard in PDCP layer for UL and DL (e.g. do we use discard timer or have another way to achieve the discard) and whether that can have impact to RLC layer.

Including discussion on impact of PSI and PSIHI for PDU discard at UE and what (if anything) needs to be specified in RAN2.

**Online (1st week Thursday) – PDU-set based discard mechanism in PDCP (2)**

[R2-2303303](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303303.zip) PDU discard based on PSDB and PDU set importance MediaTek Inc. discussion Rel-18 NR\_XR\_enh [R2-2301371](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2301371.zip)

*Observation 1: A partial/complete PDU-set discard operation when the PSDB is exceeded can be useful to reduce congestion and priortise new data in some cases.*

*Observation 2: In case of differential encoded video, PDB/PSDB expiry cannot be used as a trigger for PDU discard as the information is still needed to decode future frames.*

*Observation 3: In cases where PSDB expiry based PDU discard cannot be used (e.g. differentially encoded information), it is useful to drop all earlier PDU sets in the transmission buffer of the transmitter when a PDU set of high importance arrives, to ease congestion and to ensure that newly arriving independent video frames can be provided to the end-user in a timely manner.*

*Observation 4: Window stalls at the receiver entity as a consequence of discarded PDUs by the transmitter entity is undesirable for delay-sensitive XR traffic.*

*Proposal 1: PDU discard based on PSDB expiry can be left to NW implementation on the downlink.*

*Proposal 2: PDU discard based on PSDB expiry is modelled using the existing PDCP discard timer for the uplink.*

*Proposal 3: In cases where jitter exists for the uplink, expiry of the PDCP discard timer of a PDU that belongs to a PDU set can trigger discard of all PDUs that belong to that PDU-set.*

*Proposal 4: Arrival of a PDU set with high importance can trigger the discard of all PDU sets that arrived earlier.*

*Proposal 5: The receiver entity is notified of any PDUs that are discarded by the transmitter entity to avoid window stalls.*

* Focus on P2-P5

[R2-2303722](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303722.zip) Discussion on PDU Discard Ericsson discussion Rel-18 NR\_XR\_enh

*Proposal 1 UE PDU Set discard timer is used by the UE if configured by the network.*

*Proposal 2 When PDU Set discard timer is configured the PDCP discard timer is disabled.*

*Proposal 3 One PDU Set discard timer is started for each PDU Set.*

*Proposal 4 Allow RRC to change discard timer values*

*Proposal 5 The NW may configure the PDU set discard timer with at least 2 timer values which the UE will apply when no PSI levels are configured by the network.*

*Proposal 6 If the UE cannot identify the PSI level of the PDU Sets, the UE applies the same timer values as when no PSI levels are configured by the NW, if the timer value was configured.*

*Proposal 7 If the UE supports PSI identification and can identify the PSI levels, the NW may configure PSI levels so that:*

*1. Each PSI level may be associated with at least 2 different PDU set discard timer values.*

*2. PSI levels are defined in order of importance: the first PSI level is the most important while the last defined PSI is the least important.*

*Proposal 8 PDCP CEs are used to indicate which PDU Set discard timer value is applied.*

*Proposal 9 PDCP CE may, in addition, also indicate the PSI and PDU set discard timer value when PSIs are used*

* Focus on P3, P8-9

[R2-2303801](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303801.zip) Discard operation for XR CMCC discussion Rel-18 NR\_XR\_enh-Core

[R2-2303788](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303788.zip) Discussion on PDU discard NTT DOCOMO, INC. discussion

[R2-2303700](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303700.zip) Discussion on PDU Discard Operation for XR Meta discussion Rel-18 NR\_XR\_enh-Core

[R2-2302720](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302720.zip) Discard operation for XR Nokia, Nokia Shanghai Bell discussion Rel-18 NR\_XR\_enh-Core

[R2-2302759](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302759.zip) Discard Operation for XR CATT discussion Rel-18 NR\_XR\_enh-Core

[R2-2302854](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302854.zip) PDU discard for XR ZTE Corporation, Sanechips discussion

[R2-2302964](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302964.zip) Discard Operation for XR Samsung R&D Institute India discussion Rel-18

[R2-2302516](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302516.zip) Discussion on discard operation for XR Qualcomm Incorporated discussion Rel-18 NR\_XR\_enh-Core

[R2-2302708](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302708.zip) Discussing on PDU discarding of XR traffic Xiaomi Communications discussion

[R2-2302813](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302813.zip) Discussion on discard operation for XR vivo discussion Rel-18 NR\_XR\_enh-Core

[R2-2302897](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302897.zip) Discard operation for XR InterDigital discussion Rel-18 NR\_XR\_enh-Core

[R2-2302912](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302912.zip) Discard operation for XR Intel Corporation discussion Rel-18 NR\_XR\_enh-Core

[R2-2302937](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302937.zip) Discussion on discard operation for XR Futurewei discussion Rel-18 NR\_XR\_enh-Core

[R2-2302970](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302970.zip) Discussions on discard operation for XR TCL Communication Ltd. discussion

[R2-2303011](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303011.zip) Discussions on PDU discard based on PDU Set Importance Fujitsu discussion Rel-18 NR\_XR\_enh-Core

[R2-2303199](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303199.zip) Discussion on discarding operation for XR Motorola Mobility France S.A.S discussion Rel-18 NR\_XR\_enh-Core

[R2-2303314](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303314.zip) Discussion on discard operation for XR OPPO discussion Rel-18 NR\_XR\_enh-Core

[R2-2303329](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303329.zip) PDU discard NEC discussion Rel-18 FS\_NR\_XR\_enh

[R2-2303361](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303361.zip) Views on PDU Discard Operation for XR Apple discussion Rel-18 NR\_XR\_enh-Core

[R2-2303579](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303579.zip) Discussion on XR discard Spreadtrum Communications discussion Rel-18

[R2-2303830](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303830.zip) Discussion on PDU set discarding for XR traffic Huawei, HiSilicon discussion Rel-18 NR\_XR\_enh

[R2-2303931](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303931.zip) Discussion on PDU Set discard in PDCP layer for DL and UL ASUSTeK discussion Rel-18 NR\_XR\_enh-Core

[R2-2303999](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303999.zip) Discussion on the discard for XR LG Electronics Inc. discussion NR\_XR\_enh-Core

#### 7.5.4.3 Configured Grant enhancements for XR

Including RAN2-specific aspects of Multiple Configured Grant (CG) PUSCH transmission occasions in a period of a single CG PUSCH configuration.

