3GPP TSG-RAN WG2 Meeting #119 electronic [R2-2208702](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208702.zip)

Online, August, 2022

**Agenda item: 10.1**

**Source: Vice Chairman (Nokia)**

**Title: Report on LTE/NR17 legacy, XR, MUSIM, WUS, QoE and NW energy saving**

**Document for: Approval**

# Organizational

Tdoc limitations (reminder)

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

- Assigned Editor of Running CRs input to update the running CR and input of one tdoc to facilitate addressing of CR open issues.

- 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).

- ASN.1 review: Max 1 tdoc per RIL issue (class 1,2) for RIL company (if there is RIL overlap or closely related RILs, companies shall coordinate to avoid multiple tdocs for one topic, including coordination with WI CR Rapporteur, who has priority for treatment). Tdoc for a RIL issue is expected if it is indicated in the RIL that a tdoc will be provided.

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).

Tdoc limitations applies to all other submitted tdocs.

**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 1st week Mon-Wed.**

**Deadline 1 (discussions for 2nd week online sessions)**

* **Comment deadline:** Tuesday W2, 0700 UTC (for collecting views)
* **Rapporteur proposals:** Wednesday W2, 0700 UTC (proposed outcome)
* **Document deadline:** 1h before session (discussion report)

**Deadline 2 (CR/LS approval via email):**

* **Comment deadline:** ThursdayW2, 1200 UTC (for collecting views)
* **Rapporteur proposals:** EOM (LS and/or agreed CRs)
  + If not agreeable, may continue to short post-meeting email (based on chair decision).

**Organizational**

* [AT119-e][200] Organizational – LTE legacy, 71 GHz, DCCA, Multi-SIM, RAN slicing, QoE and XR (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 (for LS discussion):

* + - General information sharing about the sessions

      Deadline for providing comments to LSs:

* + - Deadline: Deadline 1

**LTE legacy (started immediately at meeting start)**

* [AT119-e][201][LTE] LTE legacy CRs, non-IoT (Samsung)

Scope: Discuss LTE CRs marked for this discussion (under AI 4.4 and 7.1).

Intended outcome: Discussion report in [R2-2208711](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208711.zip). Agreeable CRs (by proponents) to be produced after online agreements.

Deadline: Deadline 1 (report) / Deadline 2 (final CRs)

* [AT119-e][202][LTE] LTE legacy CRs, eMTC/NB-IoT (MediaTek)

Scope: Discuss LTE CRs marked for this discussion (under AI 4.1 and 7.1).

Intended outcome: Discussion report in [R2-2208712](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208712.zip). Agreeable CRs (by proponents) to be produced after online agreements.

Deadline: Deadline 1 (report) / Deadline 2 (final CRs)

**NR Rel-17 DCCA (started only after online session)**

* [AT119-e][220][DCCA] Stage-2 corrections to DCCA (ZTE)

      Scope: Discuss Stage-2 corrections for DCCA marked for this discussion.

Intended outcome: Report in in [R2-2208713](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208713.zip). Merged CR (if needed) in [R2-2208714](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208714.zip).

Deadline: Deadline 1 (report) / Deadline 2 (final CRs)

* [AT119-e][221][DCCA] RRC corrections to SCG deactivation (Huawei)

      Scope: Discuss NR and LTE RRC corrections for SCG deactivation marked for this discussion.

Intended outcome: Report in in [R2-2208715](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208715.zip). Merged NR RRC CR in [R2-2208716](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208716.zip) and LTE RRC CR in [R2-2208717](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208717.zip).

Deadline: Deadline 1 (report) / Deadline 2 (final CRs)

* [AT119-e][222][DCCA] MAC/PDCP corrections to DCCA (Nokia)

      Scope: Discuss NR and LTE MAC/PDCP corrections for DCCA marked for this discussion.

Intended outcome: Report in in [R2-2208718](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208718.zip). Merged CR (if needed) in [R2-2208719](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208719.zip).

Deadline: Deadline 1 (report) / Deadline 2 (final CRs)

* [AT119-e][223][DCCA] RRC corrections to CPAC (Ericsson)

      Scope: Discuss NR and LTE RRC corrections for CPAC marked for this discussion.

Intended outcome: Report in in [R2-2208720](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208720.zip). Merged NR RRC CR in [R2-2208721](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208721.zip) and LTE RRC CR in [R2-2208722](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208722.zip).

Deadline: Deadline 1 (report) / Deadline 2 (final CRs)

**NR Rel-17 Multi-SIM (started only after online session)**

* [AT119-e][230][MUSIM] Stage-2 and MAC corrections to MUSIM (Samsung)

      Scope: Discuss Stage-2 and NR MAC corrections for MUSIM marked for this discussion.

Intended outcome: Report in in [R2-2208723](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208723.zip). Merged Stage-2 CR in [R2-2208724](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208724.zip) and MAC CR in [R2-2208725](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208725.zip).

Deadline: Deadline 1 (report) / Deadline 2 (final CRs)

* [AT119-e][231][MUSIM] RRC corrections to MUSIM (vivo)

      Scope: Discuss RRC corrections for MUSIM marked for this discussion.

Intended outcome: Report in in [R2-2208726](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208726.zip). Merged NR RRC CR in [R2-2208727](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208727.zip).

Deadline: Deadline 1 (report) / Deadline 2 (final CRs)

* [AT119-e][232][MUSIM] Potential clarifications to MUSIM (Ericsson)

      Scope: Discuss the corrections for MUSIM marked for this discussion.

Intended outcome: Report in in [R2-2208728](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208728.zip).

Deadline: Deadline 1 (report)

**NR Rel-17 RAN Slicing (started only after online session)**

* [AT119-e][240][Slicing] RRC, MAC and Stage-2 CRs to RAN slicing (Huawei)

      Scope: Discuss RRC and Stage-2 corrections for RAN slicing marked for this discussion.

Intended outcome: Report in in [R2-2208729](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208729.zip). Merged Stage-2 CR in [R2-2208730](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208730.zip), MAC CR in [R2-2208731](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208731.zip) and RRC CR in [R2-2208732](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208732.zip).

Deadline: Deadline 1 (report) / Deadline 2 (final CRs)

* [AT119-e][241][Slicing] Cell reselection corrections to RAN slicing (Qualcomm)

      Scope: Discuss cell reselection aspects for RAN slicing marked for this discussion and attempt to provide 38.304 CR if corrections are required.

Intended outcome: Report in in [R2-2208733](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208733.zip). Merged 38.304 CR in [R2-2208734](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208734.zip).

Deadline: Deadline 1 (report) / Deadline 2 (final CRs)

**NR Rel-17 QoE (started immediately at meeting start)**

* [AT119-e][250][R17 QoE] Stage-2 corrections to Rel-17 QoE (China Unicom)

      Scope: Discuss Stage-2 corrections for Rel-17 QoE marked for this discussion.

Intended outcome: Report in in [R2-2208735](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208735.zip). Merged 38.300 CR in [R2-2208736](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208736.zip).

Deadline: Deadline 1 (report) / Deadline 2 (final CRs)

* [AT119-e][251][R17 QoE] NR RRC corrections to Rel-17 QoE (Ericsson)

      Scope: Discuss NR RRC corrections for Rel-17 QoE marked for this discussion.

Intended outcome: Report in in [R2-2208737](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208737.zip). Merged 38.331 CR in [R2-2208738](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208738.zip).

Deadline: Deadline 1 (report) / Deadline 2 (final CRs)

**NR Rel-17 QoE (started after online session)**

* [AT119-e][252][QoE] Draft CRs for QoE report handling without segmentation (Lenovo)

Scope: Discuss the topic and provide draft CR showing the possible solution so RAN2 can decide whether to adopt it.

Intended outcome: Discussion summary in [R2-2208746](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208746.zip) and draft CR in [R2-2208747](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208747.zip).

Deadline: Deadline 1

**NR Extension to 71 GHz (started only after online session)**

* [AT119-e][210][71 GHz] RRC corrections to 71 GHz (Ericsson)

      Scope: Discuss RRC corrections for 71 GHz marked for this discussion.

Intended outcome: Report in in [R2-2208739](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208739.zip). Merged 38.331 CR in [R2-2208740](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208740.zip).

Deadline: Deadline 1 (report) / Deadline 2 (final CRs)

* [AT119-e][211][71 GHz] CCA for neighbour cells (Nokia)

Scope: Provide draft CR for solution and LS draft to RAN4 (can include RAN1, RAN3) on CCA for neighbour cells.

Intended outcome: Discussion summary in [R2-2208741](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208741.zip) and agreeable LS to RAN4 in [R2-2208742](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208742.zip).

Deadline: Deadline 1 (if possible can also close earlier)

* [AT119-e][212][71 GHz] HO from E-UTRA to FR2-2 (ZTE)

Scope: Based on agreements on [R2-2207984](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207984.zip), provide CRs to 36.331 and 36.306.

Intended outcome: Discussion summary in [R2-2208743](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208743.zip), CR to 36.331 in [R2-2208744](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208744.zip) and CR to 36.331 in [R2-2208745](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208745.zip).

Deadline: Deadline 1 (report) / Deadline 2 (final CRs)

**NR Rel-18 XR**

No AT-meeting email discussions in this meeting.

Expected post-meeting email discussions:

* [260] TR update
* [261] LSs to other groups (based on RAN2 agreements and online discussion)

**NR Rel-18 QoE enhancements**

No AT-meeting email discussions in this meeting - may have one post-meeting email discussion if seen needed.

* [270] QoE enhancements (if seen needed based on online discussion)

**Dates and deadlines (see also RP-221818) – Technical Meeting**

July 2nd – Aug 7th **Inactive Period** (incl the weekends). Information distribution is not prohibited but it is assumed that people do not pay attention to it during the Inactive Period.

Aug 10th, 0900 UTC **General Tdoc Submission Deadline**.

Aug 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.

Aug 19th 1800 Local Time **Weekend break**, Suspend decision making in email discussions (= no deadlines etc) from Aug 19th 1000 UTC. It should be possible for a delegate to take the weekend off, rejoin and not miss decisions.

Aug 22th 0800 Local Time Resume after weekend. Resume decision making in email discussions, Week 2.

Aug 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.

Aug 29th  **e-Meeting Additional Day for late input from other groups (optional)**. Decision whether to have this session is taken Fri Aug 26.

Sept 2nd **Deadline Short Post119-e email discussions**. Short Post email discussions can be started before the meeting has ended.

Exceptional late deadline: Sept 7th (for UE capabilities).

**Web Conference Schedule**

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

**Web Conference Schedule, WEEK 1**

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

**WEEK 1:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Time Zone UTC** | **Web Conference R2 - Main** | **Web Conference R2 - BO1** | **Web Conference R2 - BO2** |
| **Wednesday** |  |  |  |
| 12:30-13:30 | NR17 IAB ePowSav (Johan) | NR 71 GHz:  - 6.20.1/6.20.2: LS on TCI states ([R2-2206925](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2206925.zip)), LS on neighbour cell CCA ([R2-2206956](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2206956.zip))  - 6.20.2: neighbour cell CCA info ([R2-2207543](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207543.zip)), LTE UE capabilities for FR2-2 ([R2-2207984](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207984.zip))  RAN slicing:  - 6.8.1: CT1 LS on slice groups([R2-2206909](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2206909.zip)) and proposed LS replies ([R2-2207797](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207797.zip), [R2-2208002](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208002.zip))  IF time allows:  MUSIM:  - 6.3.3: MAC specification impacts of MUSIM ([R2-2208030](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208030.zip), [R2-2208470](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208470.zip)) | SL Maintenance, if needed (Kyeongin)  NR17 SL enh (Kyeongin) |
| 13:30-14:30 | NR17 feMIMO (Johan) | NR17 Small Data Enh (Diana)  NR17 IIOT (Diana) | NR17 SL Relay (Nathan) |
| 14:30-15:30 | NR17 DCCA (Tero)  - 6.2.3.2: Outcome of [Post118-e][227] ([R2-2208647](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208647.zip))  - 6.2.2.2: UAI handling ([R2-2207306](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207306.zip), [R2-2207306](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207306.zip), [R2-2208286](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208286.zip))  IF time allows:  - 6.2.3.1: MN-SN awareness of CPAC ([R2-2207321](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207321.zip)) | NR151617 UP, if needed (Diana)  NR17 RACH indication / partitioning (Diana) | NR17 Pos (Nathan) |
| **Thursday** |  |  |  |
| 12:30-13:30 | NR17 MBS (Dawid) | NR17 IoT-NTN (Sergio) | EUTRA R17 and earlier, if needed (Tero)  - 7.1.2: Aligning LTE PDCP with NR PDCP on DRB release ([R2-2207492](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207492.zip))  NR17 QoE (Tero)  - 6.14.2: QoE reporting and AT-commands ([R2-2207530](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207530.zip)) |
| 13:30-14:30 | NR151617 CP, if needed (Johan)  NR17 MGE PRN Other (Johan) | NR17 NTN (Sergio) | NR17 Pos (Nathan) |
| 14:30-15:30 | NR18 Mobile IAB (Johan) | NR17 Cov Enh (Sergio)  NR17 Redcap (Sergio) | NR17 SON MDT (HuNan) |
| **Friday** |  |  |  |
| 03:30-04:30 | NR18 Mobility (Johan) | NR18 XR (Tero)  - 8.5.1: Work plan, LSs, TR structure ([R2-2206917](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2206917.zip), [R2-2207372](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207372.zip)), XR overview ([R2-2207375](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207375.zip)), pose information LS to SA4 ([R2-2207376](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207376.zip)) | NR18 Enh SL relay (Nathan) |
| 04:30-05:30 | NR18 MBS (Dawid | NR18 NR NTN (Sergio) | NR18 Enh Pos (Nathan) |

**Web Conference Schedule, WEEK 2**

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

**WEEK 2:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Time Zone UTC** | **Web Conference R2 - Main** | **Web Conference R2 - BO1** | **Web Conference R2 - BO2** |
| **Monday** |  |  |  |
| 12:30-13:30 | NR18 Mobility (Johan) | NR18 XR (Tero)  - 8.5.2: XR awareness (e.g. [R2-2207377](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207377.zip)  [R2-2207780](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207780.zip), [R2-2208677](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208677.zip), [R2-2208313](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208313.zip), [R2-2207998](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207998.zip), others as time allows) | NR18 Enh Pos (Nathan) |
| 13:30-14:30 | NR18 Mobility (Johan) | NR18 XR (Tero)  - 8.5.3: XR power saving: Schemes to consider (e.g. [R2-2208019](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208019.zip)), Handling of CDRX and jitter for XR (e.g. [R2-2207084](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207084.zip), [R2-2207430](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207430.zip), or [R2-2208440](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208440.zip))  IF time allows:  -8.5.4: XR capacity improvements: Scheduler impacts (e.g. [R2-2208417](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208417.zip)) | NR18 Enh Pos (Nathan) |
| 14:30-15:30 | NR18 Mobility (Johan) | NR18 QoE (Tero)  - 8.14.1: Work plan ([R2-2208619](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208619.zip))  - 8.14.2: QoE for MBS requirements (e.g. [R2-2208622](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208622.zip)), signalling aspects (e.g. [R2-2208423](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208423.zip))  - 8.14.3: Proceeding with R17 leftovers (e.g. [R2-2207993](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207993.zip)) | NR18 Network Energy Saving (Diana) |
| **Tuesday** |  |  |  |
| 12:30-13:30 | NR18 Other (Johan) | EUTRA18 IoT NTN (Sergio) | NR18 NC repeater (Sasha) |
| 13:30-14:30 | NR18 SONMDT (HuNan) | EUTRA18 IoT NTN (Sergio) | NR18 UAV (Diana) |
| 14:30-15:30 | NR18 SONMDT (HuNan) | NR18 NR NTN (Sergio) | NR18 Network Energy Saving (Diana) |
| **Wednesday** |  |  |  |
| 12:30-13:30 | NR18 IDC (Yi) | NR18 XR (Tero)  -8.5.4: XR capacity improvements: Scheduler impacts (e.g. [R2-2208417](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208417.zip)), SPS/CG (e.g. [R2-2207785](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207785.zip)), L2 enhancements [R2-2208302](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208302.zip)  - 8.5.X: CB session, documents TBD based progress in previous sessions | NR18 Enh SL relay (Nathan) |
| 13:30-14:30 | NR18 IDC (Yi) (+30min if needed)  NR17 MBS CB (Dawid) | NR17 CB (Diana) | NR17 CB (Nathan) |
| 14:30-15:30 | NR17 feMIMO CB (Johan) | NR17 CB (Diana) | NR17 CB (Kyeongin) |
| **Thursday** |  |  |  |
| 03:30-04:30 | NR151617 CP Centric CB (Johan) | NR17 CB (Sergio) | NR17/EUTRA CB (Tero)  - 4.1, 4.4, 6.2.X, 6.3.X, 6.8.X, 6.14.X, 6.20.X: Reports from email discussions |
| 04:30-05:30 | NR17 CB (Johan) | NR17/E17 CB (Sergio) | NR17 TBD |
| **Friday** |  |  |  |
| 03:30-04:30 | TBD | TBD | TBD |
| 04:30-05:30 | TBD | TBD | TBD |

**Web Conference Schedule, WEEK 3 (optional)**

**WEEK 3 (optional)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Time Zone UTC** | **Web Conference R2 - Main** | **Web Conference R2 - BO1** |  |
| **Monday** |  |  |  |
| 12:30 - 15:30 | Related to Late R17 LS ins, if needed | Related to Late R17 LS ins, if needed |  |

# 4 EUTRA Rel-16 and earlier

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

## 4.1 NB-IoT and eMTC corrections Rel-16 and earlier

(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).

By Email [202] (3+2)

Clarification on hoew schedulingInfoList extension is used:

[R2-2207312](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207312.zip) Clarification on schedulingInfoList for in NB-IoT MediaTek Inc. CR Rel-17 36.331 17.1.0 4837 - A LTE\_NBIOT\_eMTC\_NTN-Core

[R2-2207313](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207313.zip) Clarification on schedulingInfoList for in NB-IoT MediaTek Inc. CR Rel-16 36.331 16.9.0 4838 - A LTE\_NBIOT\_eMTC\_NTN-Core

[R2-2207314](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207314.zip) Clarification on schedulingInfoList for in NB-IoT MediaTek Inc. CR Rel-15 36.331 15.18.0 4839 - A LTE\_NBIOT\_eMTC\_NTN-Core

Deactivation of SPS:

[R2-2208594](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208594.zip) 36331\_(R16)\_Clarification on SPS deactivation upon carrier reconfiguration ZTE Corporation, Sanechips CR Rel-16 36.331 16.9.0 4864 - F NB\_IOTenh3-Core

[R2-2208595](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208595.zip) 36331\_(R17)\_Clarification on SPS deactivation upon carrier reconfiguration ZTE Corporation, Sanechips CR Rel-17 36.331 17.1.0 4865 - A NB\_IOTenh3-Core

Email discussions ([202])

* [AT119-e][202][LTE] LTE legacy CRs, eMTC/NB-IoT (MediaTek)

Scope: Discuss LTE CRs marked for this discussion (under AI 4.1 and 7.1).

Intended outcome: Discussion report in [R2-2208712](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208712.zip). Agreeable CRs (by proponents) to be produced after online agreements.

Deadline: Deadline 1 (report) / Deadline 2 (final CRs)

[R2-2208712](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208712.zip) Report of [AT119-e][202][LTE] LTE legacy CRs, eMTC/NB-IoT (MediaTek) MediaTek discussion Rel-16 NB\_IOTenh3-Core, LTE\_NBIOT\_eMTC\_NTN-Core

## 4.4 Other LTE corrections Rel-16 and earlier

(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)

(Documents relating to Rel-16 LTE but for which there is no existing RAN WI/SI, e.g. LSs from CT/SA requesting RAN2 action)

Including TEI16, TEI15 etc corrections and issues that do not fit under any other topic.

For LTE mobility enhancements, only corrections that are LTE-specific should be submitted to this AI. Corrections that impact or are common with NR mobility enhancements should be submitted to 5.1.X instead.

By Email [201] (2+3+3)

CHO recovery: Clearing of stored CHO commands at initial recovery (same as in NR):

[R2-2207391](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207391.zip) Corrections on CHO recovery CATT CR Rel-16 36.331 16.9.0 4845 - F LTE\_feMob-Core

[R2-2207392](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207392.zip) Corrections on CHO recovery CATT CR Rel-17 36.331 17.1.0 4846 - A LTE\_feMob-Core

RRC rapporteur corrections (mostly editorial):

[R2-2208531](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208531.zip) Miscellaneous changes collected by Rapporteur Samsung CR Rel-15 36.331 15.18.0 4860 - F NR\_newRAT-Core

[R2-2208532](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208532.zip) Miscellaneous changes collected by Rapporteur Samsung CR Rel-16 36.331 16.9.0 4861 - F NR\_newRAT-Core

[R2-2208533](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208533.zip) Miscellaneous changes collected by Rapporteur Samsung CR Rel-17 36.331 17.1.0 4862 - A NR\_newRAT-Core

Editorial: Clarification of RRC procedural figure:

[R2-2207023](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207023.zip) Correction on SCG failure information procedure ITRI CR Rel-15 36.331 15.18.0 4830 - F NR\_newRAT-Core

[R2-2207024](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207024.zip) Correction on SCG failure information procedure ITRI CR Rel-16 36.331 16.9.0 4829 - A NR\_newRAT-Core

[R2-2207025](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207025.zip) Correction on SCG failure information procedure ITRI CR Rel-17 36.331 17.1.0 4828 - A NR\_newRAT-Core

Email discussions ([201])

* [AT119-e][201][LTE] LTE legacy CRs, non-IoT (Samsung)

Scope: Discuss LTE CRs marked for this discussion (under AI 4.4 and 7.1).

Intended outcome: Discussion report in [R2-2208711](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208711.zip). Agreeable CRs (by proponents) to be produced after online agreements.

Deadline: Deadline 1 (report) / Deadline 2 (final CRs)

[R2-2208711](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208711.zip) Report of [AT119-e][201][LTE] LTE legacy CRs, non-IoT (Samsung) Samsung discusssion Rel-16 NR\_newRAT-Core, LTE\_feMob-Core

# 6 NR Rel-17

## 6.2 MR DC CA further enhancements

(LTE\_NR\_DC\_enh2-Core; leading WG: RAN2; REL-17; WID: RP-201040)

Tdoc Limitation: 5 tdocs

No documents should be submitted to 6.2. Please submit to.6.2.x

Rapporteurs may provide baseline correction CRs containing smaller corrections, text clarifications etc - please contact the Rapporteur before providing contributions on those aspects.

### 6.2.1 Organizational and Stage-2 corrections

Including LSs and any rapporteur inputs.

Including Stage-2 corrections related to DCCA WI.

By Email [220] (5)

37.340 corrections:

[R2-2208404](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208404.zip) Corrections for DCCA enhancement ZTE Corporation (Rapporteur), Sanechips, Samsung CR Rel-17 37.340 17.1.0 0340 - F LTE\_NR\_DC\_enh2-Core

* May be revised in [R2-2208714](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208714.zip) (as part of [220])

[R2-2207319](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207319.zip) Rel-17 Stage-2 CPAC corrections Nokia, Nokia Shanghai Bell CR Rel-17 37.340 17.1.0 0334 - F LTE\_NR\_DC\_enh2-Core

[R2-2207741](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207741.zip) Correction on CHO with MR-DC in TS 37.340 vivo CR Rel-17 37.340 17.1.0 0338 - F LTE\_NR\_DC\_enh2-Core

[R2-2208646](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208646.zip) Corrections for further MR-DC enhancements Huawei, HiSilicon draftCR Rel-18 37.340 17.1.0 F LTE\_NR\_DC\_enh2-Core

[R2-2207727](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207727.zip) Introduction of signaling flows for CHO+MR-DC Ericsson CR Rel-17 37.340 17.1.0 0337 - B LTE\_NR\_DC\_enh2-Core

*(moved from 6.2.3.2)*

By Email [221] (2)

38.331 corrections:

[R2-2208644](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208644.zip) Corrections for further MR-DC enhancements Huawei, HiSilicon CR Rel-18 38.331 17.1.0 3459 - F NR\_mob\_enh2-Core

* Revised in [R2-2208695](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208695.zip)

[R2-2208695](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208695.zip) Corrections for further MR-DC enhancements Huawei, HiSilicon CR Rel-17 38.331 17.1.0 3459 1 F LTE\_NR\_DC\_enh2-Core

* May be revised in [R2-2208716](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208716.zip) (as part of [221])

[R2-2208645](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208645.zip) Corrections for further MR-DC enhancements Huawei, HiSilicon CR Rel-18 36.331 17.1.0 4867 - F NR\_mob\_enh2-Core

* Revised in [R2-2208696](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208696.zip)

[R2-2208696](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208696.zip) Corrections for further MR-DC enhancements Huawei, HiSilicon CR Rel-17 36.331 17.1.0 4867 1 F LTE\_NR\_DC\_enh2-Core

* May be revised in [R2-2208717](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208717.zip) (as part of [221])

Email discussions ([220])

* [AT119-e][220][DCCA] Stage-2 corrections to DCCA (ZTE)

      Scope: Discuss Stage-2 corrections for DCCA marked for this discussion.

Intended outcome: Report in in [R2-2208713](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208713.zip). Merged CR (if needed) in [R2-2208714](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208714.zip).

Deadline: Deadline 1 (report) / Deadline 2 (final CRs)

[R2-2208713](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208713.zip) Report of [AT119-e][220][DCCA] Stage-2 corrections to DCCA (ZTE) ZTE discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2208714](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208714.zip) Corrections for DCCA enhancement ZTE Corporation (Rapporteur), Sanechips, Samsung CR Rel-17 37.340 17.1.0 0340 1 F LTE\_NR\_DC\_enh2-Core [R2-2208404](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208404.zip)

### 6.2.2 Efficient activation deactivation mechanism for one SCG and SCells

No documents should be submitted to 6.2.2. Please submit to.6.2.2.x

#### 6.2.2.1 MAC PDCP corrections

Including essential corrections to SCG activation/deactivation for MAC/PDCP.

By Email [222] (3+3+2+1+1)

SCell activation/deactivation actions in MAC:

[R2-2207011](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207011.zip) MIscellaneous Corrections for SCG activation\_deactivation Samsung Electronics Co., Ltd draftCR Rel-17 38.321 17.1.0 LTE\_NR\_DC\_enh2-Core

[R2-2208465](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208465.zip) Correction for activation/deactivation of SCells Xiaomi draftCR Rel-17 38.321 17.1.0 LTE\_NR\_DC\_enh2-Core

[R2-2208650](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208650.zip) Correction on SCG deactivation Huawei, HiSilicon CR Rel-18 38.321 17.1.0 1396 - F NR\_mob\_enh2-Core

* Revised in [R2-2208697](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208697.zip)

[R2-2208697](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208697.zip) Correction on SCG deactivation Huawei, HiSilicon CR Rel-17 38.321 17.1.0 1396 1 F LTE\_NR\_DC\_enh2-Core

Beam failure actions when in deactivated SCG:

[R2-2207966](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207966.zip) [E129] Stop/resume BFD at beam failure for deactivated SCG Ericsson discussion [R2-2205797](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2205797.zip)

[R2-2207852](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207852.zip) Correction of BFD procedure for deactivated PSCell Sharp discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2207853](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207853.zip) CR related to BFD mechanism for deactivated PSCell Sharp CR Rel-17 38.321 17.1.0 1355 - F LTE\_NR\_DC\_enh2-Core

BWP operation:

[R2-2207854](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207854.zip) Remaining issues for BWP operation in deactivated SCG Sharp discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2207855](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207855.zip) CR on 38.321 for Remaining issues for BWP handling in deactivated SCG Sharp CR Rel-17 38.321 17.1.0 1356 - F LTE\_NR\_DC\_enh2-Core

Activation of BFD/RLM in deactivated SCG:

[R2-2207541](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207541.zip) Clarification on BFD while PSCell is deactivated Nokia, Nokia Shanghai Bell CR Rel-17 38.321 17.1.0 1322 - F LTE\_NR\_DC\_enh2-Core

* May be revised in [R2-2208719](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208719.zip) (as part of [222])

MAC/PDCP modelling issues:

[R2-2207393](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207393.zip) Discussion on MAC and PDCP Aspects CATT discussion Rel-17 LTE\_NR\_DC\_enh2-Core

Email discussions ([222])

* [AT119-e][222][DCCA] MAC/PDCP corrections to DCCA (Nokia)

      Scope: Discuss NR and LTE MAC/PDCP corrections for DCCA marked for this discussion.

Intended outcome: Report in in [R2-2208718](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208718.zip). Merged CR (if needed) in [R2-2208719](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208719.zip).

Deadline: Deadline 1 (report) / Deadline 2 (final CRs)

[R2-2208718](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208718.zip) Report of [AT119-e][222][DCCA] MAC/PDCP corrections to DCCA (Nokia) Nokia discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2208719](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208719.zip) Corrections to MAC specification Nokia, Nokia Shanghai Bell CR Rel-17 38.321 17.1.0 1322 1 F LTE\_NR\_DC\_enh2-Core [R2-2207541](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207541.zip)

#### 6.2.2.2 RRC corrections

Including essential corrections to SCG activation/deactivation for RRC and related UE capabilities.

By Web Conf (1st Week Wednesday) (3)

UAI handling:

[R2-2208651](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208651.zip) UE assistance information while the SCG is deactivated Huawei, HiSilicon discussion Rel-17 LTE\_NR\_DC\_enh2-Core

*Proposal 1: Clarify that only the MN can configure the UE to report its SCG deactivation preference.*

*Proposal 2: Clarify that the UE reports the assistance information configured by the SN via SRB1 when the SCG is deactivated.*

*Proposal 3: Clarify that the UE shall not report the SCG deactivation assistance information via SRB3 and ULInformationTransferMRDC.*

[R2-2207306](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207306.zip) [E131] Handling of UAI for deactivated SCG Ericsson discussion LTE\_NR\_DC\_enh2-Core

*Observation 1 Leaving up to UE implementation the behavior of SN configured UAI while the SCG is deactivated may lead to inter-operability issues in the future, e.g. it may prevent further UE reports to the SN once the SCG is activated.*

*Observation 2 While the network can configure/release UAI upon SCG activation/deactivation, the behavior is still unclear for the case where the network decides to keep SN configured UAI while the SCG is deactivated.*

*Observation 3 A note in 38.331 would not prevent the UE from sending reports for SN configured UAI while the SCG is deactivated and would thus still leave unclear the behavior to be adopted in this case.*

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

*Proposal 1 The UE behavior of SN configured UAI while the SCG is deactivated is to be captured in 38.331.*

*Proposal 2 The UE report of SN configured UAI is stopped while the SCG is deactivated and resumed once the SCG is activated.*

*Proposal 3 The UE report of SN configured UAI is captured in 38.331 as normative text.*

*Proposal 4 RAN2 confirms that UE report of MN configured UAI is not affected by SCG activation/deactivation, regardless of whether the report also concerns the SCG (i.e. UE keeps running UAI procedure for those reports as usual).*

[R2-2208286](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208286.zip) UAI transmission in SCG deactivation Sharp discussion

*Observation 1: assistance information for SCG may change even if SCG is deactivated.*

*Observation 2: UAI for SCG that has not been successfully transmitted to the network via SRB3 is discarded upon SCG deactivation.*

*Observation 3: at the time of SCG activation, the network may not have the latest assistance information for SCG if UE cannot send UAI for SCG during SCG deactivation.*

*Proposal: when SCG is in deactivated state, UE can send the UAI for SCG via SRB1, which can then be delivered to SN by MN, so as to make sure SN has the latest assistance information for SCG at the time of SCG activation.*

Discussed jointly

- CATT indicates that for UAI, powSaving discussed the similar issue for deactivated SCG and agreed that UE can indicate UAI via MN leg for SN.

HW P1

* 1: Discuss in offline [221] whether only the MN can configure the UE to report its SCG deactivation preference.

- Apple thinks this is restrictive. In EN-DC, LTE has to do this, which makes more work for LTE implementations. Huawei thinks is already implemented in 36.331. MTK agrees with Huawei P1 and is not sure why LTE MN is not impacted in general. Apple clarifies that network does not necessarily implement UAI. If we restrict to MN, we depend on LTE node for UAI. Should allow both MN and SN to use it. This restriction would mean SN cannot ask UAI to be configured.

E/// P1

- Huawei thinks specification already captures these, but there could be some omissions. Shouldn’t try to have new functionalities, just capture the intent.

* 1 The UE behavior of SN configured UAI for SCG preference while the SCG is deactivated is captured in 38.331 (should be already there, can discuss details in CR phase).
* [200] Remaining content of Tdocs [R2-2208651](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208651.zip), [R2-2207306](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207306.zip) and [R2-2208286](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208286.zip) can be discussed under offline [221]

By Email [221] (5)

Miscellaneous RRC corrections:

[R2-2207395](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207395.zip) Discussion on RRC Aspects for SCG Activation and Deactivation CATT discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2207305](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207305.zip) BFD with two BFD-RS sets on deactivated SCG Ericsson discussion LTE\_NR\_DC\_enh2-Core

[R2-2208405](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208405.zip) CR on SCG failure type ZTE Corporation, Sanechips CR Rel-17 38.331 17.1.0 3418 - F LTE\_NR\_DC\_enh2-Core

[R2-2208648](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208648.zip) SCG state in the MCG fast recovery Huawei, HiSilicon discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2207394](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207394.zip) Corrections on scg-State CATT discussion Rel-17 LTE\_NR\_DC\_enh2-Core

Email discussions ([221])

* [AT119-e][221][DCCA] RRC corrections to SCG deactivation (Huawei)

      Scope: Discuss NR and LTE RRC corrections for SCG deactivation marked for this discussion.

Intended outcome: Report in in [R2-2208715](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208715.zip). Merged NR RRC CR in [R2-2208716](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208716.zip) and LTE RRC CR in [R2-2208717](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208717.zip).

Deadline: Deadline 1 (report) / Deadline 2 (final CRs)

[R2-2208715](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208715.zip) Report of [AT119-e][221][DCCA] RRC corrections to SCG deactivation (Huawei) Huawei discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2208716](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208716.zip) Corrections for further MR-DC enhancements Huawei, HiSilicon CR Rel-17 38.331 17.1.0 3459 2 F LTE\_NR\_DC\_enh2-Core [R2-2208695](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208695.zip)

[R2-2208717](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208717.zip) Corrections for further MR-DC enhancements Huawei, HiSilicon CR Rel-17 36.331 17.1.0 4867 2 F LTE\_NR\_DC\_enh2-Core [R2-2208696](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208696.zip)

### 6.2.3 Conditional PSCell change addition

No documents should be submitted to 6.2.2. Please submit to.6.2.2.x

#### 6.2.3.1 Corrections to CPAC network aspects

Including essential corrections to of CPAC on network aspects (e.g. network communication via inter-node messages) handled by RAN2 and any aspects that require RAN3 interaction.

By Email [220] (1)

[R2-2207321](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207321.zip) On SN-MN awareness of conditional reconfiguration's validity or execution Nokia, Nokia Shanghai Bell discussion Rel-17 LTE\_NR\_DC\_enh2-Core

*Observation 1: Release 17 supports Conditional Handover with SCG configuration to enable DC setup after PCell change is completed.*

*Observation 2: CHO with SCG configuration works fine as long as MN is aware of any changes to SCG configuration which may impact the prepared CHO + SCG reconfiguration.*

*Observation 3: MN is not aware of any SCG configuration changes pursued by SN, e.g. using SRB3 (without MN involvement).*

*Observation 4: MN may not be aware it shall release all CHO configurations when intra-SN CPC execution has been triggered.*

*Proposal 1: RAN2 is asked to confirm the need to have the following SN to MN indications:*

*a) To inform the MN when conditional reconfigurations should be released (scenario: multiple conditional reconfigurations provided by different network nodes exist and intra-SN CPC triggers)*

*b) To inform the MN to update the CHO configuration (scenario: CHO with SCG was prepared and intra-SN changes were pursued)*

By Email [220] (4)

[R2-2207636](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207636.zip) On co-existence of MN and SN initiated conditional reconfiguration Lenovo, ZTE Corporation, Sanechips, CATT CR Rel-17 37.340 17.1.0 0336 - F LTE\_NR\_DC\_enh2-Core

[R2-2207740](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207740.zip) Discussion on release of conditional configuration vivo discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2207494](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207494.zip) Clarifications on prepared PSCell addition by candidate SN NEC discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2207495](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207495.zip) Clarifications on prepared PSCell addition by candidate SN in CPC NEC CR Rel-17 37.340 17.1.0 0335 - F LTE\_NR\_DC\_enh2-Core

By Email [223] (3)

[R2-2207320](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207320.zip) Rel-17 CPAC corrections to NR 38.331 Nokia, Nokia Shanghai Bell CR Rel-17 38.331 17.1.0 3246 - F LTE\_NR\_DC\_enh2-Core

[R2-2207639](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207639.zip) On maximum number of SN initiated conditional reconfigurations Lenovo, ZTE Corporation, Sanechips, CATT CR Rel-17 38.331 17.1.0 3300 - F LTE\_NR\_DC\_enh2-Core

[R2-2207728](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207728.zip) Outstanding issue for CPC Ericsson discussion Rel-16 LTE\_NR\_DC\_enh2-Core

Email discussions ([223])

* [AT119-e][223][DCCA] RRC corrections to CPAC (Ericsson)

      Scope: Discuss NR and LTE RRC corrections for CPAC marked for this discussion.