Including RAN2-specific aspects of dynamic indication of unused CG PUSCH occasion(s) based on Uplink Control Information (UCI) by the UE.

Including discussion on how retransmission-less CG defined for NTN could work with XR (as per RAN#99 discussion).

NOTE: Topics other than retransmission-less CG may be deprioritized in this meeting.

**AT-meeting offline discussions (started at meeting start)**

* [AT121bis-e][210][XR] Retransmission-less CG for XR (Huawei)

 Scope: Discussion whether Rel-17 NTN solution for retransmission-less CG can work for XR (based on contributions to this meeting, e.g. [R2-2302584](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302584.zip)). Can also provide draftCR illustrating the changes.

 Intended outcome: Discussion report in [R2-2304391](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2304391.zip)

 Deadline: Deadline 1

**Online (1st week Thursday) – Report of [210] (1)**

[R2-2304391](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2304391.zip) Report of [AT121bis-e][210] Retransmission-less CG for XR (Huawei) Huawei discussion Rel-18 NR\_XR\_enh-Core

[R2-2302584](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302584.zip) Discussion on retransmission-less CG for XR Huawei, Apple, Google, HiSilicon, Intel, Lenovo, MediaTek, Meta, Nokia, Nokia Shanghai Bell, Qualcomm Incorporated discussion Rel-18 NR\_XR\_enh

[R2-2302517](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302517.zip) Enhancements to configured grant for XR Qualcomm Incorporated discussion Rel-18 NR\_XR\_enh-Core

[R2-2302760](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302760.zip) On the need for retransmission-less CG for XR CATT discussion Rel-18 NR\_XR\_enh

[R2-2302792](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302792.zip) Configured Grant enhancements for XR Google Inc. discussion

[R2-2302852](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302852.zip) Configured Grant enhancements for XR ZTE Corporation, Sanechips discussion

[R2-2302898](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302898.zip) Configured Grant enhancements for XR InterDigital discussion Rel-18 NR\_XR\_enh-Core

[R2-2303084](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303084.zip) Retransmission-less CG for some XR traffic Sony discussion Rel-18 NR\_XR\_enh-Core

[R2-2303085](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303085.zip) Configured Grant enhancements for XR Sony discussion Rel-18 NR\_XR\_enh-Core

[R2-2303198](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303198.zip) Discussion of CG enhancements Lenovo discussion Rel-18 NR\_XR\_enh-Core

[R2-2303315](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303315.zip) Discussion on configured grant enhancement for XR OPPO discussion Rel-18 NR\_XR\_enh-Core

[R2-2303362](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303362.zip) Views on Configured Grant Enhancements for XR Apple discussion Rel-18 NR\_XR\_enh-Core

[R2-2303839](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303839.zip) Configured Grant enhancements for XR Ericsson discussion Rel-18 NR\_XR\_enh

[R2-2303863](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303863.zip) CG enhancements for XR Nokia, Nokia Shanghai Bell discussion Rel-18 NR\_XR\_enh-Core

[R2-2303891](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303891.zip) Discussion on Configured Grant enhancements for XR III discussion NR\_XR\_enh-Core

[R2-2304009](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2304009.zip) Discussion on retransmission-less CG for XR LG Electronics Inc. discussion Rel-18 NR\_XR\_enh-Core

[R2-2304120](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2304120.zip) Retransmission-less CG for XR MediaTek Inc. discussion Rel-18

[R2-2302814](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302814.zip) Discussion on CG enhancements for XR vivo discussion Rel-18 NR\_XR\_enh-Core

[R2-2303987](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303987.zip) Multiple CG occasions and retransmission-less CG Samsung discussion Rel-18 NR\_XR\_enh-Core

[R2-2303531](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303531.zip) Consideration on Configured Grant enhancement for XR CMCC discussion Rel-18 NR\_XR\_enh-Core

## 7.14 Enhancement on NR QoE management and optimizations for diverse services

(NR\_QoE\_enh-Core; leading WG: RAN3; REL-18; WID: RP-223488)

Time budget: 1 TU

Tdoc Limitation: 2 tdocs

### 7.14.1 Organizational

Including LSs and any rapporteur inputs (e.g. work plan)

**Online (1st week Wednesday) – Work plan (1)**

[R2-2304084](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2304084.zip) Revised Work Plan for Rel-18 NR QoE Enhancement China Unicom Work Plan NR\_QoE\_enh-Core

**Online (1st week Wednesday) – LSs (3+1)**

[R2-2302425](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302425.zip) LS on assistance information for handling of QoE reporting upon RAN overload (R3-231028; contact: Huawei) RAN3 LS in Rel-18 NR\_QoE\_enh-Core To:RAN2

[R2-2302461](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302461.zip) Reply LS on QoE measurements in RRC IDLE/INACTIVE states (S5-232760; contact: Huawei) SA5 LS in Rel-18 NR\_QoE\_enh-Core To:RAN2, RAN3 Cc:SA4

[R2-2302463](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302463.zip) LS on Approval of eQoE CRs for NR (S5-232997; contact: Ericsson) SA5 LS in Rel-18 eQoE To:RAN2, RAN3, SA4, CT1, CT4

**TBD: AT-meeting offline discussions (started earliest after 1st Week Wednesday session)**

* [AT121bis-e][221][QoE] LS replies to QoE (Huawei)

 Scope: Determine whether to send replies to LSs received from other groups (e.g. RAN3, SA4 and SA5) and attempt to provide RAN2 reply. If LS reply is agreeable, discussion should also determine what to reply and what the target groups are (for To and Cc).