Intended outcome: Report in in [R2-2208720](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208720.zip). Merged NR RRC CR in [R2-2208721](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208721.zip) and LTE RRC CR in [R2-2208722](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208722.zip).

Deadline: Deadline 1 (report) / Deadline 2 (final CRs)

[R2-2208720](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208720.zip) Report of [AT119-e][223][DCCA] RRC corrections to CPAC (Ericsson) Ericsson discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2208721](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208721.zip) Corrections for further CPAC Ericsson CR Rel-17 38.331 17.1.0 XXXX - F LTE\_NR\_DC\_enh2-Core

[R2-2208722](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208722.zip) Corrections for further CPAC Ericsson CR Rel-17 36.331 17.1.0 XXXX - F LTE\_NR\_DC\_enh2-Core

#### 6.2.3.2 Corrections to CPAC UE signalling

Including essential corrections to CPAC that relate to RRC signalling between network and UE and related UE capabilities.

Including essential corrections to CHO + MR-DC (done as part of TEI17).

Including report of email discussion [Post118-e][227][DCCA] Resolving E022 and E023 for CPAC (Huawei)

By Web Conf (1st Week Wednesday) (1)

Report of email discussion [Post118-e][227][DCCA] Resolving E022 and E023 for CPAC (Huawei)

[R2-2208647](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208647.zip) [Post118-e][227][DCCA] Resolving E022 and E023 for CPAC (Huawei) Huawei, HiSilicon discussion Rel-17 LTE\_NR\_DC\_enh2-Core

*[E022 Description]: It was agreed to support the combination of CHO + CPC. That means that also VarConditionalReconfiguration may have been configured when CHO was configured and VarConditionalReconfiguration then needs to be released as well. This applies to all cases where VarConditionalReconfig is released.*

*[Proposed Change]: Add one more line with the text “remove all the entries within VarConditionalReconfiguration as specified in TS 36.331 [10] clause 5.3.5.9.6, if any;”.*

*Proposal 1: Further discuss the TP in 3.1 for E022. Consider that this TP assumes MN-configured measurements for CPC are to be explicitly removed by the MN (not autonomously by the UE).*

- Ericsson thinks the proposal could be simplified by not having new chapter. MediaTek supports the intention. QC, vivo, Nokia, ZTE, Samsung and LGE agrees. ZTE thinks SCG release for EN-DC case is not captured. Huawei thinks this can be discussed based on ZTE contribution.

* Agree to the (intent of) TP for E022 from [R2-2208647](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208647.zip).

*[E023 Description]: In rel-17 there can be conditional reconfigurations both in MCG and the SCG at the same time. There then needs to be two variables for conditional reconfigurations, one for MCG and one for SCG. If this is not defined, there need to be additions in RAN3 specifications instead, such as coordination of condReconfigId.*

*[Proposed Change]: Define a new variable VarConditionalReconfig-SCG and add relevant procedure text and ASN.1 for it.*

*Proposal 2: Further discuss the TP in 3.2 for E023.*

- QC and Samsung agrees with intent and TP. Ericsson agrees with intent but thinks we can avoid having so many sections.

- Huawei clarifies that by default, the variable applies to the branch from which it was received (MCG or SCG). But if we want to say in some place it applies to both, that is possible.

* Agree to have two UE variables *VarConditionalReconfig*. Agree to the (intent of) TP for E023 from [R2-2208647](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208647.zip) (can still discuss exact wordings etc.)

*[V190 Description]: Remove VarConditionalReconfig when reconfigurationWithSync*

*[Proposed Change]: The current description “if the reconfigurationWithSync was included in spCellConfig of an SCG and the CPA or CPC was configured” includes CPAC and normal SCG handover cases. In our understanding:*

*- Case 1: when MCG change (i.e. if the reconfigurationWithSync was included in spCellConfig of an MCG): all CHO/CPAC should be removed.*

*- Case 2: when CPAC execution: all CHO/CPAC should be removed.*

*- Case 3: when normal SCG change (i.e. not CPAC): CPAC should be removed, while CHO should not be removed.*

*CHO and CPAC candidates are stored in the same VarConditionalReconfiguration. Thus, the current description means all CHO/CPAC would be removed even when normal SCG change (i.e. Case 3).*

*Thus, we think this should be fixed. Details could be found in the contribution* [*R2-22xxx.*](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-22xxx.%0d.zip)*Proposal 3: Further discuss the TP in 3.3 for V190.*

- Ericsson has some concerns this would change Rel-17 UE behaviour.

- ZTE thinks The SCG *reconfigurtaionwithsync* does not differentiate normal PSCell addition/change with CPAC execution. So would want to confirm does the TP mean to revise the previous agreement “If one conditional reconfiguration is executed, the other conditional reconfigurations should be released. Huawei clarifies that we release configurations even if case of non-conditional reconfiguration with sync, which we never really discussed. Huawei agrees this change is functionally NBC but so were the other changes.

- Intel agrees and thinks MTK changes are fine.

* Agree to the (intent of) TP for V190 (with changes proposed by MTK) from [R2-2208647](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208647.zip). Indicate in CR cover page that this CR is mandatory to implement for all UEs and networks.
* To be merged to CPAC RRC CR as part of RRC offline discussion [223]

By Email [223] (4)

*CP(A)C coexistence: CHO+CPAC, CHO with SCG, R16 CPC with R17 CPC*

[R2-2207396](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207396.zip) Discussion on Conditional Reconfiguration for CPAC and CHO CATT discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2207397](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207397.zip) Discussion on CHO with SCG CATT discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2207462](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207462.zip) Discussion on handling of simultaneous configuration of R16 and R17 CPC Apple discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2207463](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207463.zip) CR for handling R16 CPC with R17 CPA/CPC Apple CR Rel-17 38.331 17.1.0 3266 - F LTE\_NR\_DC\_enh2-Core

By Email [223] (3+1)

*Conditional reconfiguration release:*

[R2-2208406](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208406.zip) Discussion on conditional reconfiguration release ZTE Corporation, Sanechips discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2208407](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208407.zip) CR on conditional reconfiguration release ZTE Corporation, Sanechips CR Rel-17 36.331 17.1.0 4858 - F LTE\_NR\_DC\_enh2-Core

[R2-2208408](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208408.zip) CR on conditional reconfiguration release ZTE Corporation, Sanechips CR Rel-17 38.331 17.1.0 3419 - F LTE\_NR\_DC\_enh2-Core

*Prioritization of triggered cells when multiple conditional reconfigurations trigger:*

[R2-2208649](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208649.zip) Triggering of multiple cells for conditional reconfiguration execution Huawei, HiSilicon discussion Rel-17 LTE\_NR\_DC\_enh2-Core

### 6.2.4 Temporary RS for SCell activation

Including essential corrections to of temporary RS for SCell activation..

By Email [222] (2)

[R2-2207542](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207542.zip) Corrections MAC regarding TRS activation Nokia, Nokia Shanghai Bell CR Rel-17 38.321 17.1.0 1323 - F LTE\_NR\_DC\_enh2-Core

[R2-2207788](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207788.zip) Correction to TRS for fast SCell activation vivo CR Rel-17 38.321 17.1.0 1340 - F LTE\_NR\_DC\_enh2

## 6.3 Multi SIM

(LTE\_NR\_MUSIM-Core; leading WG: RAN2; REL-17; WID: RP-212610)

Tdoc Limitation: 3 tdocs

Rapporteurs may provide baseline correction CRs containing smaller corrections, text clarifications etc - please contact the Rapporteur before providing contributions on those aspects.

### 6.3.1 Organizational

Including LSs and any rapporteur inputs (e.g. from ASN.1 ad-hoc meeting).

By Email [230] (2)

[R2-2208000](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208000.zip) Correction on MUSIM related changes Nokia, Nokia Shanghai Bell CR Rel-17 38.300 17.1.0 0522 - F LTE\_NR\_MUSIM-Core

[R2-2208033](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208033.zip) Update to gap handling for Multi-USIM (38.300) Ericsson CR Rel-17 38.300 17.1.0 0526 - F LTE\_NR\_MUSIM-Core

By Email [231] (1)

[R2-2208461](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208461.zip) Correction of NR RRC support for MUSIM vivo CR Rel-17 38.331 17.1.0 3422 - F LTE\_NR\_MUSIM-Core

### 6.3.2 Paging collision avoidance and paging with service indication

Including essential corrections to paging collision avoidance and paging with service indication and related UE capabilities.

### 6.3.3 NW switching for multi-SIM with or without leaving RRC\_CONNECTED

Including essential corrections to procedures for NW switching for multi-SIM with or without leaving RRC\_CONNECTED and related UE capabilities.

By Email [230] (2)

Capturing MUSIM gaps in MAC:

[R2-2208030](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208030.zip) Mac updates for MUSIM Ericsson discussion

*Observation 1 Specifying MUSIM gaps in 38.321 may require multiple changes that are not limited to RACH procedure.*

*Proposal 1 RAN2 to discuss whether to introduce MUSIM gaps behaviour in 38.321.*

[R2-2208470](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208470.zip) UE MAC operations during MUSIM gaps Samsung R&D Institute India discussion

*Proposal 1: Capture the missing agreement: UE is allowed to initiate RACH procedure during MUSIM gaps in MAC specification.*

*Proposal 2: Once the preamble is transmitted, UE starts the RA response window and monitors PDCCH for MSG2/MSG-B or contention resolution regardless of MUSIM gap.*

*Proposal 3: RAN2 to discuss whether UE monitors the PDCCH during the next on-duration when DCP overlaps with MUSIM gaps.*

By Email [232] (3+2+1)

Switching gaps:

[R2-2208032](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208032.zip) Discussion on gap length IE optionality Ericsson discussion

[R2-2208344](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208344.zip) Clarification on performing MUSIM gap configuration procedure Samsung Electronics Co., Ltd discussion Rel-17 38.331 LTE\_NR\_MUSIM-Core

*Observation 1: Current procedure text only specifies how UE to add/modify/release each musim-GapId for periodic MUSIM gap(s), if the MUSIM gap configuration is provided.*

*Observation 2: There is no procedure text how UE to apply MUSIM gap configuration i.e. how to setup (a)periodic MUSIM gap via calculating its gap starting position.*

*Proposal: Update the procedure text such that how to perform the MUSIM gap configuration procedure is specified in a new clause. The draft TP in Annex can be considered as baseline.*

[R2-2208035](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208035.zip) On Remaining Issues ofr MUSIM Switching Procedures Nokia, Nokia Shanghai Bell discussion Rel-18

* Revised in [R2-2208683](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208683.zip)

[R2-2208683](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208683.zip) On Remaining Issues ofr MUSIM Switching Procedures Nokia, Nokia Shanghai Bell discussion Rel-17

*Observation 1: Current specification for MUSIM functionality is not explicit on disallowing UE Assistance information triggering for MUSIM operation via both cell groups of DC connection.*

*Observation 2: Allowing UE assistance information and signalling procedure for MUSIM via both cell groups will require additional clarification on UE behaviour related to gap handling and leaving scenarios.*

*Observation 1: Network may have pending user plane packets at the time of RRC connection Release based on Leave indication.*

*Observation 2: Transition to RRC-INACTIVE for MUSIM operation will result in user plane packet drop at NTWK-A.*

*Proposal 1: RAN2 to confirm that MUSIM assistance information and signaling procedure for switching notifications are only carried out as MCG Configuration change for Rel-17.*

*Proposal 2: The gap configurations signalled from Master cell-group is used by UE to switch from NTWK-A completely including MCG and SCG operations for Rel-17.*

*Proposal 3: Cell-Group specific MUSIM Gap configuration and leave notification should be considered in Rel-18 WID.*

*Proposal 4: Uplink transmission for SPS and CG are allowed during MUSIM Gap based on network control.*

*Proposal 5: UE may indicate the support for uplink transmission during MUSIM Gap as optional capability*

*Proposal 6: RAN2 to consider inclusion of absence time or preferred return time to minimise the user plane data interruption and packet loss due to release of RRC connection for MUSIM switching for short absence.*

[R2-2207994](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207994.zip) Clarification for MUSIM Assistance Information in DC for reconfiguration with Sync Nokia, Nokia Shanghai Bell CR Rel-17 38.331 17.1.0 3343 - F LTE\_NR\_MUSIM-Core

Do we need to support eDRX with MUSIM gaps?

[R2-2207670](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207670.zip) Support eDRX in Multi-SIM scenario Spreadtrum Communications discussion Rel-17

By Email [232] (2)

Should UE release MUSIM gaps and/or stop T346g upon triggering RRC re-establishment?

[R2-2207961](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207961.zip) Discussion on the MUSIM gap release during RRC reestablishment Huawei, HiSilicon discussion Rel-17

[R2-2208369](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208369.zip) Further discussion on re-establishment handling while T346g timer is running Samsung Electronics Co., Ltd discussion Rel-17 38.331 LTE\_NR\_MUSIM-Core

By Email [230] (3)

[R2-2207164](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207164.zip) CR on the Gap Numbers Restriction ZTE Corporation, Sanechips CR Rel-17 38.300 17.1.0 0500 - F LTE\_NR\_MUSIM-Core

[R2-2207231](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207231.zip) Corrections on NW Switching for Multi-SIM with or without Leaving RRC\_CONNECTED\_38.300 OPPO CR Rel-17 38.300 17.1.0 0506 - F LTE\_NR\_MUSIM-Core

[R2-2208462](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208462.zip) corrections on RACH procedure during MUSIM gaps vivo CR Rel-17 38.321 17.1.0 1386 - F LTE\_NR\_MUSIM-Core

*(moved from 6.3.1)*

By Email [231] (11)

Corrections to aperiodic MUSIM gaps:

[R2-2207166](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207166.zip) Further Clarification on the Waiting Timer for Leaving Connected State ZTE Corporation, Sanechips discussion Rel-17 LTE\_NR\_MUSIM-Core

[R2-2207505](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207505.zip) Discussion on handling of aperiodic MUSIM gap Huawei, HiSilicon discussion Rel-17 LTE\_NR\_MUSIM-Core

[R2-2207165](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207165.zip) CR on the MUSIM-GapInfo ZTE Corporation, Sanechips CR Rel-17 38.331 17.1.0 3225 - F LTE\_NR\_MUSIM-Core

[R2-2207232](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207232.zip) Corrections on NW Switching for Multi-SIM with or without Leaving RRC\_CONNECTED\_38.331 OPPO CR Rel-17 38.331 17.1.0 3236 - F LTE\_NR\_MUSIM-Core

[R2-2207238](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207238.zip) Corrections on Capability for MUSIM UE OPPO CR Rel-17 38.306 17.1.0 0763 - F LTE\_NR\_MUSIM-Core

[R2-2207987](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207987.zip) Applicability of otherConfig MUSIM IEs for SRB3 Nokia, Nokia Shanghai Bell CR Rel-17 38.331 17.1.0 3342 - F LTE\_NR\_MUSIM-Core

[R2-2207958](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207958.zip) Corrections to MUSIM gaps Huawei, HiSilicon CR Rel-17 38.331 17.1.0 3335 - F LTE\_NR\_MUSIM-Core

[R2-2208029](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208029.zip) Correction to musim-GapLength Ericsson CR Rel-17 38.331 17.1.0 3344 - F LTE\_NR\_DC\_CA\_enh-Core

[R2-2208496](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208496.zip) Correction on MUSIM gap configuration MediaTek Inc. CR Rel-17 38.331 17.1.0 3428 - F LTE\_NR\_MUSIM-Core

Email discussions ([230], [231], [232])

* [AT119-e][230][MUSIM] Stage-2 and MAC corrections to MUSIM (Samsung)

      Scope: Discuss Stage-2 and NR MAC corrections for MUSIM marked for this discussion.

Intended outcome: Report in in [R2-2208723](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208723.zip). Merged Stage-2 CR in [R2-2208724](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208724.zip) and MAC CR in [R2-2208725](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208725.zip).

Deadline: Deadline 1 (report) / Deadline 2 (final CRs)

* [AT119-e][231][MUSIM] RRC corrections to MUSIM (vivo)

      Scope: Discuss RRC corrections for MUSIM marked for this discussion.

Intended outcome: Report in in [R2-2208726](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208726.zip). Merged NR RRC CR in [R2-2208727](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208727.zip).

Deadline: Deadline 1 (report) / Deadline 2 (final CRs)

* [AT119-e][232][MUSIM] Potential clarifications to MUSIM (Ericsson)

      Scope: Discuss the corrections for MUSIM marked for this discussion.

Intended outcome: Report in in [R2-2208728](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208728.zip).

Deadline: Deadline 1 (report)

[R2-2208723](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208723.zip) Report of [AT119-e][230][MUSIM] Stage-2 and MAC corrections to MUSIM (Samsung) Samsung discussion Rel-17 LTE\_NR\_MUSIM-Core

[R2-2208724](C:\\Users\\terhentt\\Documents\\Tdocs\\RAN2\\RAN2_119-e\\R2-2208724.zip) Stage-2 corrections on MUSIM Samsung CR Rel-17 38.300 17.1.0 0548 - F LTE\_NR\_MUSIM-Core

[R2-2208725](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208725.zip) MAC corrections on MUSIM Samsung CR Rel-17 38.321 17.1.0 1401 - F LTE\_NR\_MUSIM-Core

[R2-2208726](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208726.zip) Report of [AT119-e][231][MUSIM] RRC corrections to MUSIM (vivo) vivo discussion Rel-17 LTE\_NR\_MUSIM-Core

[R2-2208727](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208727.zip) Correction of NR RRC support for MUSIM vivo CR Rel-17 38.331 17.1.0 3422 1

F LTE\_NR\_MUSIM-Core [R2-2208461](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208461.zip)

[R2-2208728](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208728.zip) Report of [AT119-e][232][MUSIM] Potential clarifications to MUSIM (Ericsson) Ericsson discussion Rel-17 LTE\_NR\_MUSIM-Core

## 6.8 RAN slicing

(NR\_Slice -Core; leading WG: RAN2; REL-17; WID: RP-212534)

Tdoc Limitation: 2 tdocs

Proposals that do not provide relevant Stage-3 details will not be treated.

### 6.8.1 Organizational

Including LSs and any rapporteur inputs .

By Web Conf (1st Week Wednesday) (1+2)

LS from CT1:

[R2-2206909](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2206909.zip) Reply LS on Slice list and priority information for cell reselection (C1-224295; contact: OPPO) CT1 LS in Rel-17 NR\_slice-Core To:RAN2 Cc:SA2, CT

- Apple wonders how the solution works: For requested NSSAI, RAN2 agreed that service initiation doesn’t trigger cell reselection. Does this still hold? Nokia thinks CT1 didn’t intend to change RAN2 agreements, but just provide the information to AS layer. Intel also thinks this doesn’t change RAN2 agreements. LGE and Lenovo agree.

* Noted (RAN2 details and need for a reply LS discussed online based on input contributions)

[R2-2207797](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207797.zip) Discussion on CT1 Reply LS on cell reselection OPPO discussion Rel-17 NR\_slice-Core

*(moved from 6.8.2)*

*Observation 1 For cell reselection, a gap exists between the current TS 38.304 and the description in this CT1 Reply LS. RAN2 may need to update the spec to resolve this gap.*

*Observation 2 One month later, for RAN slicing WI completeness, SA Plenary has discussed the issue similar to what CT1 discussed in May. SA finally concludes that the impact on RAN should be avoided.*

*Proposal 1 RAN2 confirms no RAN2 spec change due to SA2/CT1 work for the RAN slicing WI completeness. Whether/how to resolve the gap between the current RAN2 and CN specs depends on SA2/CT1 conclusions.*

*Proposal 2 If needed, one reply LS is sent to CT1/SA2 to indicate that RAN2 will follow what conclusion SA plenary already made and it's up to CT1/SA2 on the gap issue between the current RAN2 and CN specs.*

[R2-2208002](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208002.zip) Slice Group considerations based on CT1 LS ([R2-2206909](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2206909.zip)/C1-224295) Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_slice-Core

*Observation 1: CT1 and RAN2 specifications are not fully aligned how the slice group information is provided by the NAS to the AS layer for cell reselection.*

*Observation 2: There is no need to change the interface specification of the UE due to the misalignment between CT1 and RAN2 specifications.*

*Observation 3: SA2 has specified how the UE derives the NSAG(s) and their priorities to be used for cell reselection based on the NSAG information provided by AMF to the UE.*

*Observation 4: SA2 has already been requested by SA to specify how the UE derives the NSAG to be used for slice specific RACH configuration based on the NSAG information provided by AMF to the UE without RAN impacts.*

*Proposal 1: Align the wording of the TS 38.300 and TS 38.304 with CT1 agreement in a way that clarifies that NAS provides the NSAG information that is used to derive the NSAGs and their priorities to be considered during cell reselection and slice specific RACH configuration. (See text proposals in Annex A.1 for TS 38.300 and Annex A.2 for TS 38.304.)*

*Proposal 2: Send a reply LS to CT1 and SA2 to clarify that RAN2 aligned its specifications with CT1 agreement and RAN2 assumes SA2 specifies how the UE derives the NSAG(s) and their priorities to be considered during cell reselection and slice specific RACH configuration from the NSAG information provided by the AMF and the applicable network slices. (See LS proposal in Annex B.)*

Above contributions discussed jointly

- Nokia agrees with OPPO there is a misalignment in RAN2 and CT1.

- LGE thinks OPPO proposals are good and we may not need anything. This is UE NAS, not network NAS.

- ZTE thinks SA2 is already doing this, so CT1 may update their specifications. So it’s not urgent to update our specs now. Could just reply we wait for their progress. CMCC agrees and thinks SA2 will anyway discuss this. Vodafone also thinks we can wait.

- Huawei supports P1 from Nokia paper, because it can work and it has almost no impacts to CT1. Intel agrees.

- Samsung thinks the only difference between OPPO and Nokia is whether UE AS needs to filter the NSSAI is considered for NSAGs. But this is normally done at NAS so prefers OPPO proposal. QC agrees and thinks Nokia proposal doesn’t work since it’s not only for allowed but also for configured NSSAI.

- Ericsson supports Nokia approach. SA2 specs should detail the overall system approach. We do not specify AS-NAS interface normally. RA is only for IDLE to CONNECTED but this is not captured yet, so we should try to do that. Intel and Lenovo agree. Lenovo thinks Not clear to use the use of Slices provided additionally. So not sure what RAN2 can do with them.

- Nokia thinks the text they propose is CT1 decision, not SA2. SA2 never specifies AS-NAS functionality division.

- QC thinks SA2 already agreed that NAS layer should only provide NSAG for allowed NSSAI for cell reselection.

* Come back in next meeting once CT1/SA2 have finished their work. No reply to CT1 sent from this meeting.

By Email [240] (2)

CR/specification rapporteur inputs:

[R2-2207951](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207951.zip) Rapporteur corrections on TS 38.331 for RAN Slicing Huawei, HiSilicon, Nokia, Nokia Shanghai Bell CR Rel-17 38.331 17.1.0 3334 - F NR\_slice-Core

[R2-2208001](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208001.zip) Slicing related stage 2 corrections Nokia (rapporteur), Ericsson CR Rel-17 38.300 17.1.0 0523 - F NR\_slice-Core

### 6.8.2 Cell reselection

Including corrections to slice-specific cell reselection.

By Email [240] (5)

[R2-2207819](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207819.zip) Discussion paper on the mapping between slices and NSAG CATT discussion Rel-17 NR\_slice-Core

[R2-2208495](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208495.zip) Slice specific reselection priorities in RRC Release Samsung R&D Institute India discussion

[R2-2207932](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207932.zip) Cleanup on RAN Slicing Apple discussion Rel-17 NR\_slice-Core

[R2-2207818](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207818.zip) Correction on TS 38.331 for RAN slicing CATT CR Rel-17 38.331 17.1.0 3316 - F NR\_slice-Core

* Revised in [R2-2208690](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208690.zip)

[R2-2208690](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208690.zip) Correction on TS 38.331 for RAN slicing CATT CR Rel-17 38.331 17.1.0 3316 1 F NR\_slice-Core

[R2-2207933](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207933.zip) CR on slice availability provision for serving cell Apple CR Rel-17 38.331 17.1.0 3328 - F NR\_slice-Core

By Email [241] (13)

[R2-2207678](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207678.zip) Miscellaneous corrections to slice-specific cell reselection Spreadtrum Communications discussion Rel-17

RAN sharing and equal priorities:

[R2-2208003](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208003.zip) Support of RAN sharing and equivalent PLMNs with slice specific cell reselection Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_slice-Core

[R2-2208446](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208446.zip) Correction on the rules in equal priority case for slice-based cell reselection CMCC, OPPO, Huawei, HiSilicon CR Rel-17 38.304 17.1.0 0279 - F NR\_slice-Core

[R2-2208519](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208519.zip) Issues with slice specific cell reselection Samsung R&D Institute India discussion

[R2-2207952](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207952.zip) Discussion on the details of slice specific cell reselection Huawei, HiSilicon discussion Rel-17 NR\_slice-Core

[R2-2208143](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208143.zip) Corrections on slice-based cell re-selection in TS 38.304 Ericsson discussion Rel-17 NR\_slice-Core

[R2-2207934](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207934.zip) CR to cleanup slice specific cell reselection Apple CR Rel-17 38.304 17.1.0 0268 - F NR\_slice-Core

[R2-2207953](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207953.zip) Corrections on TS 38.304 for RAN Slicing Huawei, HiSilicon CR Rel-17 38.304 17.1.0 0269 - F NR\_slice-Core

[R2-2208517](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208517.zip) Correction on per-TA NSAG for slice specific cell reselection Qualcomm Incorporated CR Rel-17 38.304 17.1.0 0280 - F NR\_slice-Core

[R2-2208607](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208607.zip) 38.304 CR Corrections on slice-based cell reselection Xiaomi, OPPO, CMCC draftCR Rel-17 38.304 17.1.0 F NR\_slice-Core

[R2-2208296](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208296.zip) Possible configuration mismatch in slice specific cell reselection Kyocera discussion

[R2-2207337](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207337.zip) Correction for cell reselection Lenovo discussion NR\_slice-Core Late

[R2-2207338](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207338.zip) CR for Correction for cell reselection Lenovo CR Rel-17 38.304 17.1.0 0259 - F NR\_slice-Core Late

Email discussions ([240], [241])

* [AT119-e][240][Slicing] RRC, MAC and Stage-2 CRs to RAN slicing (Huawei)

      Scope: Discuss RRC and Stage-2 corrections for RAN slicing marked for this discussion.

Intended outcome: Report in in [R2-2208729](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208729.zip). Merged Stage-2 CR in [R2-2208730](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208730.zip), MAC CR in [R2-2208731](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208731.zip) and RRC CR in [R2-2208732](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208732.zip).

Deadline: Deadline 1 (report) / Deadline 2 (final CRs)

* [AT119-e][241][Slicing] Cell reselection corrections to RAN slicing (Qualcomm)

      Scope: Discuss cell reselection aspects for RAN slicing marked for this discussion and attempt to provide 38.304 CR if corrections are required.

Intended outcome: Report in in [R2-2208733](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208733.zip). Merged 38.304 CR in [R2-2208734](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208734.zip).

Deadline: Deadline 1 (report) / Deadline 2 (final CRs)

[R2-2208729](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208729.zip) Report of [AT119-e][240][Slicing] RRC, MAC and Stage-2 CRs to RAN slicing (Huawei) Huawei discussion Rel-17 NR\_slice-Core

[R2-2208730](C:\\Users\\terhentt\\Documents\\Tdocs\\RAN2\\RAN2_119-e\\R2-2208730.zip) Corrections on TS 38.300 for RAN Slicing Huawei, HiSilicon CR Rel-17 38.300 17.1.0 0549 - F NR\_slice-Core

[R2-2208731](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208731.zip) Corrections on TS 38.321 for RAN Slicing Huawei, HiSilicon CR Rel-17 38.321 17.1.0 1402 - F NR\_slice-Core

[R2-2208732](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208732.zip) Corrections on TS 38.331 for RAN Slicing Huawei, HiSilicon CR Rel-17 38.331 17.1.0 3334 1 F NR\_slice-Core [R2-2207951](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207951.zip)

[R2-2208733](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208733.zip) Report of [AT119-e][241][Slicing] Cell reselection corrections to RAN slicing (Qualcomm) Qualcomm discussion Rel-17 NR\_slice-Core

[R2-2208734](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208734.zip) Corrections on cell reselection for RAN slicing Qualcomm Incorporated CR Rel-17 38.304 17.1.0 0280 1 F NR\_slice-Core [R2-2208517](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208517.zip)

### 6.8.3 RACH

Including corrections to RAN slicing-specific RACH prioritization (i.e. aspects that are **not** discussed as part of the common RACH prioritization agenda).

By Email [240] (1+1+1)

[R2-2207471](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207471.zip) 38.300 CR Corrections on slice based RACH configuration Beijing Xiaomi Software Tech draftCR Rel-17 38.300 17.1.0 F NR\_slice-Core

[R2-2207798](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207798.zip) Minor correction on slice-specific RACH OPPO CR Rel-17 38.321 17.1.0 1343 - F NR\_slice-Core

[R2-2208142](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208142.zip) Miscellaneous corrections for RAN slicing enhancements Ericsson CR Rel-17 38.331 17.1.0 3363 - F NR\_slice-Core

## 6.14 NR QoE

(NR\_QoE-Core; leading WG: RAN3; REL-17; WID: RP-211406)

Tdoc Limitation: 2 tdocs

### 6.14.1 Organizational

Including incoming LSs, rapporteur inputs, etc.

Rapporteurs may provide baseline correction CRs containing smaller corrections, text clarifications etc - please contact the Rapporteur before providing contributions on those aspects.

By Email [200] (2)

[R2-2206906](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2206906.zip) Reply LS on UE capabilities for NR QoE (C1-224008; contact: Apple) CT1 LS in Rel-17 NR\_QoE-Core To:RAN2 Cc:SA4

* Noted (confirms RAN2 assumption on AS capabilities)

[R2-2206908](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2206908.zip) Reply LS on NR QoE (C1-224182; contact: Huawei) CT1 LS in Rel-17 NR\_QoE-Core To:RAN2 Cc:SA4, RAN3, SA5

* Noted (CT1 has updated specifications based on RAN2 agreements)

[R2-2206978](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2206978.zip) LS Reply on QoE configuration and reporting related issues (S5-223518; contact: Ericsson) SA5 LS in Rel-17 eQoE To:SA4, RAN3 Cc:RAN2

* Noted (RAN2 in CC)

By Email [250] (1)

[R2-2208627](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208627.zip) 38.300 CR Correction for Introduction of QoE measurements in NR China Unicom, Huawei, HiSilicon CR Rel-17 38.300 17.1.0 0543 - F NR\_QoE-Core

Email discussions ([250])

* [AT119-e][250][R17 QoE] Stage-2 corrections to Rel-17 QoE (China Unicom)

      Scope: Discuss Stage-2 corrections for Rel-17 QoE marked for this discussion.

Intended outcome: Report in in [R2-2208735](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208735.zip). Merged 38.300 CR in [R2-2208736](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208736.zip).

Deadline: Deadline 1 (report) / Deadline 2 (final CRs)

[R2-2208735](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208735.zip) Report of [AT119-e][250][R17 QoE] Stage-2 corrections to Rel-17 QoE (China Unicom) China Unicom discussion Rel-17 NR\_QoE-Core

[R2-2208736](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208736.zip) 38.300 CR Correction for Introduction of QoE measurements in NR China Unicom, Huawei, HiSilicon CR Rel-17 38.300 17.1.0 0543 1 F NR\_QoE-Core [R2-2208627](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208627.zip)

### 6.14.2 Corrections

Including essential corrections to QoE measurements.

By Web Conf (1st Week Thursday) (1)

[R2-2207530](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207530.zip) Discussion on application layer measurement reporting procedure and AT commands for NR QoE Lenovo discussion Rel-17 NR\_QoE-Core

*Proposal 1: RAN2 to confirm that the discard of the MeasurementReportAppLayer message when UL segmentation has not been enabled by the network should be avoided in the measurement reporting procedure.*

*Proposal 2: RAN2 to discuss the enhancements to the application layer measurement reporting procedure in order to avoid any unnecessary discard of the MeasurementReportAppLayer message and application layer measurements when UL segmentation has not been enabled by the network.*

- Chair wonders if this was discussed before? Ericsson thinks the procedure was never discussed much.

- QC agree with the intention but is not sure how the specification would be changed. Current procedure is clear. Could add a note to indicate UE is allowed to discard selectively. Huawei agrees.

- Apple thinks current behaviour is more efficient since UE just appends everything at once and then checks the size. Network should ensure the reports are not too big and should use RRC segmentation, which solves the problem.

- CATT agrees with the proposal and could discuss what UE should do if message is larger than the RRC limit.

- Ericsson agrees this may not be common but avoiding discard would be good. Can support NOTE as proposed by QC.

- China Unicom also agree on UE implementation solution, and P1 and P2 are too complicated.

- Nokia agrees with intention and thinks UE was allowed to report up to max RRC message size and going beyond that requires support of UL segmentation. There is some UE complexity with the extra checks but it would benefit the network and this would still be good to do procedurally. Having NOTE doesn’t help.

- Samsung supports proposals and thinks it would be beneficial. Thinks we should discus the proposal based on the Lenovo CR in 7531.

- Lenovo thinks this is not a corner-case since we will also enhance QoE for Rel-18. Oversized reports cannot be avoided and thinks NOTE doesn’t help since UE has to discard. MTK agrees.

- Apple thinks RRC segmentation was intended for this case and if network supports this, there are no problems.

* Discuss draft CR showing the possible solution in offline [252] (Lenovo) so RAN2 can decide whether to adopt it.

*Proposal 3: RAN2 to discuss the issues in the definition of the AT commands for NR QoE and if confirmed, to send a reply LS to CT1 and ask them to fix the issues.*

- Lenovo thinks RAN2 companies could check the issues and confirm whether they are correct. Chair wonders if this could be raised in CT1? Lenovo thinks editorials can be but other issues may need RAN2 discussion since we provided them the information.

- Huawei thinks this can be discussed in CT1. QC agrees. China Unicom agrees.

- Ericsson thinks some RAN2 discussion could help. There were some mistakes in RAN2 LS earlier. Nokia thinks the analysis is good but this could start with CT1. If there are discrepancies we can get back if CT1 doesn’t do anything.

* The AT – command issues can be raised up in CT1 first. If CT1 concludes RAN2 discussion is needed, we will handle it at the next opportunity.