 Intended outcome: LS out to SA4/SA5 in [R2-2304396](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2304396.zip)

 Deadline: Deadline 4

**By Email [221] – Report of [221] (1+3)**

[R2-2304396](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2304396.zip) [DRAFT] Reply LS on QoE measurements in RRC IDLE/INACTIVE Huawei, HiSilicon LS out Rel-18 NR\_QoE\_enh-Core To:SA4, SA5 Cc:RAN3, CT1, CT4

Replies to SA4/5 LSs:

[R2-2303597](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303597.zip) [DRAFT] Further reply LS to SA4 on QoE measurements in RRC IDLE/INACTIVE Huawei, HiSilicon LS out Rel-18 NR\_QoE\_enh-Core To:SA4 Cc:RAN3, SA5

*(moved from 7.14.2)*

[R2-2303599](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303599.zip) [DRAFT] Further reply LS to SA5 on QoE measurements in RRC IDLEINACTIVE states Huawei, HiSilicon LS out Rel-18 NR\_QoE\_enh-Core To:SA5 Cc:RAN3, SA4

*(moved from 7.14.2)*

[R2-2304019](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2304019.zip) Draft reply LS on eQoE CRs for NR Lenovo LS out Rel-18 eQoE, NR\_QoE\_enh-Core To:SA5 Cc:RAN3, SA4, CT1, CT4

**Online (1st week Wednesday) – Running CRs (1)**

[R2-2303676](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303676.zip) Running CR for QoE measurements Ericsson draftCR Rel-18 38.331 17.4.0 NR\_QoE\_enh-Core

* ?? Noted (can be further refined based on this meeting decisions)
* ?? Companies are encouraged to provide comments on the CR to rapporteur(s) offline.
* ?? Stage-3 and RRC CR rapporteurs to provide updated version to RAN2#122 for endorsement.

### 7.14.2 QoE measurements in RRC\_IDLE INACTIVE

Including discussion on whether something on MBS QoE configuration can be provided in RRCRelease-message, and how would such indications work with configuration provided in RRCReconfiguration.

Including discussion on AS layer buffer size (e.g. how many values, what is the minimum value).

Including discussion on what AS layer stores in IDLE/INACTIVE and what exactly is sent to AL.

Including discussion on handling area scope for MBS QoE and how long will UE retain the QoE configuration in IDLE/INACTIVE.

**Online (1st week Wednesday) – RRC configuration details and area scope (2-3)**

[R2-2303363](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303363.zip) QoE Measurements in IDLE/INACTIVE States Apple discussion Rel-18 NR\_QoE\_enh-Core

*Proposal 1: RRC-Reconfiguration and RRC-Resume can be used to configure multiple application layer measurement configurations (as in Rel-17), and RRC-Release message can be used to indicate which of these configured application layer measurement configurations should be used by the UE while it is in RRC\_IDLE or RRC\_INACTIVE.*

*Proposal 2: RAN2 should confirm the agreed baseline that, in Rel-18 the UE does not proactively enter RRC\_CONNECTED state just for the sake of QoE reporting.*

*Proposal 3: When the UE moves to RRC-CONNECTED state and indicates that there is QoE measurement available in RRCResumeComplete message:*

*• The network can request the UE to report the stored QoE measurements using UEInformationRequest message.*

*• The UE can report the stored QoE measurements using UEInformationResponse message.*

* Focus on P1, 3

[R2-2303596](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303596.zip) Discussion on QoE measurements for MBS broadcast services Huawei, HiSilicon discussion Rel-18 NR\_QoE\_enh-Core

*MBS QoE configuration*

*Proposal 1: RRC Release message is not used for configuring QoE measurements for MBS broadcast.*

*Observation 1: Only a limited number of UEs receiving MBS broadcast service needs to be configured for QoE measurements for the network to obtain a good representation of the service quality in a specific area.*

*Observation 2: There are numerous aspects and issues which would have to be resolved in order to support QoE configuration via broadcast, i.e. signalling details, UE procedures, signaling overhead issues, impact to MBS UEs and MBS performance, coordination between dedicated and common configurations etc.*

*Proposal 2: QoE measurement configuration via broadcast signaling (e.g. System Information, MCCH/MTCH etc.) is not supported.*

*MBS QoE measurements reporting*

*Observation 3: Resuming/setting up an RRC connection just for the sake of reporting QoE brings no benefits while it causes MBS broadcast service performance deterioration, increases signaling overhead, impacts UE battery life and brings additional complexity.*

*Proposal 3: The UE does not setup/resume RRC connection just for QoE reporting, i.e. the QoE reports are sent to the network when the UE moves to RRC\_CONNECTED state due to other reasons.*

*Proposal 4: If the UE is in RRC\_CONNECTED and receives QoE report for MBS broadcast from the application layer, the UE sends the report according to the QoE reporting procedure from Rel-17, i.e. the report is not stored but sent immediately (unless paused).*

*QoE configuration storage*

*Proposal 5: The network indicates per QoE configuration whether the QoE configuration is applicable to RRC\_INACTIVE/RRC\_IDLE states (i.e. that the QoE measurements are supposed to be gathered also in RRC\_IDLE/INACTIVE).*

*Proposal 6: For QoE configurations applicable to RRC IDLE, the UE AS layer stores all the RRC parameters except for QoE container.*

*Proposal 7: For QoE configurations applicable to RRC IDLE, the UE APP layer stores all the parameters forwarded from AS layer.*

*Buffering of QoE reports*

*Proposal 8: Timer based QoE configuration release is not supported, i.e. the UE stores the IDLE/INACTIVE QoE configuration until it is released by the network.*

*Proposal 9: As a default behavior, when the UE’s buffer for storing QoE reports is full and a new report arrives, the UE should discard older report(s) to make room for the new one.*

*Proposal 10: Assistance information agreed by RAN3 for handling of QoE reporting upon RAN overload can be forwarded to the UE for the UE to decide which reports to discard in case the UE’s QoE buffer becomes full.*

*Observation 4: The memory requirements for storing QoE reports generated for MBS broadcast in RRC\_IDLE/INACTIVE states will be much higher than in case of pause due to RAN overload.*

*Proposal 11: RAN2 will introduce UE capability signaling for support of QoE reports buffer size(s) larger than 64kB. Exact values to be supported FFS.*

*Area scope checking*

*Observation 5: SA4 specifications already provide a readily available solution for handling QoE measurement area scope for MBS broadcast services.*

*Observation 6: for QoE measurements in RRC IDLE/IANCTIVE state, it is not possible for the network to perform area scope checking.*