By Email [250] (3)

[R2-2207723](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207723.zip) Correction CR for QoE measurements Ericsson CR Rel-17 38.300 17.1.0 0514 - F NR\_QoE-Core

[R2-2207949](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207949.zip) Correction to the application layer measurement configuration Huawei, HiSilicon CR Rel-17 38.300 17.1.0 0521 - F NR\_QoE-Core

[R2-2208547](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208547.zip) CR to 38300 on RRC segmentation ZTE Corporation, Sanechips, China Unicom CR Rel-17 38.300 17.1.0 0542 - F NR\_QoE-Core

By Email [251] (12)

[R2-2207425](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207425.zip) Clarification of CAPC for SRB4 Apple CR Rel-17 38.331 17.1.0 3261 - F NR\_QoE-Core

[R2-2207426](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207426.zip) Clarification of QoE Reporting with Session Start/Stop Information Apple CR Rel-17 38.331 17.1.0 3262 - F NR\_QoE-Core

[R2-2207722](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207722.zip) Correction CR for QoE measurements Ericsson, Huawei CR Rel-17 38.331 17.1.0 3303 - F NR\_QoE-Core

[R2-2207734](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207734.zip) Correction on QoE configuration and reporting Qualcomm Incorporated CR Rel-17 38.331 17.1.0 3305 - F NR\_QoE-Core

[R2-2207821](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207821.zip) Correction on TS 38.331 for QoE CATT CR Rel-17 38.331 17.1.0 3318 - F NR\_QoE-Core

[R2-2207950](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207950.zip) Correction to the transmission of appLayerSessionStatus when pause is enabled Huawei, HiSilicon, China Unicom CR Rel-17 38.331 17.1.0 3333 - F NR\_QoE-Core

[R2-2208238](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208238.zip) Correction to storage of application layer measurements during Pause Nokia, Nokia Shanghai Bell CR Rel-17 38.331 17.1.0 3387 - F NR\_QoE-Core

[R2-2208239](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208239.zip) Correction to paused reporting of the application layer measurements Nokia, Nokia Shanghai Bell CR Rel-17 38.331 17.1.0 3388 - F NR\_QoE-Core

[R2-2208393](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208393.zip) Correction on MeasurementReportAppLayer message per measConfigAppLayerId Samsung draftCR Rel-17 38.331 17.1.0 F NR\_QoE-Core

[R2-2208394](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208394.zip) Correction on QoE report only including measConfigAppLayerId Samsung draftCR Rel-17 38.331 17.1.0 F NR\_QoE-Core

[R2-2208479](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208479.zip) Correction on MeasurementReportAppLayer retransmission Google Inc. CR Rel-17 38.331 17.1.0 3426 - F NR\_QoE-Core

Email discussions ([251], [252])

* [AT119-e][251][R17 QoE] NR RRC corrections to Rel-17 QoE (Ericsson)

      Scope: Discuss NR RRC corrections for Rel-17 QoE marked for this discussion.

Intended outcome: Report in in [R2-2208737](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208737.zip). Merged 38.331 CR in [R2-2208738](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208738.zip).

Deadline: Deadline 1 (report) / Deadline 2 (final CRs)

[R2-2208737](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208737.zip) Report of [AT119-e][251][R17 QoE] NR RRC corrections to Rel-17 QoE (Ericsson) Ericsson discussion Rel-17 NR\_QoE-Core

[R2-2208738](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208738.zip) Correction CR for QoE measurements Ericsson CR Rel-17 38.331 17.1.0 3303 1 F NR\_QoE-Core [R2-2207722](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207722.zip)

* [AT119-e][252][QoE] Draft CRs for QoE report handling without segmentation (Lenovo)

Scope: Discuss the topic and provide draft CR showing the possible solution so RAN2 can decide whether to adopt it.

Intended outcome: Discussion summary in [R2-2208746](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208746.zip) and draft CR in [R2-2208747](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208747.zip).

Deadline: Deadline 1

[R2-2208746](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208746.zip) Report of [AT119-e][252][QoE] Draft CRs for QoE report handling without segmentation (Lenovo) Lenovo discussion Rel-17 NR\_QoE-Core

[R2-2208747](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208747.zip) Draft CR on QoE report handling without segmentation Lenovo draftCR Rel-17 38.331 17.1.0 F NR\_QoE-Core

### 6.14.3 UE capabilities

Corrections to features / UE caps developed in RAN2. Note that this AI is complementary to AI 6.0.2. Please use draft CRs for 38.331 and 38.306 to help with CR merging.

## 6.20 Extending NR operation to 71GHz

(NR\_ext\_to\_71GHz-Core; leading WG: RAN1; REL-17; WID: RP-212637)

Tdoc Limitation: 3 tdocs

Rapporteurs may provide baseline correction CRs containing smaller corrections, text clarifications etc - please contact the Rapporteur before providing contributions on those aspects.

### 6.20.1 Organizational

Including LSs and any rapporteur inputs.

By Email [200] (1)

[R2-2206913](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2206913.zip) LS to RAN2 on RRC parameter updates for NR up to 71GHz (R1-2205380; contact: Qualcomm) RAN1 LS in Rel-17 NR\_ext\_to\_71GHz-Core To:RAN2

* Updates to RRC parameters to be handled as part of [210]
* Noted

By Web Conf (1st Week Wednesday) (2)

Need to update 38.331 to match TCI state assumption in 38.133?

[R2-2206925](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2206925.zip) LS on TCI assumption for RSSI measurement for FR2-2 (R1-2205582; contact: Qualcomm) RAN1 LS in Rel-17 NR\_ext\_to\_71GHz-Core To:RAN4, RAN2

* Noted (wait for RAN4 input, if we get it during this meeting can be handled as part of [210])

[R2-2206956](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2206956.zip) LS on CCA configurations of neighbour cells (R4-2211171; contact: Nokia) RAN4 LS in Rel-17 NR\_ext\_to\_71GHz-Core To:RAN1, RAN2

- QC thinks we should conclude the issue in this meeting. Apple agrees but thinks RAN4 is asking how this could be done.

- ZTE wonders if this impacts also RAN3, but they are not in the CC list. Should we inform them? Ericsson agrees. Nokia isn’t sure there is any impact to RAN3.

-

* Discussed as part of contributions in 6.20.2
* Noted

By Email [210] (1)

[R2-2207256](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207256.zip) Correction of RRC CR for 71 GHz Ericsson CR Rel-17 38.331 17.1.0 3237 - F NR\_ext\_to\_71GHz-Core

* [210] Revised in [R2-2208693](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208693.zip)

### 6.20.2 Control plane corrections

Including essential control plane corrections to NR operation up to 71GHz.

By Web Conf (1st Week Wednesday) (1)

Discussion on RAN4 LS on CCA information for neighbour cells:

[R2-2207543](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207543.zip) CCA information for neighbour cells Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_ext\_to\_71GHz-Core

*Proposal 1: Whether or not a given cells is assumed to apply CCA for the purpose of RRM measurements is indicated in the MeasObjectNR*

*Proposal 2: RRC Idle UEs may assume that neighbor cells in the same frequency use the same channel access as the serving cell (either no-CCA, or CCA).*

- QC thinks indicating something is useful. This is not very difficult if we use only one bit and can also address IDLE mode.

- Ericsson thinks even RAN4 didn’t conclude anything yet. It’s up to RAN2 to decide whether to introduce signalling. Thinks Rel-17 is frozen so we shouldn’t introduce anything. This means UE would assume LBT for all cells. ZTE agrees and thinks we would need Xn signalling, which complicates the work. Thinks it’s either always used or neighbours use the same as neighbour cells. Samsung agrees.

- Huawei thinks we should decide on the feasibility first. Thinks signalling is not complicated so it’s possible, we just need to make it backward-compatible.

- Apple thinks RAN4 already defined requirements for CCA and non-CCA. We can do this in backward-compatible way. Nokia agrees and thinks this is clearly feasible.

* RAN2 concludes it’s feasible to indicate whether to apply CCA for neighbour cell measurements in Rel-17.
* Draft CR and LS draft to RAN4 are discussed under email discussion [211] (Nokia)

[R2-2207460](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207460.zip) Discussion on CCA configurations of neighbour cells in FR2-2 Apple discussion Rel-17 NR\_ext\_to\_71GHz-Core

[R2-2207254](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207254.zip) discussion on RAN4 LS R4-2211171 Ericsson discussion Rel-17 NR\_ext\_to\_71GHz-Core

*(moved from 6.20.1)*

[R2-2208065](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208065.zip) Discussion on the LS on the CCA configuration of neighbour cell Huawei, HiSilicon discussion Rel-17 NR\_ext\_to\_71GHz-Core

[R2-2207985](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207985.zip) Discussion on CCA configuration of neighbour cell ZTE Corporation, Sanechips discussion

[R2-2207461](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207461.zip) [Draft] LS Reply on CCA configurations of neighbour cells in FR2-2 Apple LS out Rel-17 NR\_ext\_to\_71GHz-Core To:RAN4, RAN1

CRs for the neighbour cell CCA information:

[R2-2207544](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207544.zip) CCA information for neighbour cells Nokia, Nokia Shanghai Bell CR Rel-17 38.331 17.1.0 3276 - F NR\_ext\_to\_71GHz-Core

[R2-2208252](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208252.zip) Channel Access Mode for Neighbor Cells Qualcomm Incorporated CR Rel-17 38.331 17.1.0 3390 - F NR\_ext\_to\_71GHz-Core

By Web Conf (1st Week Wednesday) (1)

Is LTE UE capability needed for FR2-2 measurements?

[R2-2207984](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207984.zip) Inter-RAT measurement issues for NR operation above 71 GHz ZTE Corporation, Sanechips discussion

*Proposal 1: In order to support handover from E-UTRA to NR TDD FR2-2, RRM measurement for FR2-2 cell should be supported. Some FR2-2 new introduced parameters need to be added as in attached draft CR (see Annex).*

*Proposal 2: RAN2 to discuss and if deemed necessary, add a capability to indicate whether the UE supports RRM measurement for FR2-2 cell with 480/960kHz SCS.*

- QC is OK to support this even though there are lot of changes. Nokia thinks this came a bit late but it would be odd if we didn’t have the support from LTE. Apple agrees.

- Ericsson doesn’t have a strong view. Thinks TP doesn’t support all options, e.g. 960 kHz SCS. ZTE thinks those are still discussed in RAN1. Apple agrees and thinks we should have capability for 480. We can do 960 later on if needed.

- Huawei thinks capability is fine but need to be clear what the capability says. ZTE thinks we have existing capabilities for NR HO. We might need to tie this to those capabilities. QC thinks 480 and 960 are optional capabilities so would make sense to have something separate.

* 1: Support handover from E-UTRA to NR TDD FR2-2 in Rel-17, RRM measurement for FR2-2 cell should be supported.
* 2: Discuss which (i.e. new or existing) capability indicates whether the UE supports RRM measurement for FR2-2 cell with 480 kHz SCS. FFS for 960 kHz (pending RAN1 discussions)
* Details are discussed under email discussion [212] (ZTE)

By Email [210] (8)

Ensuring UE capabilities on supported bandwidths are clear:

[R2-2207253](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207253.zip) Corrections of UE Capabilityíes for FR2-2 Ericsson discussion Rel-17 NR\_ext\_to\_71GHz-Core

How to fix missing BWP ID in RMTC-Config?

[R2-2207255](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207255.zip) Discussion the need of BWP index for L3 RSSI measurement configuration Ericsson discussion Rel-17 NR\_ext\_to\_71GHz-Core

[R2-2208063](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208063.zip) Discussion on RSSI measurement issues for FR2-2 Huawei, HiSilicon discussion Rel-17 NR\_ext\_to\_71GHz-Core

[R2-2207959](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207959.zip) Release FR2-2 related preference indication configurations in RRC connection reestablishment Google Inc. CR Rel-17 38.331 17.1.0 3336 - F NR\_ext\_to\_71GHz-Core

[R2-2207983](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207983.zip) CSI-RS related issues for NR operation above 71 GHz ZTE Corporation, Sanechips discussion

[R2-2208064](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208064.zip) Correction to PO configuration for FR2-2 Huawei, HiSilicon CR Rel-17 38.331 17.1.0 3352 - F NR\_ext\_to\_71GHz-Core

[R2-2208515](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208515.zip) Discussion on a defalut value of duration-r17 for SCS 480 kHz and 960 kHz LG Electronics Inc. discussion Rel-17 NR\_ext\_to\_71GHz-Core

[R2-2208516](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208516.zip) Correction on duration-r17 for SCS 480 KHz and 960 KHz LG Electronics Inc. CR Rel-17 38.321 17.1.0 1388 - F NR\_ext\_to\_71GHz-Core

Email discussions ([210], [211], [212])

* [AT119-e][210][71 GHz] RRC corrections to 71 GHz (Ericsson)

      Scope: Discuss RRC corrections for 71 GHz marked for this discussion.

Intended outcome: Report in in [R2-2208739](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208739.zip). Merged 38.331 CR in [R2-2208740](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208740.zip).

Deadline: Deadline 1 (report) / Deadline 2 (final CRs)

[R2-2208739](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208739.zip) Report of [AT119-e][210][71 GHz] RRC corrections to 71 GHz (Ericsson) Ericsson discussion Rel-17 NR\_ext\_to\_71GHz-Core

[R2-2208693](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208693.zip) Correction of RRC CR for 71 GHz Ericsson CR Rel-17 38.331 17.1.0 3237 1 F NR\_ext\_to\_71GHz-Core [R2-2207256](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207256.zip)

* [AT119-e][211][71 GHz] CCA for neighbour cells (Nokia)

Scope: Provide draft CR for solution and LS draft to RAN4 (can include RAN1, RAN3) on CCA for neighbour cells.

Intended outcome: Discussion summary in [R2-2208741](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208741.zip) and agreeable LS to RAN4 in [R2-2208742](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208742.zip).

Deadline: Deadline 1 (if possible can also close earlier)

[R2-2208741](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208741.zip) Report of [AT119-e][211][71 GHz] CCA for neighbour cells (Nokia) Nokia discussion Rel-17 NR\_ext\_to\_71GHz-Core

[R2-2208742](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208742.zip) [Draft] LS Reply on CCA configurations of neighbour cells in FR2-2 Nokia LS out Rel-17 NR\_ext\_to\_71GHz-Core To:RAN4, RAN3 Cc: RAN1

* [AT119-e][212][71 GHz] HO from E-UTRA to FR2-2 (ZTE)

Scope: Based on agreements on [R2-2207984](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207984.zip), provide CRs to 36.331 and 36.306.

Intended outcome: Discussion summary in [R2-2208743](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208743.zip), CR to 36.331 in [R2-2208744](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208744.zip) and CR to 36.331 in [R2-2208745](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208745.zip).

Deadline: Deadline 1 (report) / Deadline 2 (final CRs)

[R2-2208743](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208743.zip) Report of [AT119-e][212][71 GHz] HO from E-UTRA to FR2-2 (ZTE) ZTE discussion Rel-17 NR\_ext\_to\_71GHz-Core

[R2-2208744](C:\\Users\\terhentt\\Documents\\Tdocs\\RAN2\\RAN2_119-e\\R2-2208744.zip) RRC CR for HO from E-UTRA to FR2-2 ZTE CR Rel-17 36.331 17.1.0 4869 - F NR\_ext\_to\_71GHz-Core

[R2-2208745](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208745.zip) UE Capability CR for HO from E-UTRA to FR2-2 ZTE CR Rel-17 36.306 17.1.0 1856 - F NR\_ext\_to\_71GHz-Core

### 6.20.3 User plane corrections

Including essential user plane corrections to NR operation up to 71GHz.

# 7 Rel-17 EUTRA Work Items

## 7.1 Common

(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)

No documents should be submitted to 7.1. Please submit to 7.1.X

### 7.1.1 Organizational and Stage-2

General LSs and documents for which there is no RAN WI.

Rapporteurs may provide baseline correction CRs containing smaller corrections, text clarifications etc - please contact the Rapporteur before providing contributions on those aspects.

[R2-2206972](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2206972.zip) LS on updated Rel-17 RAN1 UE features list for LTE (R1-2205612; contact: NTT DOCOMO, AT&T) RAN1 LS in Rel-17 NB\_IOTenh4\_LTE\_eMTC6, LTE\_NBIOT\_eMTC\_NTN, LTE\_terr\_bcast\_bands\_part1, NR\_SL\_enh To:RAN2 Cc:RAN4

*(moved from 7.2.5)*

* [200] Noted (to be taken into account by each WI)

### 7.1.2 Control Plane Corrections

By Web Conf (1st Week Thursday) or By Email [201] (1+1)

TEI17: Aligning LTE DRB release with NR DRB release:

[R2-2207492](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207492.zip) DRB release LG Electronics Inc. discussion Rel-17 TEI17

*Observation 1: At DRB release, data stored in NR PDCP are delivered to upper layer while data stored in LTE PDCP are discarded.*

*Observation 2: In NR RLC, there is no data loss at NR RLC entity release because NR RLC mandatorily supports out-of-order delivery.*

*Observation 3: In LTE RLC, data loss at LTE RLC entity release can be avoided if out-of-order delivery is configured.*

*Observation 4: At RLC bearer release, the LTE RLC entity is first re-established and then released. However, at DRB release, the LTE RLC entity is just released without RLC re-establishment.*

*Proposal 1: Support data delivery at DRB release for LTE PDCP and LTE RLC.*

*Proposal 2: Before releasing LTE PDCP entity, the UE shall re-establish the LTE PDCP entity.*

*Proposal 3: Before releasing LTE RLC entity, the UE shall re-establish the LTE RLC entity.*

*Proposal 4: Perform RLC re-establishment and release first, and then perform PDCP re-establishment and release.*

- Huawei thinks DRB release happens at NW congestion. So those DRBs are low priority anyway and data loss is not a big issue. Sees no big need for this.

- QC sees the issue but agrees with Huawei that this is a minor issue. Also thinks the CR may not be enough anyway since LTE PDCP doesn’t have all the packets stored. So would need to modify also LTE PDCP.

- Intel also agrees with the analysis but this is not a big issue and has not been seen in the field. UE implementations may also have some flexibility so no need to mandate. Nokia and Apple agree.

- Samsung agrees with the issue but also with others that this is not needed. Thinks UEs can be implemented already like this even without the CR.

* No support to do this in Rel-17.

[R2-2207493](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207493.zip) 36.331 CR on DRB release LG Electronics Inc. CR Rel-17 36.331 17.1.0 4847 - F TEI17

* Not pursued

By Email [202] (3+1)

Allowing “infinity” for hysteresis of coverage-based paging:

[R2-2208303](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208303.zip) Discussion on introducing the value infinity for the hysteresis timer Ericsson discussion Rel-17 NB\_IOTenh4\_LTE\_eMTC6-Core

[R2-2208304](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208304.zip) Introduction of value infinity for coverage based paging carrier hysteresis timer Ericsson CR Rel-17 36.331 17.1.0 4857 - F NB\_IOTenh4\_LTE\_eMTC6-Core

[R2-2208305](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208305.zip) Introduction of value infinity for coverage based paging carrier hysteresis timer Ericsson CR Rel-17 36.304 17.1.0 0852 - F NB\_IOTenh4\_LTE\_eMTC6-Core

Correction to npusch-MCS field description:

[R2-2208597](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208597.zip) 36331\_(R17)\_Correction on npusch-MCS field description ZTE Corporation, Sanechips CR Rel-17 36.331 17.1.0 4866 - F NB\_IOTenh4\_LTE\_eMTC6-Core

### 7.1.3 User Plane Corrections

# 8 NR Rel-18

## 8.5 XR Enhancements for NR

(FS\_NR\_XR\_enh; leading WG: RAN2; REL-18; WID: [RP-220285](https://www.3gpp.org/ftp/tsg_ran/TSG_RAN/TSGR_95e/Docs/RP-220285.zip))

Time budget: 2 TU

Tdoc Limitation: 3 Tdocs

### 8.5.1 Organizational

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

By Web Conf (1st Week Friday) (1)

[R2-2207371](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207371.zip) Work Plan for Rel-18 SI on XR Enhancements for NR Nokia, Qualcomm (Rapporteurs) Work Plan Rel-18 FS\_NR\_XR\_enh

*RAN2#119*

*Endorse overall TR structure*

*Populate background part of the TR based on previous work in SA2, SA4 and RAN1*

*Initiate the work on XR awareness in cooperation with SA2.*

*Initiate the work on power saving and capacity enhancements in cooperation with RAN1 (using RAN1 studies as starting point)*

*Identify critical questions to be asked to RAN1, SA2 and SA4*

*RAN2#119bis*

*Identify possible solutions for XR awareness, power saving and capacity enhancements.*

*Provide TR-like description of all solutions*

*Take feedback from RAN1, SA2 and SA4 into account*

*RAN2#120*

*Select the most promising solution(s).*

*Conclude studies.*

*-* Xiaomi thinks SA2 has delayed the process until end of 2022. Could this impact RAN2? Nokia thinks if this happens, it will be handled in RAN.

*-* Intel wonders how the SA2/SA4 background work is handled. Thinks we should add references but not copy-paste all the information.

* Endorsed

By Web Conf (1st Week Friday) (2+2)

Power saving for XR:

[R2-2206966](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2206966.zip) LS on UE Power Saving for XR and Media Services (S2-2203418; contact: Nokia) SA2 LS in Rel-18 FS\_XRM To:RAN1, RAN2

* Noted (handled with contributions to 8.5.3)

[R2-2206923](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2206923.zip) Reply LS on UE Power Saving for XR and Media Services (R1-2205531; contact: Qualcomm) RAN1 LS in Rel-18 FS\_XRM, FS\_NR\_XR\_enh To:SA2, RAN2

* Noted (handled with contributions to 8.5.3)

QoS support with PDU set granularity:

[R2-2206964](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2206964.zip) LS on QoS support with PDU Set granularity (S2-2201803; contact: Intel) SA2 LS in Rel-18 FS\_XRM To:SA4 Cc:RAN1, RAN2, RAN3

* Noted

[R2-2206969](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2206969.zip) LS Reply on QoS support with PDU Set granularity (S4-220505; contact: Qualcomm) SA4 LS in Rel-18 FS\_XRM, FS\_XRTraffic To:SA2 Cc:RAN1, RAN2, RAN3

- Vodafone thinks the LS says there are no common characteristics to XR traffic and everything depends on implementation/application.

- Nokia thinks SA4 is telling us they cannot control third party applications so it’s not clear whether the mechanisms for PDU sets are usable in practice. Vodafone agrees.

* Noted (wait for SA2 answer on this, should be read carefully by all)

By Web Conf (1st Week Friday) (1+3)

RAN1 request to modify TR38.835 structure:

[R2-2206917](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2206917.zip) LS on draft TR 38.835 skeleton (R1-2205443; contact: Nokia) RAN1 LS in Rel-18 FS\_NR\_XR\_enh To:RAN2

Discussion

[R2-2207372](C:\\Users\\terhentt\\Documents\\Tdocs\\RAN2\\RAN2_119-e\\R2-2207372.zip) XR TR Structure Nokia (Rapporteur) discussion Rel-18 FS\_NR\_XR\_enh

*Proposal: the TR structure needs to reflect a clear work split between RAN1 and RAN2.*

*This means that we either stick to what was originally suggested in R1-2204673:*

*4 Introduction to Extended Reality*

*5 Physical Layer Enhancements*

*5.1 Power Saving Techniques*

*5.2 Capacity Improvements Techniques*

*6 Layer 2 Enhancements*

*6.1 XR Awareness*

*6.2 Power Saving Techniques*

*6.3 Capacity Improvements Techniques*

*Or, with a structure articulated around techniques, adopt the following:*

*4 Introduction to Extended Reality*

*5 XR Enhancements for NR*

*5.1 Power Saving Techniques*

*5.1.1 Physical Layer Enhancements*

*5.1.2 Layer 2 Enhancements*

*5.2 Capacity Improvements Techniques*

*5.2.1 Physical Layer Enhancements*

*5.2.2 Layer 2 Enhancements*

*5.3 XR Awareness*

*5.3.1 Physical Layer Enhancements*

*5.3.2 Layer 2 Enhancements*

- Huawei thinks RAN1 change was suggested because they thought RAN1 solutions might have RAN2 impact and vice versa. But supports keeping things separate. Wonders how we handle the cross-WG impacts? Nokia clarifies this is as per normal and the leading group populates the section. QC agrees with Nokia that each section needs a clear ownership and prefers the second option. Wonders also if RAN1 can propose L2 enhancements e.g. DRX where RAN1 is providing evaluation studies? Nokia thinks TR is not a collection of everything and we should aim for Stage-2-like description. It’s fine to add evaluations but we can also put them in annex(es). vivo thinks some evaluation results could still be captured under the normal text.

- Intel is fine with option 2 but thinks 5.3.1 may not be needed. OPPO agrees.

- Sony thinks 5.3 should be 5.1. Nokia is fine with that.

- Huawei thinks we should minute that we consider solutions from both RAN1 and RAN2 and capture things in the text. Should also consider impacts between WGs for each solution.

- Vodafone wonders if “L2 enhancements” covers all RAN2 aspects? Chair thinks that is the case. Intel thinks we should use “higher layers”. Nokia thinks this is the Stage-2 terminology.

* Use the latter TR structure option (highlighted in yellow above) but remove section 5.3.1 and move 5.3 to 5.1 (renumber sections accordingly).
* TR should take the cross-WG impacts into account, and can capture the evaluation results. Exact details can be discussed when we have TPs.

[R2-2207373](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207373.zip) TR 38.835 v001 Nokia (Rapporteur) draft TR Rel-18 38.835 0.0.1 FS\_NR\_XR\_enh

* Noted (for information)

[R2-2207374](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207374.zip) TR 38.835 v002 Nokia (Rapporteur) draft TR Rel-18 38.835 0.0.2 FS\_NR\_XR\_enh

* Revised in [R2-2208748](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208748.zip)

[R2-2208748](C:\\Users\\terhentt\\Documents\\Tdocs\\RAN2\\RAN2_119-e\\R2-2208748.zip) TR 38.835 v010 Nokia (Rapporteur) draft TR Rel-18 38.835 0.1.0 FS\_NR\_XR\_enh

* Revised in [R2-2208749](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208749.zip) (TOC was not updated, to be corrected in v011)

[R2-2208749](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208749.zip) TR 38.835 v011 Nokia (Rapporteur) draft TR Rel-18 38.835 0.1.0 FS\_NR\_XR\_enh

* Endorsed (unseen)
* To be submitted to RAN1 by rapporteur (QC)

By Web Conf (2nd Week Friday) (1)

[R2-2207375](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207375.zip) XR Overview TP Nokia (Rapporteur) discussion Rel-18 FS\_NR\_XR\_enh

- Vodafone thinks there is a lot of information on XR in different groups. But not all descriptions are valid in reality (e.g. in Rel-17 XR SI). Thinks it’s useful to have a description that tells what was the point of the SI at the time, so supports having these. Huawei also agrees such descriptions can be useful. Thinks that RAN1 SI results from Rel-17 are missing as those would be baseline for RAN2 work. QC agrees and thinks we could add summary of Rel-17 SI. Some information could be in annex.

- Samsung thinks information is useful but is worried we spend time on copying information from SA2. Should avoid that.

* Having overview information is considered useful and RAN2 will have something in the TR. Content from this document can be considered for addition to TR, to be handled via post-meeting email discussion.
* Noted (companies can/should comment to rapporteur offline during the meeting)

By Web Conf (1st Week Friday) (1)

[R2-2207376](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207376.zip) Draft LS to SA4 on Pose Information for XR Nokia (Rapporteur) LS out Rel-18 FS\_NR\_XR\_enh To:SA4 Cc:RAN1, SA2

- Nokia indicates TR number should be TR26.928.

- Intel thinks We understand that the question is valid but we wonder how RAN2 plans to use this information or response from SA4 since XR related evaluation is ongoing by RAN1. Moreover, RAN1 evaluation assumes pose/control periodicity 4ms. Therefore, if this LS is needed, we suggest that this is better raised in RAN1 side. Nokia thinks RAN1 can be in CC as it’s not clear how RAN1 came up with their number. Xiaomi thinks in 38.838 for the Generic UL pose/control traffic, the Periodicity is 4ms.

- Huawei thinks this is related to UL delay budget. This is just data generation frequency but in RAN1 UL DB is 10ms so we don’t need to send it every 1ms. MTK thinks this was discussed between RAN1 and SA4 in Rel-17, that’s why the 4ms was arrived. Nokia is aware of this but is not clear how accurate that is given the latest SA4 TR. RAN1 is also using assumptions that may not be valid anymore.

- AT&T thinks it is important that RAN1/2 have common assumptions on the traffic in Rel-18.

- Ericsson is against sending an LS since RAN1 agreed to continue using Rel-17 assumptions.

- CATT thinks this is not the only case of misalignment between SA2, RAN1, and SA4. But agrees with MTK there was a lot of discussion between SA4 and RAN1 in Rel-17.

- QC thinks there is no single frequency. The actual value varies across implementations.

- Verizon thinks it’s good to ask clarification early on to get common understanding on traffic model. BT agrees it’s good to ask so we know the traffic pattern.

- AT&T thinks we may want to distinguish between what is practical for simulations (abstracted/averaged) and what should be used for designing the system based on the real traffic analysis from SA. Samsung agrees and thinks it’s important to ask. vivo agrees.

- Huawei thinks no need to send LS to SA4 directly, since RAN1 has discussed with SA4 on this for long time, if really needed, they two can check with each other]

- vivo thinks 1000 times per second seems not correct?

- MediaTek thinks that while there are variations across implementations (agree with QC), what we have from Rel-17 is a selection of traffic characteristics to base simulations on. We can send an LS, but let's not change our simulation assumptions unless dramatically different.

- ZTE agrees with Mediatek, and QC, there will be different values in different implementations and 1ms frequency may be one example and ultimately the LS may not result in any changes to any assumptions.

- NEC thinks if 1 kHZ doesn’t mean sending pose information 1000 times per second, we could further ask SA4 whether the baseline (periodicity of 4ms, PDB of 10ms, etc) is acceptable. periodicity is not the only thing matters.

* RAN2 does not intend to ask RAN1 to change their simulation assumptions
* CB Monday: Decide if we send LS to SA4 clarifying what has been assumed so far in RAN1.

Handled by dedicated contributions under 8.5.3 (2)

[R2-2207042](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207042.zip) Draft reply LS on UE power savings for XR and media services Qualcomm Incorporated discussion Rel-18 FS\_NR\_XR\_enh

[R2-2208316](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208316.zip) Discussion of SA2 LS on UE Power Saving for XR and Media Services Meta Ireland discussion Rel-18

*Observation 1:In some PDU Set implementation, all PDUs in a PDU Set are needed by the application layer to use the corresponding unit of information. In this case, it is desirable for the transmitter to drop the remaining PDUs to save radio resources and reduce power consumption*

*Observation 2:In some implementations, the application layer can still recover all or parts of the information unit, when some PDUs are missing. In this case, it would be desirable for the scheduler to transmit the remaining PDUs.*

*Proposal 1: LS SA2 requesting the provision of explicit indication and conditions under which the gNB should (1) transmit the remaining PDUs or (2) discard the remaining PDUs.*

### 8.5.2 XR-awareness

Including discussion on XR traffic characteristics (e.g. QoS, PDB, PDU size and periodicity, jitter, etc.) and how RAN is aware of those. Contributions should take the existing SA2/SA4 decisions into account.

By Web Conf (1st Week Friday) (3-5)

[R2-2207377](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207377.zip) XR Awareness in SA2 Nokia (Rapporteur) discussion Rel-18 FS\_NR\_XR\_enh

*Observation 1: In all solutions the congestion or available/dynamic QoS (e.g., data rate, round-trip delay) or event information is generated in the RAN. Different solutions propose different ways how it is exposed to an Application. The main approaches are:*

*1. IP header ECN marking and compliance with IETF L4S framework which also defines the data sender reaction to markings and assumes low latency delivery for compliant senders. Different options on which entity does the ECN marking have been considered.*

*2. 3GPP network exposure API based exposure of different parameters. From RAN the information is exposed to CN either via UP (to UPF) or CP (via AMF).*

*This document has made the following observations on SA2 XRM Key Issue #4 (PDU Set Integrated Packet Handling) and #5 (Differentiated PDU Set Handling) Solutions included in TR 23.700-60:*

*Observation 2: Most solutions focus on downlink traffic flows where PDU Set detection/identification and property/dependency extraction takes place in the UPF in various ways. It is assumed UPF marks the PDU Set related information on GTP-U extension header from where RAN obtains it. Different information such as PDU Set sequence number PDU Set size, PDU set start/end marker, PDU Set priority, PDU Set dependency info have been proposed. It is assumed RAN will use this information for “integrated” handling of PDU Sets (i.e., consider the whole set of PDUs not just one) and for differentiated QoS treatment of PDU Sets based on their properties (importance, type, …) and dependencies. Many details are still open on the exact information included and, e.g., if and how Set hierarchies or sub-flows are supported, or if burst information (end of burst) is part of the PDU Set information or an independent parameter.*

*Observation 3: In most solutions in addition to information RAN receives for Downlink traffic via GTP-U headers, RAN would also receive QoS parameters for PDU Sets such as PDU Set Delay Budget or PDU Set Error Rate or PDU Set (or Burst) periodicity.*

*Observation 4: Solutions for PDU Set based packet or QoS handling for Uplink direction are less mature.*

*This document has made the following observation on SA2 XRM Key Issue #1 and #2 (Multi-modal traffic) included in TR 23.700-60:*

*Observation 5: Whether and how some information for Multi-modal Traffic is provided to RAN as well as whether and what RAN can perform by leveraging the provided information is currently under discussion for the upcoming SA2 meeting.*

- Nokia notes SA2 has not progressed in all areas, e.g. uplink parameters or multi-modal aspects. Vodafone wonders if SA2 has agreed on anything yet? Nokia clarifies SA2 is trying to select sub-sets of solutions but it’s not clear what will be chosen.

- Xiaomi wonders for Obs1 how congestion indication is carried in RAN, and thinks we may not need handle such things in RAN2. Nokia thinks that for CU-DU-split, DU needs some information on congestion, which would have RAN2 impact. But otherwise information should be transparent. vivo agrees with Xiaomi.

- Intel thinks We would like to confirm that RAN2 study of enhancements is equally applicable to UL and DL even though SA2 has had more focus on CN/DL side.

* RAN2 should take SA2/SA4 work into account
* Noted (no proposals)

[R2-2207780](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207780.zip) Discussion on XR-awareness KT Corp. discussion

*PDU Set: A PDU Set is composed of one or more PDUs carrying the payload of one unit of information generated at the application level (e.g. a frame or video slice for XRM Services, as used in TR 26.926 [27]). In some implementations all PDUs in a PDU Set are needed by the application layer to use the corresponding unit of information. In other implementations, the application layer can still recover parts all or of the information unit, when some PDUs are missing.*

*Proposal 1: NR should be able to use PDU Set based parameters and PDU Set related information for better support of XR services.*

*Proposal 2: RAN2 should discuss PDU Set based parameters and PDU Set related information handling in NR layer 2 and layer 3 protocol.*

[R2-2208313](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208313.zip) Discussion on XR-Awareness RAN Meta Ireland discussion Rel-18

*Observation 1: The current PDU Set definition may map to and benefit some use cases and operation modes for media delivery. For other use cases the current definition concept around PDU Sets may not fully apply and other QoS frameworks may be considered. Hence, multiple definitions of PDU Sets may be needed for various use cases and operation modes.*

*Observation 2: The existing 5G QoS model is based on the QoS Flow which the finest granularity of QoS differentiation in the PDU Session, where user plane traffic with the same QFI within a PDU session receives the same traffic forwarding treatment. The introduction of the PDU Set concept requires the RAN to enhance the QoS support from per PDU to per PDU Set QoS.*

*Observation 3: XR-aware information can also be provided from the UE based on UAI framework.*

*Observation 4: The current discard timer setting is very limited and hasn’t taken into account the new 5QI’s agreed in SA2 for XR applications, specifically 5QI 87-90.*

*Observation 5: In some XR application implementation, transmitting the remaining PDUs of a PDU Set following the loss of a PDU from that same PDU Set may still be useful, while being useless in some other implementation. for the information unit, while the transmitting should continue if the application layer can still recover all or parts of the information unit, when some PDUs are missing.*

*Observation 6: The traffic characteristics, specifically the correlation between different PDU Sets in video coding, can vary for different media applications and it is difficult and likely impossible to identify common “traffic characteristics”.*

*Observation 7: Due to the heavy-compression and spatial-temporal prediction, any packet losses in video generally result in degradation of the user-perceived quality of services. Hence, XR applications generally benefit, are more efficient and can be simplified, if the network minimizes video packet losses.*

Both above documents discussed jointly

- Vodafone thinks we should consider both UL and DL for PDU sets. But would have to confirm from SA2. QC supports P1-2 from KT. Also wonders how many DRBs to use?

- Intel shares the view of Vdf on UL. We are also ok to initiate the study as indicated by KT but in P1, but we wonder if it might be good to say “RAN/UE” or “RAN2” not to restrict the scope only to NR (DL).

- MediaTek thinks we can go with SA2 definition for now and let them work on it. Most important is to study how the PDU sets can be used in RAN2. We need to identify the usage first. Ericsson agrees with MediaTek and thinks the objectives already indicate the parts that are included.