*Proposal 12: Area scope verification for QoE collection for MBS broadcast should be performed by the application layer.*

*Selection of UEs for MBS QoE configuration*

*Observation 7: Forcing the gNB to utilize blind configuration of MBS broadcast QoE to all MBS capable UEs is sub-optimal for both the UE and the network in terms of signaling overhead, memory/storage requirements, predictability of receiving QoE measurements etc.*

*Proposal 13: RAN2 should investigate the means for the gNB to identify which UEs should be provided with MBS broadcast QoE configuration for a specific MBS session via, e.g.:*

*3. Allowing the network to indicate to the UE the IDs of MBS broadcast sessions for which it is interested in receiving QoE measurements.*

*4. The UE indicating to the network when the UE is configured with or receiving/starting to receive the indicated MBS sessions.*

* Focus on P1-2, 8, 12

[R2-2303642](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303642.zip) On QoE measurements in RRC IDLE and INACTIVE Nokia, Nokia Shanghai Bell discussion Rel-18 NR\_QoE\_enh-Core

*Observation 1: The area scope of a QoE configuration can be provided within the QoE configuration container in UE’s Application layer, which is already supported in current specification.*

*Observation 2: The area scope can be checked in UE’s application layer at the start of a QoE session.*

*Proposal 1: RRCRelease can be used to inform UE the continuity of application layer measurement configurations for UEs being in RRC idle and RRC inactive state.*

*Proposal 2: The gNB can indicate the RRC ID(s) for the QoE collection to be maintained/continued in RRCRelease message.*

*Proposal 3: RAN2 to discuss how to store the QoE configurations for MBS based on the conclusion of Area Scope handling for UE in RRC Idle/inactive.*

*Proposal 4: The gNB can select MBS UEs for QoE measurement either in a randomized way or only select UEs that experience poor MBS service experience.*

*Proposal 5: Based on SA5 reply LS, RAN2 can confirm the agreement that AS layer should discard the QoE data if the AS layer buffer is full.*

*Proposal 6: If the AS layer QoE buffer is full, the UE can overwrite the old QoE data when it receives a new QoE report from the application layer. This principle can be predefined in the specification.*

*Proposal 7: When UE moves to RRC idle/inactive, the UE should perform the area scope check based on the area scope information provided in Application layer.*

*Proposal 8: RAN2 to further discuss whether the area scope check can be done in UE’s application layer, with the restriction that the checking can only be triggered at the start of a QoE session.*

*Proposal 9: When UE’s QoE buffer is full, the UE is allowed to trigger RRC Resume or Setup to report the QoE data if it is allowed by network.*

* Focus on P7-8

**Online (1st week Wednesday) – AS layer buffer size (2)**

[R2-2303677](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303677.zip) QoE measurements in RRC\_INACTIVE and RRC\_IDLE Ericsson discussion Rel-18 NR\_QoE\_enh-Core

*Observation 1 Agreeing on the memory size for storing of QoE reports at the end of the WI when the UE capabilities are discussed may be too late in case another option needs to be considered.*

*Observation 2 The AS layer would need to inform the application of RRC state changes or at least changes between connected and non-connected state if the LocationFilter would be used for area handling.*

*Observation 3 The LocationFilter would need to be updated to include also TA and PLMN if the LocationFilter would be used for area handling.*

*Observation 4 The AS layer would need to inform the application of cell changes if the LocationFilter is used for area handling.*

*Observation 5 The application may need to inform the UE AS that it needs to subscribe to changes of RRC state and changes of cell, tracking area or PLMN.*

*Observation 6 Any type of configuration related to the area handling would need to be sent to the application if the LocationFilter would be used for area handling.*

*Observation 7 If the application would handle the area by means of the LocationFilter, every application would need to implement the area handling.*

*Observation 8 If the UE AS would handle the area, it has already all the necessary information and all the additional impacts listed above would not be needed.*

*Observation 9 No benefits can be identified by allowing the application to handle the area.*

*Proposal 1 Provide a QoE configuration for RRC INACTIVE/IDLE states within the RRCRelease message.*

*Proposal 2 Increase the UE AS memory to at least 512 kB to accommodate larger amounts of buffered QoE reports in the RRC\_INACTIVE/RRC\_IDLE states*

*Proposal 3 Another option, when the UE AS memory becomes full while it is in RRC\_INACTIVE or RRC\_IDLE state, could be for the UE to store the buffered QoE reports in the UE application layer.*

*Proposal 4 Upon reconnecting to the RRC\_CONNECTED state, a UE could indicate to the network the total size of the QoE reports buffered while a UE was in a non-RRC\_CONNECTED state.*

*Proposal 5 UE should check whether the target gNB is within the PLMN identity list upon reconnecting from RRC\_IDLE to RRC\_CONNECTED.*

*Proposal 6 The UE AS layer is responsible for the area handling when a UE is in RRC\_IDLE or RRC\_INACTIVE.*

* Focus on P2-4

[R2-2302886](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302886.zip) Discussion on support of QoE measurements in RRC\_IDLE and RRC\_INACTIVE Lenovo discussion Rel-18 NR\_QoE\_enh-Core

*Proposal 1: The gNB uses the MBSInterestIndication message to determine and select qualified UEs for MBS broadcast QoE measurements.*

*Proposal 2: The UE keeps and continues the MBS broadcast QoE configurations in RRC\_IDLE or RRC\_INACTIVE which have not been explicitly released by the gNB per RRCRelease message.*

*Proposal 3: Support the option to send MBS broadcast QoE measurements which are collected in RRC\_INACTIVE during SDT procedure.*

*Proposal 4: Start discussion on the factors to consider for selecting the minimum AS layer buffer size for storing MBS broadcast QoE measurements in RRC\_IDLE/RRC\_INACTIVE.*

*Proposal 5: Agree on 64 kBytes as minimum value if no consensus can be reached on the factors to consider for selecting the minimum AS layer buffer size.*

* Focus on P4-5

[R2-2303532](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303532.zip) Consideration on QoE measurement in RRC\_IDLE and RRC\_INACTIVE CMCC discussion Rel-18 NR\_QoE\_enh-Core