- OPPO agrees with P1-2 but thinks we need to clarify the parameters. BT, Apple Lenovo, CATT support P1-2. Lenovo also thinks UL needs to be considered. OPPO thinks we could focus on UL since that’s more in RAN2 domain.

- ZTE thinks we need something like PDU set but we need to understand how it maps to the architecture. SA2 has two alternatives: QoS flows (transparent to RAN2) or introducing sub-QoS-flows (which will impact RAN2).

- Huawei thinks the most important thing is to agree on the information as indicated by Ericsson. Should consider both UL and DL.

- Nokia thinks that for UL, many companies are targeting QoE/MDT so would like to limit to DL as much as possible. Also thinks that SA2 is considering sub-flows because packet filters cannot distinguish traffic headers, but we should call them “QoS flows”.

- Intel suggests the following update of P1 and P2 of KT: P1: RAN2 assumes that PDU Set based parameters and PDU Set related information may be used in UL and DL for better support of XR services P2: RAN2 will study PDU Set based parameters and PDU Set related information handling in RAN/UE. In addition, in our understanding we should identify inputs/questions to SA2 on RAN implications. Intel thinks SA2 will not make final decisions until October meeting.

- vivo thinks RAN2 should also confirm with SA2 about the awareness modelling, e.g. how many flows should be mapped, how many DRBs should be mapped. This is one important thing we need to confirm with SA2.

* RAN2 assumes that PDU Set based parameters and PDU Set related information may be used for better support of XR services. RAN2 can consider both UL and DL directions.
* RAN2 will study PDU Set based parameters and PDU Set related information handling in Network and UE

*Proposal 1: NR should be able to use PDU Set based parameters and PDU Set related information for better support of XR services.*

*Proposal 2: RAN2 should discuss PDU Set based parameters and PDU Set related information handling in NR layer 2 and layer 3 protocol.*

* RAN2 to adopt the current SA2 definition of PDU Set as an application media unit as working assumption, subjected to further guidance from SA2 and SA4.

*Proposal 2: RAN2 to study enhancement of the SDAP to support per PDU Set QoS.*

*Proposal 3: RAN2 to study providing XR-awareness from the UE based on user assistance information framework.*

*Proposal 4: RAN2 to discuss additional discard timer setting to support XR services.*

*Proposal 5: It is proposed to add an additional discard policy based on XR-awareness based on UAI or PDU Set, e.g. that’s PDU of the same PDU Set should be discarded if all the PDUs are needed for the recovery for the information unit, while the transmitting should continue if the application layer can still recover all or parts of the information unit, when some PDUs are missing.*

*Proposal 6: Until there is further guideline from SA2, it is proposed not to further discuss codec-related XR traffic characteristics, such as the encoding operation, bitrate control, usage of slices, error resilience such as intra frames, Gradual Decoder Refresh (GDR), or long-term prediction, etc.), other than the QoS-related KPIs.*

*Proposal 7:RAN2 to discuss RAN assistance information that can help application layer providing a more proactive codec rate adaptation.*

[R2-2208677](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208677.zip) Discussion on XR-awareness Ericsson discussion Rel-17

*Observation 1 An application packet is used to identify a unit of application information, e.g., a video frame in RAN.*

*Observation 2 For XR services, it is inefficient for RAN to treat IP packets independently; rather RAN should treat packets on application packet basis.*

*Observation 3 Applications may implement different features to adapt the QoE such as, for example, increasing/decreasing the fps or bit rate, which may impact the periodicity and delay requirement of video frames.*

*Observation 4 gNB benefits from information about every application packet as well as updated information in response to significant events triggered by the application.*

*Observation 5 Two types of application information can be used in RAN, static and dynamic information.*

*Observation 6 Dynamic information is needed per application packet, while static information is needed once or infrequently.*

*Observation 7 UPF should convey dynamic Application packet information.*

*Observation 8 Fluctuations in traffic requirements and characteristics may be triggered by the application. Hence, application PDB and traffic flow periodicity may be considered as static or dynamic information depending on application implementation.*

*Observation 9 Application packet size information is beneficial for the scheduler and by doing better prioritization, the network could increase capacity by 10%*

*Observation 10 Application packet delay budget information is beneficial for the scheduler and by doing proper prioritization, the network could increase capacity by 10%*

*Observation 11 Application packet delay budget information is beneficial for the scheduler and by dropping application packets not meeting the requirements, 10% more capacity can be obtained*

*Observation 12 Static information of the application packet periodicity of each traffic flow may be used to align scheduling and power saving features such as CDRX, DG, SPS and CG.*

*Observation 13 Static application information on the expected jitter of the video flow can be used to enable enhancements.*

*Proposal 1 The following dynamic characteristics of XR traffic are needed to be provided to RAN*

*• application packet size information (application packet size, association of IP packets to application packets, number of IP packets in application packet)*

*• delay budget of the application packet for radio interface, per application flow or per application packet. (Dynamic & static)*

*• Application packet periodicity changes for each traffic flow*

*Proposal 2 The following static characteristics of XR traffic are needed to be provided to RAN:*

*• application packet periodicity (generation rate) and periodicity changes for each application traffic flow*

*• application packet periodicity*

*• application packet jitter information, e.g. range, per application flow*

*• delay budget of the application packet for radio interface, per application flow or per application packet. (Dynamic & static)*

*Proposal 3 We propose to send an LS reply to SA2 formulated as in this section.*

[R2-2207998](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207998.zip) On RAN awareness of XR traffic characteristics MediaTek Inc. discussion Rel-18 FS\_NR\_XR\_enh

*Proposal 1: To enable power savings and capacity enhancements, the following XR traffic characteristics are useful to the gNB: periodicity, arrival time, jitter and frame-size variations.*

*Proposal 2: RAN2 to investigate the impact of PDU set dropping on XR traffic latency and capacity.*

*Proposal 3: The CN configures how PDU set information can be used by the gNB.*

*Proposal 4: TSC assistance information framework can be used to provide the gNB with DL XR traffic characteristics that do not vary from PDU to PDU.*

*Proposal 5: UE assistance information framework can be used to provide the gNB with UL XR traffic characteristics that do not vary from PDU to PDU.*

*Proposal 6: GTP-U headers can be used to provide the gNB with DL XR traffic characteristics that could vary from PDU to PDU.*

*Proposal 1 The following dynamic characteristics of XR traffic are needed to be provided to RAN*

*• application packet size information (application packet size, association of IP packets to application packets, number of IP packets in application packet)*

*• delay budget of the application packet for radio interface, per application flow or per application packet. (Dynamic & static)*

*• Application packet periodicity changes for each traffic flow*

*Proposal 2 The following static characteristics of XR traffic are needed to be provided to RAN:*

*• application packet periodicity (generation rate) and periodicity changes for each application traffic flow*

*• application packet periodicity*

*• application packet jitter information, e.g. range, per application flow*

*• delay budget of the application packet for radio interface, per application flow or per application packet. (Dynamic & static)*

*Proposal 1: To enable power savings and capacity enhancements, the following XR traffic characteristics are useful to the gNB: periodicity, arrival time, jitter and frame-size variations.*

Both of the above discussed jointly:

- Vodafone wonders about the priority of PDU sets? Thinks we should have these characteristics per PDU set.

- Intel thinks that on Ericsson P1, P2 - we think that P1 and P2 could be used to agreed and be used to respond to SA2 question on the parameters needed (considering other informations proposed by other companies' TDoc e.g. priority, dependency) . Maybe refer even to inputs from RAN1 LS. However it would be nice to aligned with SA2 language that uses “PDU set” instead of “application packet”. On MediaTek, we are ok with P1, P2. However P3 should be decided by SA2 (instead). Thinks we should build on top of RAN1 LS.

- ZTE would add "PDU Set dependency information" to Ericsson's P1.

- CMCC thinks we should first discuss whether we have dynamic and static parameters. Can discuss offline which parameters to consider.

- vivo thinks All these information are DL related. We should similar information should be also consider for UL. (some different from DL). All these information should be confirmed with SA2. Besides, we need briefly discuss how to use this information or how to helpful for the RAN?

- QC agrees with vivo and thinks DL and UL may have different set of traffic information. For example, UL jitter is less of an issue.

- Ericsson thinks priority and dependency is not so useful. Should show how information is used first. Apple thinks PDU set importance and also correlation between them is useful. Support dynamic/static information.

- MediaTek clarifies that The set of parameters in P1 of our paper are not PDU-set specific, but rather applicable across the flow

- Nokia thinks we need to focus on PDU sets and what SA2 is suggesting. KT agrees.

- Huawei thinks we can reply to SA2 on other things than power saving. Should consider the definition of “data burst”: PDU set could be “slice” of frame, and multiple PDU sets could create a “data burst”.

- NEC SA2 has listed some PDU set-related parameters that may be sent to RAN in 23.700. Most of them are the same as we discussed here. I think RAN2 can align with them first.

- Vodafone thinks we can align with SA2. Wonders if two PDU sets means two DRBs, or can we aggregate multiple PDU sets into one DRB? Nokia thinks SA2 is no longer aware of DRBs, only QoS flows.

* XR awareness discussion in RAN2 should consider PDU set characteristics and how to use the information available on those (for UL and/or DL). Can also consider how to handle data bursts.
* RAN2 can study e.g. periodicity, arrival time, jitter and frame-size variations for XR awareness to enable power savings and capacity enhancements. Can study also how often such parameters change (i.e. how dynamic they are).
* RAN2 can consider how PDU sets can be mapped to DRBs (FFS if SA2 discussion on PDU set mapping to QoS (sub-)flows impacts this)

[R2-2207118](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207118.zip) Solution Directions for XR Specific Differentiated Traffic Handling and Packet Dropping Intel Corporation discussion Rel-18 FS\_NR\_XR\_enh

*Observation 1. Exposure of XR traffic characteristics from CN, such as finer granularity (per PDU or group of PDUs) of QoS information, could be beneficial for RAN to better set UE’s configuration and scheduling.*

*Observation 2. XR traffic awareness information available per PDU or per PDU-set or per burst may be for example in terms of periodicity, priority, jitter, delay, dependency, etc. NOTE: The exact list of XR related information requires coordination with SA2.*

*Observation 3. The frequency when the XR traffic awareness information may be available could be: (1) dynamic which changes per PDU or per PDU set level, (2) semi-static which changes after a certain period of time, or (3) static which does not vary for a given application but may vary among different XR applications. Such information can be made visible to the UE for DL and RAN for UL for example, via (1) data channel (e.g using data headers), (2) control channel (e.g control PDU) or (3) in the form of assistance information or feedback for current/ongoing traffic.*

*Observation 4. XR traffic may have inherent dependency among XR data packets which can make certain packets (e.g those containing I-frames) critical/higher priority with stringent reliability requirements compared to other packets of the same QoS flow.*

*Observation 5. Currently NR provides different reliabilities, when required, at the bearer level, however this may not be sufficient to meet the QoS differentiation requirement of XR which might be per packet/PDU or per PDU-set level.*

*Observation 6. Identification of data PDU(s) that may need to be discarded if related critical PDU(s) are lost/corrupted would depend on SA2 modelling/design.*

*Proposal 1. RAN2 to discuss whether XR traffic awareness information can be available at the AS in the UE (e.g. from application, upper layers, statistical estimation, pre-configuration, etc) and whether the UE also provides assistance information/feedback to the gNB in addition to the potential XR awareness information from the CN.*

*Proposal 2. RAN2 waits for SA2 progress to potentially update 5GC/NR QoS framework to better meet XR specific requirements of differentiated handling. RAN2 studies in parallel RAN centric solutions to provide higher reliability to required XR packets (e.g. critical/high-priority ones).*

*Proposal 3. RAN2 should study potential solution directions to enable differentiated handling and reordering for critical and non-critical XR data. This could be using approach (1) a single DRB and multiple RLC entities and/or different logical channels, or approach (2) multiple DRBs with reordering maintained among the multiple DRBs.*

*Proposal 4. RAN2 waits for SA2 progress before discussing the issue of identification of unnecessary data PDUs that can be dropped at the gNB or UE.*

*Proposal 5. RAN2 to discuss support for PDCP/RLC PDU discard for unnecessary packets for the case when such packets are already submitted to lower layers (MAC layer) but not been acknowledged.*

[R2-2207117](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207117.zip) XR awareness: RAN2 areas of interest, assumptions, and inputs to SA2 LS Intel Corporation discussion Rel-18 FS\_NR\_XR\_enh

*Observation 1. For the study of XR awareness in RAN, RAN2 coordination and/or collaboration with SA2 may be required when studying RAN enhancements related to at least the following SA2 identified key issues: (KI#3) 5GS information exposure for XR/media Enhancements, (KI#4) PDU Set integrated packet handling, (KI#5) Differentiated PDU Set Handling.*

*Proposal 1. The study of XR-awareness in RAN should aim to provide the mapping to the corresponding SA2 Key Issue, when applicable.*

*Proposal 2. RAN2 should first identify the key areas (or key issues) for RAN to focus the study of XR awareness in RAN (i.e. before discussing potential RAN enhancements). Later any proposed/candidate solution should be mapped to these identified Key Areas for RAN study.*

*Proposal 3. RAN2 discussion should avoid or be agnostic to XR application specific terms (e.g. frames, flows, streams), i.e. RAN2 study should focus on enhancements for XR traffic using NR terms (e.g. QoS flows, DRB, LCH, etc).*

*Proposal 4. RAN2 confirms that the study of XR awareness in RAN includes both UL and DL XR traffic directions.*

*Proposal 5. For the study of XR awareness in RAN, RAN2 assumes that “PDU set” related information is visible or known to RAN (at least for DL) and UE (for UL).*

*Proposal 5.1. It is FFS how this information is known, and which actual information is considered although RAN2 may need to wait for SA2 progress/conclusion on related topic.*

*Proposal 5.2. If proposal 4 is agreed, RAN2 also assumes that similar model of the “PDU set” discussed by SA2 for DL side is also applicable for UL and informs SA2 (CCing also CT1 and SA4) of this assumption.*

*Proposal 6. RAN2 asks SA2 whether for one given XR traffic stream where the packets have different characteristics or QoS requirements (such as, importance when having I and P frames), are those packets mapped to the same and/or different QoS flow(s)?*

*Proposal 6.1. If packets with different characteristics can be sent to different QoS flows, RAN2 also asks SA2 whether AS layer should enable re-ordering of these packets (i.e. across different QoS flows) vs for example leaving the re-ordering to be handled by upper layers (e.g. XR Application).*

*Proposal 6.2. If packets with different characteristics can be sent to the same QoS flow, RAN2 also asks SA2 how RAN would be able to differentiate these packets.*

*Proposal 7. To agree on the RAN2 key areas (or issues) to study RAN enhancements related to XR awareness, considering at least: (A) exposure and usage of XR related information in UE and RAN (which also includes UE related input to RAN), (B) increase reliability for high priority (or critical) packets when applicable, (C) efficient dropping/discard of unnecessary packets to the receiver application, and (D) efficient handling of different XR flows/streams associated with a given XR application. Any key area may provide candidate solutions that also provides efficient RAN operation at PDU set level.*

*Proposal 8. RAN2 responds to SA2 LS* [*R2-2206966*](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2206966.zip) */ S2-2203418 that RAN2 also sees helpful to have similar candidate information as indicated by RAN1 in LS* [*R2-2206923*](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2206923.zip) */ R1-2205531 from the CN to RAN and adds other ones, such as XR traffic periodicity (in packet and/or burst level), and XR traffic burst duration.*

*Proposal 8.1. The response LS to SA2 can also explain that RAN2 may also enable mechanisms for UE to provide inputs on some of these XR related parameters (which may be associated with the UL and/or DL XR traffic) to the RAN (e.g. based on inputs provided by Applications or upper layers, or even based on UE’s estimation, if/when applicable). With the conclusion dependent on the outcome of the Rel-18 XR SI which is currently starting.*

[R2-2207980](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207980.zip) RAN level protocol enhancements for XR awareness ZTE Corporation, Sanechips discussion

*Observation 1: XR traffic imposes special requirements on RAN protocol stack because of the characteristics such as periodicity with jitter, varying frame/traffic-unit importance within the same traffic flow, existence of correlated traffic frames within the traffic flow*

*Observation 2: If QoS flow to DRB mapping is reused, then XR awareness is mainly concentrated within the updated QoS rules to map different parts of an XR PDU-set to different QoS flows (up to SA2 and CT1 to finalise this)*

*Observation 3: If sub-QoS flows are introduced, then RAN2 needs to discuss whether to introduce a new sub-QoS flow to DRB mapping in the SDAP layer or to handle the sub-QoS flows within the given QoS flow in some other protocol layer (e.g. different logical channels associated with a given DRB mapped to different sub-QoS flows etc) (impacts, SA2, CT1 and RAN2)*

*Proposal 1: QoS handling for XR traffic will be based on mapping different parts of the XR traffic to different DRBs either based on QoS flows (existing QoS architecture) or based on sub-QoS flows (updates to SDAP layer needed)*

*Proposal 2: The decision between QoS flows vs sub-QoS flows is up to SA2*

*Proposal 3: An early decision on QoS flow vs sub-QoS flows would be useful to progress the RAN2 protocol design. So, RAN2 should inform SA2 about the implications to SDAP layer with these choices.*

*Proposal 4: RAN2 should ask SA2/SA4 whether the upper layers expect in order delivery of PDU sets for some use cases*

*Proposal 5: RAN should be aware of overall PDU-set delay budget (PSDB) (impacts mainly RAN3 from signalling perspective, RAN2 impact with this proposal is TBD)*

*Proposal 6: If the upper layers deliver the entire content of the PDU-set at the same time, then existing PDCP SDU discard mechanism is sufficient to handle the PSDB functionality*

*Proposal 7: If upper layers deliver the content of the PDU-set at different points in time, then enhancements are needed in RAN2 to handle the PDCP SDU discard mechanism. In this case, RAN2 should study mechanisms to enable discarding of PDCP SDUs mapped to different DRBs upon expiry of a timer associated with a XR PDU-set (details TBD)*

*Proposal 8: Other discard mechanisms to discard any related SDUs once loss of a dependent SDU is detected should be studied in RAN2*

*Proposal 9: RAN2 should ask SA2/SA4 whether the contents of the PDU-set are delivered to lower layers at the same time or in a sequential manner*