[R2-2303780](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303780.zip) Considerations on QoE measurements in RRC\_IDLE and RRC\_INACTICE China Telecom discussion

[R2-2304086](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2304086.zip) Discussion on QoE measurements in RRC\_IDLE and INACTIVE states China Unicom discussion NR\_QoE\_enh-Core

[R2-2303319](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303319.zip) Discussion on QoE measurement in RRC\_IDLE and RRC\_INACTIVE Samsung discussion Rel-18

[R2-2303108](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303108.zip) Discussion on QoE measurement in IDLE and INACTIVE ZTE Corporation, Sanechips discussion Rel-18 NR\_QoE\_enh-Core

[R2-2303510](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303510.zip) QoE collection for IDLE and Inactive state Qualcomm Incorporated discussion NR\_SL\_relay\_enh-Core

[R2-2304037](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2304037.zip) Discussion on QoE measurements in RRC IDLE and INACTIVE state CATT discussion Rel-18 NR\_QoE\_enh-Core

### 7.14.3 Rel-17 leftover topics for QoE

Including discussion on Rel-17 leftover topics as agreed in previous meetings.

This agenda item will not be treated in this meeting (except for LSs received from other WGs).

### 7.14.4 Support of QoE measurements for NR-DC

Including discussion on the new SRB (“SRB5”) configuration and procedure details (e.g. leg change, RRC configuration, QoE reporting aspects, etc.).

Including discussion on how to achieve splitting of QoE configuration identities between MN and SN.

Including discussion on different m-based QoE configurations for MN/SN (pending RAN3 decisions).

**AT-meeting offline discussions (started at meeting start)**

* [AT121bis-e][220][QoE] SRB5 configuration and usage (China Unicom)

 Scope: Discuss how the SRB5 is configured by MN/SN, e.g. how switching the reporting leg and QoE pause work. Attempt to provide proposal on agreeable details as well as details requiring further discussion.

 Intended outcome: Discussion report in [R2-2304395](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2304395.zip)

 Deadline: Deadline 2

**Online (2nd week Tuesday) – Report of [220] (1)**

[R2-2304395](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2304395.zip) Report of [AT121bis-e][220][QoE] SRB5 configuration and usage (China Unicom) China Unicom discussion Rel-18 NR\_QoE\_enh-Core

**Online (2nd week Tuesday) – QoE in NR-DC (if not handled by email discussion)**

[R2-2303511](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303511.zip) RAN2 issues to support QoE collection in NR-DC Qualcomm Incorporated discussion NR\_QoE\_enh-Core

*Container based QoE reporting in NR-DC operation*

*Observation 1: There is no bearer mapping on UE side for QoE data reporting.*

*Observation 2: There is no different QoS requirements for QoE data, then no different bearers needed for QoE reporting.*

*Observation 3: In Rel-17, RVQoE is configured to the UE only when the corresponding container-based QoE is provided to the UE and share the same RRC ID as corresponding container-based QoE.*

*Proposal 1: For container based QoE reporting, only one bearer, i.e. either SRB4 or SRB5 is configured at a given time for QoE reporting in NR-DC operation.*

*Proposal 2: QoE reporting leg change can be achieved by existing bearer type change, and then no explicit leg indication needed.*

*Proposal 3: RVQoE configuration should be generated by the RAN node which has the knowledge of the corresponding container QoE, and can be configured using SRB1 or SRB3 to the UE.*

*For RVQoE collection in NR-DC operation*

*Observation 4: RVQoE measurement should be sent to the RAN node which provide(s) bearers carrying the application collecting the RVQoE report(s).*

*Proposal 4: The receiving RAN node will determine the appropriate RAN node the RVQoE measurement should be sent based on the received QoS flow ID(s) and then forward to the appropriate RAN node if needed.*

*Proposal 5: Only one bearer is configured for RVQoE reporting and the bearer is same as the bearer configured for container-based QoE reporting.*

* Focus on P3-5

By Email [220] (10)

[R2-2302951](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302951.zip) Discussion on SRB5 configuration and procedure NEC discussion Rel-18 NR\_QoE\_enh-Core

[R2-2303109](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303109.zip) Discussion on QoE measurement for NR-DC ZTE Corporation, Sanechips discussion Rel-18 NR\_QoE\_enh-Core

[R2-2303309](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303309.zip) Support of QoE measurements for NR-DC LG Electronics Inc. discussion Rel-18

[R2-2303320](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303320.zip) Discussion on switching reporting leg in NR-DC Samsung discussion Rel-18

[R2-2303364](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303364.zip) Views on QoE Reporting for NR-DC Apple discussion Rel-18 NR\_QoE\_enh-Core

[R2-2303598](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303598.zip) Discussion on QoE measurements in NR-DC Huawei, HiSilicon discussion Rel-18 NR\_QoE\_enh-Core

[R2-2303643](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303643.zip) QoE configuration and reporting in NR-DC Nokia, Nokia Shanghai Bell discussion Rel-18 NR\_QoE\_enh-Core

[R2-2303678](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303678.zip) QoE measurements in NR-DC Ericsson discussion Rel-18 NR\_QoE\_enh-Core

[R2-2304038](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2304038.zip) Discussion on support of QoE measurement for NR-DC CATT discussion Rel-18 NR\_QoE\_enh-Core

[R2-2304085](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2304085.zip) Discussion on QoE configuration and reporting for NR-DC China Unicom discussion NR\_QoE\_enh-Core

### 7.14.5 Other topics

Including discussion on the continuity of legacy QoE measurement job for streaming and MTSI service during intra-5GC inter-RAT handover process.

Including any other QoE enhancement discussion (e.g. service type aspects).

This agenda item will not be treated in this meeting (except for LSs received from other WGs).

## 7.17 Dual Transmission/Reception (Tx/Rx) Multi-SIM for NR

(NR\_DualTxRx\_MUSIM-Core; leading WG: RAN2; REL-18; WID: [RP-230751](https://www.3gpp.org/ftp/TSG_RAN/TSG_RAN/TSGR_99/Docs/RP-230751.zip))

Time budget: 0.5 TU

Tdoc Limitation: 3 tdocs

### 7.17.1 Organizational

Including LSs and any rapporteur inputs (e.g. work plan)

**Online (1st week Tuesday) – LS from RAN4 (1)**

[R2-2302430](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302430.zip) LS on priority for MUSIM gaps (R4-2303249; contact: vivo) RAN4 LS in Rel-18 NR\_DualTxRx\_MUSIM-Core To:RAN2

**Online (2nd week Tuesday) – running CRs (1)**

[R2-2303266](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303266.zip) MUSIM Stage 2 running CR vivo discussion Rel-18

* ?? Endorsed (can be further refined based on this meeting decisions)
* ?? Companies are encouraged to provide comments on the CR to rapporteur(s) offline.

Post-meeting email discussions (Rel-18 MUSIM – started after RAN2#122, lasting until RAN2#123)

* [Post121bis-e][2xx][MUSIM] Running Stage-2 CR for NR MUSIM enhancements (vivo)

 Scope: Update running Stage-2 CR based on agreements in this meeting for NR Rel-18 MUSIM

 Intended outcome: Endorsed running CR

 Deadline: Long (until RAN2#123, started after RAN2#122)

* [Post121bis-e][2xx][MUSIM] Running RRC CR for NR MUSIM enhancements (NN)

 Scope: Update running RRC CR based on agreements in this meeting for NR Rel-18 MUSIM

 Intended outcome: Endorsed running CR

 Deadline: Long (until RAN2#123, started after RAN2#122)

### 7.17.2 Procedures for MUSIM temporary capability restriction

Including discussion on UE procedures when UE is in IDLE/INACTIVE towards NW A, e.g. how to handle UE moving to CONNECTED in NW A while already being CONNECTED in NW B: Does UE indicate something in RRC setup/resume request towards NW A or NW B?

Including discussion on UE procedures when UE is in CONNECTED towards NW A, e.g. how to handle UE moving to CONNECTED in NW B

Including discussion on how UE indicates it is using temporary UE capabilities at connection setup/resume

**Online (2nd week Tuesday) – reactive/proactive mechanisms (1)**

[R2-2302781](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302781.zip) Further considerations on the capability restriction request for Rel-18 MUSIM Intel Corporation discussion Rel-18 NR\_DualTxRx\_MUSIM-Core

*Observation#1: Other than Scenario 1, the following scenarios 2 and 3 need to be studied:*

*Scenario 2: UE in NW A and NW B in RRC\_Connected indicates its preference on temporary UE capability due to reconfiguration in NW B*

*Scenario 3: Only one network supports Rel-18 MUSIM (e.g. NW B is in LTE or NW B does not support Rel-18 MUSIM)*

*Observation#2: Reactive approach may result in delay in establishing/resuming connection to network A as in sub-scenarios 1A and 1B.*

*Observation#3: Reactive approach may result in delay in reconfiguration as in sub-scenario 2A if it needs to inform capability restriction to the other network*

*Observation#4: For sub-scenario 3A, UE may be configured in network A during connection resumption with configuration (e.g. SCell and/or SCG) that is incompatible to its configuration with network B.*

*Observation#5: For sub-scenario 3B, UE can only reject the configuration from NW A as the configuration cannot be restricted in NW B.*

*Observation#6: If the capability restriction due to resource usage from one network is proactively provided by the UE to the other network(s), reconfiguration delay or rejection can be avoided.*

*Observation#7: One main issue with UE proactively provides the UE assistance to NW A is that it may result in unnecessary signalling overhead to NW A, particularly if this capability restrictions indicated by UE are not going to be configured (now or in the future) by NW A.*

*Observation#8: During resumption (ResumeRequest), network A needs to be informed of possible capability restriction to avoid the network A configuring resources in Resume message incompatible to the configuration in network B.*

*Observation#9: Supporting and configuring Rel-17 and Rel-18 MUSIM features simultaneously for a UE can lead to more optimal performance by using the most appropriate solution depending on the scenario and the UE state.*

*Proposal#1: UE is allowed to proactively provide capability restriction request to the other network(s).*

*Proposal#2: RAN2 to discuss how to reduce the unnecessary signalling overhead due to possible proactive sending capability restriction request/indication, e.g. indicating the bands of concern to the UE in the UAI configuration for Rel-18 MUSIM.*

*Proposal#3: UE should indicate release/incapability of CA/DC during connection resume to the network so that the network knows that there is possible restriction on the UE capabilities and the network and UE should not use CA/DC. Network should wait until the UE provides the UE capability restriction before reconfiguring the UE further with higher capability configuration (e.g. CA, SCG and/or MIMO layers, larger BW etc.).*

*Proposal#4: It should be possible to configure both Rel-17 and Rel-18 MUSIM features (if supported) simultaneously for a UE.*

*Proposal#5: Postpone the discussion on whether UE supporting Rel-18 MUSIM also needs to support of Rel-17 MUSIM UE capabilities till Rel-18 MUSIM operation is defined.*

* Focus on P1-3

[R2-2303639](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303639.zip) Overall Dual-RX/TX MUSIM procedure Ericsson discussion Rel-18 NR\_DualTxRx\_MUSIM-Core

*Observation 1 The UE needs to free hardware resources with NW-1 (and ensure that NW-1 does not try to use those resources later) to allocate one transceiver to NW-2.*

*Observation 2 By restricting the usage of the frequencies in NW-1 and NW-2, any IDC issue due to MUSIM is also resolved.*

*Observation 3 The same procedure is valid regardless of if the UE is in RRC\_CONNECTED with NW-1 and RRC\_IDLE/INACTIVE in NW-2, or vice versa.*

*Based on the discussion in the previous sections we propose the following:*

*Proposal 1 The UE restricts in NW-1 all the frequencies handled by the second transceiver, to prevent NW-1 to use it and to free the hardware resources for the other NW.*

*Proposal 2 UE uses a flag in RRCSetupComplete/RRCResumeComplete to indicate to NW-2 that its capabilities are temporarily restricted.*

*Proposal 3 NW-2 configures the UE with a “minimal” configuration in the first RRCReconfiguration message.*

*Proposal 4 NW-2 configures the UE to report the capability restrictions via UEAssistanceInformation message and indicates all the frequencies NW-2 intends to use.*

*Proposal 5 The UE restricts the affected frequencies in NW-2 and, if needed, updates the list of restricted frequencies in NW-1, to prevent one network from configuring the UE with hardware resources that UE is using with the other network.*

*Proposal 6 NW-2 reconfigures, if needed, the UE with a proper configuration, once the restricted capabilities are received via UEAssistanceInformation message.*

*Proposal 7 Only SCell/SCG release should be supported for dual-active MUSIM purpose.*

*Proposal 8 A prohibit timer is needed to allow the network to react to the UE indication of restricted capabilities and reconfigure to UE. At timer expiration, the UE can e.g., either request to leave NW-1 (using Rel-17 MUSIM leave indication), or not respond to the Paging message in NW-2.*

**Online (2nd week Tuesday) – UE-initiated SCell/SCG (de)activation for MUSIM (1)**

[R2-2303455](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303455.zip) Further discussion on the UE-initiated SCell/SCG deactivation and activation for MUSIM Huawei, HiSilicon, Vodafone, Vivo discussion Rel-18

*(moved from 7.17.3)*

*Proposal 1: If allowed by the NW, the UE can request SCell/SCG deactivation (and reversal) using RRC signaling (e.g. UAI) for MUSIM purpose.*

*Proposal 2: The NW can configure gap-based RRM measurement for the deactivated SCell/SCG for mobility purpose. If not configured, the UE is allowed to NOT perform RRM/RLM/BFD on the deactivated SCell/SCG.*

[R2-2303779](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303779.zip) Support of UE requesting SCell/SCG Deactivation for eMUSIM Sharp discussion

*(moved from 7.17.3)*

*Proposal 1: If configured by the network, UE can request SCell/SCG deactivation (and reversal) for MUSIM purpose.*

*Proposal 2: It up to the UE implementation to request release or deactivate of SCell/SCG for MUSIM purpose.*

[R2-2302550](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302550.zip) Procedures for MUSIM temporary capability restriction OPPO discussion Rel-18 NR\_DualTxRx\_MUSIM-Core

[R2-2302721](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302721.zip) UE Capability restrictions for Dual-Active MUSIM Qualcomm Incorporated discussion

[R2-2302725](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302725.zip) Consideration on capability restriction for dual Rx/Tx MUSIM DENSO CORPORATION discussion NR\_DualTxRx\_MUSIM-Core

[R2-2303188](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303188.zip) Baseline signalling procedure options for temporary capability restrictions. Nokia, Nokia Shanghai Bell discussion

[R2-2303225](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303225.zip) Procedure of dual Tx/Rx Multi-SIM Lenovo discussion Rel-18

[R2-2303267](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303267.zip) Procedures for MUSIM temporary capability restriction vivo discussion Rel-18

[R2-2303409](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303409.zip) Procedures for MUSIM temporary capability restriction Apple discussion Rel-18 NR\_DualTxRx\_MUSIM-Core

[R2-2303669](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303669.zip) Procedures for MUSIM temporary capability restriction Samsung R&D Institute India discussion

[R2-2303774](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303774.zip) Procedure of UE Capability Restriction for eMUSIM Sharp discussion

[R2-2303874](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303874.zip) Temporary Capability Restriction for Idle/Inactive State Transfer ZTE Corporation, Sanechips discussion Rel-18 NR\_DualTxRx\_MUSIM-Core

[R2-2304026](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2304026.zip) Procedures for MUSIM Temporary Capa Restriction LG Electronics discussion Rel-18 NR\_DualTxRx\_MUSIM-Core

### 7.17.3 Allowed MUSIM temporary capability restrictions

Including discussion on which UE capabilities can be impacted by temporary UE capability restrictions and how signalling of temporary UE capability changes works (e.g. for band combination restrictions due to band conflict), what is the granularity of temporary UE capability restrictions, and what does UE report to the network?

**AT-meeting offline discussions (started at meeting start)**

* [AT121bis-e][230][MUSIM] UE capability restrictions (vivo)

 Scope: Discuss and attempt to converge on the set of UE capabilities allowed to be temporarily restricted for MUSIM.

 Intended outcome: Discussion report in [R2-2304397](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2304397.zip)

 Deadline: Deadline 2

**Online (2nd week Tuesday) – Report of [230] (1)**

[R2-2304397](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2304397.zip) Report of [AT121bis-e][230][MUSIM] UE capability restrictions (vivo) vivo discussion Rel-18 NR\_DualTxRx\_MUSIM-Core

By Email [230] (16)

[R2-2302551](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302551.zip) Allowed MUSIM temporary capability restrictions OPPO discussion Rel-18 NR\_DualTxRx\_MUSIM-Core

[R2-2302782](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302782.zip) Signalling to indicate temporary capability reduction for Rel-18 MUSIM Intel Corporation discussion Rel-18 NR\_DualTxRx\_MUSIM-Core

[R2-2302966](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302966.zip) Allowed MUSIM temporary capability restrictions Samsung R&D Institute India discussion Rel-18

[R2-2303189](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303189.zip) Adidtional aspects related to capability restriction signalling Nokia, Nokia Shanghai Bell discussion

[R2-2303268](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303268.zip) Discussion on temporary capability restriction for Rel-18 Multi-SIM vivo discussion Rel-18

[R2-2303350](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303350.zip) Capability sharing issue for SRS Tx switching capability Xiaomi discussion Rel-18 NR\_DualTxRx\_MUSIM-Core [R2-2301116](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2301116.zip)

[R2-2303351](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303351.zip) Remaining issues on band combination restrictions due to band conflict Xiaomi discussion Rel-18 NR\_DualTxRx\_MUSIM-Core [R2-2301117](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2301117.zip)

[R2-2303410](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303410.zip) Parameters for MUSIM temporary capability restriction Apple discussion Rel-18 NR\_DualTxRx\_MUSIM-Core

[R2-2303470](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303470.zip) Further discussion on MUSIM temporary capability restrictions Huawei, HiSilicon discussion Rel-18 NR\_DualTxRx\_MUSIM-Core

[R2-2303623](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303623.zip) Discussion on temporary UE capability restriction for MUSIM MediaTek Inc. discussion [R2-2300816](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2300816.zip)

[R2-2303624](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303624.zip) Disucssion on UE capability restriction signaling China Telecommunications discussion

[R2-2303640](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303640.zip) Discussion on restricted UE capabilities Ericsson discussion Rel-18 NR\_DualTxRx\_MUSIM-Core

[R2-2303873](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303873.zip) Consideration on the Temporary Capability Restriction ZTE Corporation, Sanechips discussion Rel-18 NR\_DualTxRx\_MUSIM-Core

[R2-2303938](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303938.zip) Discussion on temporary capability restriction for Dual Tx/Rx Multi-SIM ASUSTeK discussion Rel-18 NR\_DualTxRx\_MUSIM-Core

[R2-2304027](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2304027.zip) Simple Methods for MUSIM Temporary Capa Restriction LG Electronics discussion Rel-18 NR\_DualTxRx\_MUSIM-Core

### 7.17.4 MUSIM gap priorities and other RAN4 impacts

Including discussion on RAN4 LS [R4-2303249](https://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_106/Docs/R4-2303249.zip) concerning Rel-17 MUSIM gap priorities

Including analysis on RAN4 impact on the maximum UL power change due to R18 MUSIM

**AT-meeting offline discussions (started after Tuesday maintenance session)**

* [AT121bis-e][231][MUSIM] RAN4 aspects of MUSIM (Samsung)

 Scope: Discuss what to do for MUSIM gap priorities (based on RAN4 LS): Can UE indicate gap priority preference? Is the gap priority applicable to aperiodic gaps? Are there any RAN4 impacts on maximum UL power change?

 Intended outcome: Discussion report in [R2-2304398](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2304398.zip)

 Deadline: 2nd week Monday (discussion report)

**Online (2nd week Tuesday) – Report of [231] (1)**

[R2-2304397](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2304397.zip) Report of [AT121bis-e][231][MUSIM] RAN4 aspects of MUSIM (Samsung) Samsung discussion Rel-18 NR\_DualTxRx\_MUSIM-Core

By Email [231] (12) – gap priorities and UL power change

[R2-2303641](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303641.zip) MUSIM gap priorities Ericsson discussion Rel-18 NR\_DualTxRx\_MUSIM-Core

*Proposal 1 The information element used to identify the priority of Rel-17 measurement gap configurations (GapPriority-r17) can be used to request and assign the MUSIM gaps priorities.*

*Proposal 2 Consider the Text Proposal in Annex A as a baseline for the MUSIM gap priority.*

*Proposal 3 A default priority value should be used for the MUSIM gaps which do not have an assigned priority. FFS if RAN2 or RAN4 to decide.*

*Proposal 4 RAN2 to discuss introduction of a new UE capability for support of MUSIM priority configuration.*

*Proposal 5 RAN2 to discuss if UE need to provide further information (e.g. MUSIM gap purpose) to assist the Network to configure the gap priorities (for MUSIM gaps and measurement gaps).*

[R2-2303828](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303828.zip) Discussion on MUSIM gap priorities and maximum UL power change Samsung Electronics Austria discussion Rel-18 NR\_DualTxRx\_MUSIM-Core

*MUSIM gap priorities:*

*Proposal 1: Gap priority can be configured per periodic MUSIM gap configuration by gapPriority-r17.*

*Proposal 2: Multiple periodic MUSIM gap patterns can be assigned with same or different gap priority.*

*Proposal 3: UE can optionally inform network A of its preferred gap priority for all or a subset of periodic MUSIM gaps via UEAssistanceInformation.*

*Proposal 4: It is up to network implementation whether/how to assign a gap priority to each requested MUSIM gap pattern.*

*Maximum UL power change:*

*Observation 1: With PHR reporting mechanism, it seems unlikely that R18 MUSIM UE 1) transmits its power larger than the existing specification allows and 2) is instructed to transmit its power that goes beyond its limit.*

*Observation 2: How to calculate maximum UL transmission power is defined in TS 38.101 series and RAN2 only specifies PHR MAC CE format and when to trigger PHR reporting.*

*Proposal 5: RAN2 assumes that there is no issue on the maximum UL power change due to R18 MUSIM. Can be revisited depending on progress in RAN4 work.*

[R2-2302724](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302724.zip) Remaining issues for MUSIM gaps Qualcomm Incorporated discussion

[R2-2302783](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2302783.zip) Gap collision handling for Rel-17 gaps Intel Corporation discussion Rel-18 NR\_DualTxRx\_MUSIM-Core

[R2-2303190](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303190.zip) On MUSIM gap priority and uplink power sharing aspects of MUSIM operation Nokia, Nokia Shanghai Bell discussion

[R2-2303269](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303269.zip) Discussion on MUSIM gap priorities vivo discussion Rel-18

[R2-2303352](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303352.zip) Discussion on MUSIM gap priorities Xiaomi discussion Rel-18 NR\_DualTxRx\_MUSIM-Core

[R2-2303411](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303411.zip) Views on RAN4 LS for MUSIM gap priorities Apple discussion Rel-17 LTE\_NR\_MUSIM-Core

[R2-2303471](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303471.zip) Discussion on MUSIM gaps and other RAN4 topics Huawei, HiSilicon discussion Rel-18 NR\_DualTxRx\_MUSIM-Core

[R2-2303875](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303875.zip) Consideration on the Scheduling Gap Priority ZTE Corporation, Sanechips discussion Rel-18 NR\_DualTxRx\_MUSIM-Core

[R2-2303937](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2303937.zip) Discussion on maximum UL power change for Dual Tx/Rx Multi-SIM ASUSTeK discussion Rel-18 NR\_DualTxRx\_MUSIM-Core

[R2-2304028](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_121bis-e/Docs/R2-2304028.zip) MUSIM Gap Priority LG Electronics discussion Rel-18 NR\_DualTxRx\_MUSIM-Core

# Summary

**Comebacks: None**

**Agreed documents ()**

*4.1: LTE legacy ()*

**Endorsed ()**

*7.5: Rel-18 XR enhancements ()*

*7.14: Rel-18 QoE enhancements ()*

*7.17 Rel-18 Dual Rx/Tx MUSIM ()*

**Approved LS out ()**

**Post-meeting email discussions (short, CR/LS finalization) ()**

**Post-meeting email discussions (long) ()**