*Proposal 10: RAN should be aware of overall PDU-Set Error Rate (PSER) (impacts mainly RAN3 from signalling perspective, RAN2 impact with this proposal is TBD)*

*Proposal 11: RAN2 should evaluate the impacts of PSER on the PDCP discard mechanism (e.g. discarding PDCP SDUs from all DRBs corresponding to a given PDU-set if PSER exceeds the threshold)*

[R2-2207991](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207991.zip) Views on XR-specific handling at RAN Huawei, HiSilicon discussion Rel-18 FS\_NR\_XR\_enh

*Observation 1: For UL XR traffic, there may be multiple PDU sets buffered in one LCH at the same time.*

*Observation 2: With the current BSR framework, it would be difficult for the network to guarantee the PSDB without finer granular data volume information.*

*Observation 3: Currently, RAN can provide differentiated packet handling for QoS flows by mapping them to separate DRBs.*

*Observation 4: The detailed RAN impacts of differentiated PDU set handling depends on how SA2 provides the PDU Set importance information to RAN, e.g. via separating DL packets into different QoS flows, or via the single QoS flow but with importance information attached in the GTP-U header of each PDU.*

*Proposal 1: In order to handle DL PDU set integrity at RAN, RAN node needs to know at least the PDU set SN and End PDU of each PDU set.*

*Proposal 2: In order to meet XR application QoS requirements, RAN node needs to know the PDU set delay budget (PSDB) and PDU set error rate (PSER) requirements.*

*Proposal 3: How the PDU set level assistance information is used by RAN should be up to the network implementation and does not have to be specified.*

*Proposal 4: RAN2 should study UL PDU set integrity handling.*

*Proposal 5: RAN2 to study whether and how RAN node should obtain more detailed data volume and latency information of the data buffered at the UE, e.g. at the level of uplink PDU set or data burst, in order to guarantee XR application QoS requirements.*

*Proposal 6: RAN2 to study whether/how the current LCP procedure should be enhanced to ensure UL PDU set integrity for XR services.*

*Proposal 7: In order to enable differentiated PDU set handling at RAN, PDU sets with different importance can be served via different logical channels.*

*Proposal 8: The importance or priority information of a PDU set should be provided to RAN from CN.*

*Proposal 9: Detailed design on how to serve PDU sets with different importance via distinguished logical channels or different number of logical channels can wait for SA2’s further conclusion.*

*Proposal 10: Study differentiated PDU set handling for both DL and UL directions.*

[R2-2207508](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207508.zip) XR requirements and issues CATT discussion Rel-18 FS\_NR\_XR\_enh

*Observation 1: Video stream involves large jitter and large packet size variation.*

*Observation 2: Video stream has periodicities not supported by current SPS/ CG configurations and C-DRX.*

*Observation 3: Multi-flow handling results in semi-periodic behavior.*

*Proposal 1: RAN2 aligns with RAN1’s analysis and uses XR traffic streams statistical parameters from above Table 1 as reference requirements.*

*Proposal 2: RAN2 should study CG and SPS enhancements to cope with XR traffic periodicity, jitter and burst size variations, following RAN1’s recommended directions.*

*Proposal 3: RAN2 should study C-DRX enhancements to cope with XR traffic periodicity, jitter and burst size variations, following RAN1’s recommended directions.*

*Proposal 4: RAN2 should study user plane enhancements (SDAP/PDCP/RLC/MAC), enabling PDU-set identification through the UP stack.*

*Proposal 5: RAN2 should study MAC enhancements in support of PDU-set QoS guarantee, potentially involving LCP, BSR and duplication trigger enhancements.*

*Proposal 6: In view of addressing the power saving requirements on top of the stringent QoS requirements, RAN2 should study potential extensions of legacy IIOT/URLLC features, now involving more UE autonomous behaviors (e.g. autonomous activation/deactivation of some features) thus saving the associated network commands and related UE reception/decoding/feedback transmission.*

*Proposal 7: RAN2 should study UE assistance information enhancements (e.g. on playout buffer) in support of XR capacity improvements.*

[R2-2207197](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207197.zip) Discussion on XR-awareness NTT DOCOMO, INC. discussion Rel-18

*Observation1: In XR service, there exists interactive service period where both UL and DL data arrives frequently. Efficient scheduling the of DL/UL traffic and DRX config in this busy period is considered to be important to fulfil XR service low latency and power saving requirement.*

*Observation2: TSC assistance info which includes uplink or downlink data periodicity burst arrival time, survival time has been introduced from CN to RAN for efficient TSC traffic scheduling and low latency purpose in rel-16 IIoT WI.*

*Observation3: For XR service, there are PDUs of different importance levels in the same QoS flow.*

*Observation4: In legacy NR network, SDAP layer do the mapping between QoS flows and DRBs based on the QFI.*

*Proposal1: UE to send XR interactive service period related assistance info (e.g., interactive service period’s starting time, end timing, cycle length, periodicity, uplink data arrival periodicity, etc) to network for efficient CG scheduling and DRX configuration purpose.*

*Proposal2: Introduce XR service assistance info (e.g., XR service DL/UL data periodicity, burst arrival time, traffic jitter, survival time, interactive service period start timing, end timing, cycle length, periodicity, etc) from CN to RAN for efficient SPS/CG scheduling and low latency purpose.*

*Proposal3: SDAP layer should be aware of PDUs of different importance levels in the same QoS flow and responsible to map them to different DRBs based on QFI/subQFI.*

*Proposal4: L2 (e.g., PDCP layer) is responsible for early dropping of a PDU that exceeds the delay deadline.*

*Proposal5: RAN2 to study how to set the PDU set identity and relationship info among PDUs within the same PDU set.*

[R2-2207926](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207926.zip) First steps for XR handling Vodafone GmbH discussion Rel-18

*Observation 1: RAN WG2 should study enhancements allowing to handle traffic with different characteristics/streams within the same DRB.*

*Observation 2: Some of the traffic characteristics might be important for DL and some for UL or both.*

*Observation 3: There is a need to know between gNB and UE to which flow within DRB the corresponding packet belongs to. Such means could be provided over MAC protocol.*

*Observation 4: Especially for the DL enhancements, but also for UL of XR traffic, it is important to know what characteristics/methods are agreed in SA2 sofar, to allow the gNB to handle packets differently within the same 5QI. This would also allow to prioritise corresponding enhancements in RAN WG2.*

*Proposal 1: it is proposed to investigate methods for providing flow characteristics to the radio protocols at the UE for UL data transmission*

*Proposal 2: It is proposed to study how MAC header could be used to signal the correspondence of the packet to a particular flow within the same DRB.*

*Proposal 3: It is proposed to liaise SA2 asking for information which is agreed regarding the enhancements for QCI/5QI characteristics and possible enhancements to protocols e.g. GTP-U for user plane data.*

*Proposal 4: It is also proposed to contact SA4 to ask for the last enhancements regarding XR services and if there is an intention to provide those to the gNB.*

[R2-2208021](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208021.zip) Draft LS on first steps for XR handling Vodafone GmbH LS out Rel-18 To:SA2,SA4 Cc:RAN1

[R2-2208443](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208443.zip) Consideration on XR-awareness in RAN CMCC discussion Rel-18 FS\_NR\_XR\_enh

*Observation 1: the traffic characteristics for VR, CG, and AR applications can be summarized in general as follows:*

*- XR traffic is quasi periodic and is possible to vary depending on the radio condition an load of network and user status*

* Deterministic inter-arrival time plus random jitter following truncated Gaussian distribution within limited range*

*- XR periodicity is non-integer and recurrent:*

* E.g. k/F\*1000 [ms] in case of the frame rate {30,60,90,120} fps, k (=1,2,3….)*

*- Irregular intervals and variable size*

*- XR frames are large and fragmented in multiple packets*

*- Typically, an XR frame is split into tens of IP packets (MTU=1500byte)*

*- Packet Delay Budget (PDB) is counted for the entire XR frame instead of a single IP packet*

* PDB of 10ms or 15ms for the whole XR frame (i.e., for the whole burst of IP packets) depending on the application*

* Delayed delivery of a single fragment cause the delay (and possibly the loss) of the entire frame*

* A delayed delivery and potential drop of a frame may affect the next frame as well*

*- High data rate, including UL for AR services*

*- Simultaneous transmission of video stream and control/pose traffic over the same end-to-end connection.*

*Observation 2: Comparison on the candidate options is listed as follows:*

*- option A and option C are difficult for gNB to differentiate the process of PDU Sets with different QoS requirement.*

*- option B can enable the differentiated processing on PDU Sets with different QoS requirement by enhaced the QoS mapping rule, which is only depends on the work of SA2 and CT1, no RAN impact;*

*- option D and option E can implement the differentiated processing on PDU Sets with different QoS requirement as well: option D need introduce a new sub-QoS flow to DRB mapping in the SDAP layer, whereas for option E, RAN2 needs to discuss whether to handle the sub-QoS flows within the given QoS flow in some other protocol layer (e.g. different logical channels/RLC entities associated with a given DRB mapped to different sub-QoS flows etc), which will impact on SA2, CT1 and RAN2.*

*Observation 2: For DL, how the gNB to perform corresponding QoS handlings with the granularity of PDU Set, i.e., the PDU Set integrated packet handling and Differentiated PDU Set Handling is left to network implementation.*

*Observation 3: For UL, how the gNB to prioritize the UL inter-UE XR services even with same service priority taking the frame integration into account is left to network implementation, except some indication for service cancellation similar to specified in IIOT/URLLC.*

*Observation 4: For UL, there are still some potential impact on the MAC, RLC and/or PDCP layer as the below exemplary use cases:*

*- for the UL intra-UE prioritization the enhancement of taking the frame integration into account;*

*- for the UE to drop the remaining UL PDUs belonging to the same PDU Set if one key PDUs was lost, e.g. I frame, requires the specification work in MAC layer, even PDCP layer.*

*Proposal 1: It is proposed that the gNB should acquire the new QoS parameters for PDU set and new information for PDU Set Identification:*

*- - Reception of new QoS parameters: PSDB and PSER*

*- - Reception of new PDU Set associated information: PDU Set size, PDU Set sequence number, Late PDU Set delivery indication, All PDUs in PDU Set required indication in GTP-U extension header.*

*Proposal 2: RAN2 need study and down-select the candidate options taking the SA2 decision on QoS framework enhancement for XR into account:*

*Option A) Reusing current QoS framework in CN side, mapping UL packets to QoS flows then RAN performs QoS flow to same DRB.*

*Option B) Reusing current QoS framework in CN side, mapping UL packets to QoS flows then RAN performs QoS flow to same DRB. However, CN is required to update the QoS rules to map different parts of an XR PDU-set to different QoS flows with XR-awareness in CN.*

*Option C) Utilizing Sub-QoS framework in CN side, mapping UL packets to Sub QoS flows then RAN performs Sub QoS flow to same DRB.*

*Option D) Utilizing Sub-QoS framework in CN side, mapping UL packets to Sub QoS flows then RAN performs Sub QoS flow to different DRB.*

*Option E) Utilizing Sub-QoS framework in CN side, mapping UL packets to Sub QoS flows then RAN performs Sub QoS flow to same DRB, but to different logical channels/RLC bearers.*

*Proposal 3: RAN2 need discussion the issues what kind of information associated with PDU-Set is needed for gNB and how gNB to achieve them, via encapsulated in the extended GTP-U header or propagated through signalling.*

*Proposal 4: To facilitate the PDU Set integrated packet handling and differentiated PDU Set handling, the following PDU set associated information is proposed to be acquired from CN or UE:*

*Class A) Conveyance of PDU Set-related information by extended GTP-U header:*

* Start/Last PDU Flag*

* PDU Set Priority*

* PDU Set dependency information:*

*Class B) Provisioning the relative static PDU Set-related information by signalling:*

* PDU Set Arrival Time: it can assist a gNB to efficiently configure SPS/CG or C-DRX parameters;*

* Jitter range of PDU Set Arrival Time: it is helpful for gNB to decide whether SPS/CG can be used for the service.*

* PDU Set End Time or PDU Set Time Duration: it is helpful for gNB to configure SPS/CG or C-DRX parameters*

* PDU Set Periodicity: it is helpful for gNB to configure SPS/CG or C-DRX parameters*

* Packet periodicity or Packet numbers in one PDU Set: it is helpful for gNB to configure SPS/CG resource.*

* Packet size: it is helpful for gNB to configure SPS/CG resource.*

*Proposal 5: It is proposed that RAN2 should study some potential impact on the MAC, RLC and/or PDCP layer as the below exemplary use cases:*

*- for the UL intra-UE prioritization the enhancement of taking the frame integration into account;*

*- for the UE to drop the remaining UL PDUs belonging to the same PDU Set if one key PDUs was lost, e.g. I frame, requires the specification work in MAC layer, even PDCP layer.*

[R2-2207801](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207801.zip) Discussion on XR-awareness in RAN OPPO discussion Rel-18 FS\_NR\_XR\_enh

*Observation 1 SA2 introduces a concept of the PDU set for XR service.*

*Observation 2 According to TR 23. 700-60, SA2 agrees to support integrated and differentiated PDU set handling, which may need coordination with RAN.*

*Observation 3 According to the SA2 progress, different PDU sets can map into one or different QoS flows according to their QoS requirements.*

*Proposal 1 For XR service, RAN2 studies if any AS layer enhancement is needed to support the PDU set.*

*Proposal 2 For DL, RAN2 waits for SA2 progress on how to identify the PDU set.*

*Proposal 3 For UL, RAN2 has the responsibility to identify the PDU set.*

*Proposal 4 RAN2 studies whether to deliver or discard the PDU(s) which has not been transmitted for the integrated PDU set requirement.*

*Proposal 5 The current QoS framework can be used as a baseline for XR service.*

*Proposal 6 RAN2 waits for the SA2 progress on how to map different PDU sets with QoS flow(s) and then continues RAN2 study of the differentiated PDU set handling accordingly.*

[R2-2208259](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208259.zip) Discussion on XR awareness Samsung discussion Rel-18 FS\_NR\_XR\_enh

*Observation 1. In XR, packet delay budget (PDB) can vary based on traffic types e.g., video, audio/video, pose/control and PDB for certain traffic type can be relatively tighter.*

*Observation 2. For XR traffic, packet arrival time may not be fixed due to random jitter.*

*Observation 3. PDB and packet arrival time of XR traffic can be utilized in AS layer functions to support XR traffic effectively.*

*Observation 4. The information of PDU set and Multi-modal Data can be utilized with AS layer functions to support XR traffic effectively.*

*Proposal 1. RAN2 is asked to study XR traffic specific information e.g., PDB, packet arrival time, PDU set, Multi-modal Data, etc. and to analyse how to utilize the information in L2 operation.*

[R2-2207210](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207210.zip) Discussing on XR-awareness in RAN Xiaomi Communications discussion

[R2-2207366](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207366.zip) Discussion on XR-awareness TCL Communication discussion Rel-18

[R2-2207429](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207429.zip) Considerations on XR-awareness, QoS-metrics, and XR-specific traffic handling Apple discussion Rel-18 FS\_NR\_XR\_enh

[R2-2207489](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207489.zip) Discussion on XR-awareness InterDigital, Inc. discussion Rel-18 FS\_NR\_XR\_enh

[R2-2207044](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207044.zip) XR-awareness in RAN Qualcomm Incorporated discussion Rel-18 FS\_NR\_XR\_enh

[R2-2207680](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207680.zip) Discussion on RAN awareness of XR traffic characteristics Spreadtrum Communications discussion Rel-18

[R2-2207697](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207697.zip) Discusion of XR awareness in RAN Lenovo discussion Rel-18

[R2-2207756](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207756.zip) Discussion on XR-awareness vivo discussion Rel-18 FS\_NR\_XR\_enh

[R2-2207761](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207761.zip) Discussion on XR-awareness III discussion FS\_NR\_XR\_enh

[R2-2207831](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207831.zip) Considerations on XR awareness Sony discussion Rel-18 FS\_NR\_XR\_enh

[R2-2207893](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207893.zip) XR-awareness techniques Google Inc. discussion

[R2-2208223](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208223.zip) RAN behaviour for XR-awareness QoS ETRI discussion

[R2-2208321](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208321.zip) Discussion on XR-awareness LG Electronics Inc. discussion FS\_NR\_XR\_enh

[R2-2208618](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208618.zip) Discussion on XR traffic characteristics Futurewei discussion Rel-18 FS\_NR\_XR\_enh

### 8.5.3 XR-specific power saving

Including discussion on how the XR traffic characteristics (e.g. QoS, PDB, PDU size and periodicity, jitter, etc.) impact power saving and what kind of power saving aspects are needed.

By Web Conf (2nd Week Monday) (3-4)

[R2-2208019](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208019.zip) XR power saving RAN1 study overview and suggestions for RAN2 focus Nokia, Nokia Shanghai Bell (Rapporteur) discussion Rel-18 FS\_NR\_XR\_enh

*High priority Issue 1-1: Alignment between CDRX and XR traffic for resolving the mismatch between CDRX cycle and XR traffic periodicity for each flow*

*High priority Issue 1-2: C-DRX enhancements to handle jitter*

*High priority Issue 2-3: Enhancements to Rel-17 PDCCH monitoring adaptation.*

*o Note: Discussion on some enhancements may depend on the outcome of Rel-17 PDCCH monitoring adaptation maintenance*

*o Note: The study on enhancement to R17 PDCCH monitoring adaptation should focus on the techniques that are used for addressing XR-specific issues, e.g., jitter*

*Medium priority Issue 1-3: CDRX enhancements for multiple XR traffic flows [Note 2]*

*Low priority Issue 1-4: CDRX enhancements to adjust to variable burst sizes and frame rate*

*o Note: Some companies think the adjustment for variable burst sizes can be realized by existing spec already*

*Low priority Issue 1-5: low latency handling*

*Low priority Issue 1-6: SFN wraparound mismatch (if handled in RAN1)*

*Low priority Issue 2-1: Alignment between PDCCH monitoring and XR traffic to resolve the mismatch between PDCCH monitoring periodicity and XR traffic periodicity.*

*o Note: some companies think Rel-17 PDCCH monitoring adaptation can solve issue 2-1 or achieve similar intended outcome*

*o Note: Solutions proposed for Issue 2-1 and those proposed for Issue 1-1 are motivated by the same issue, namely non-integer XR traffic periodicity. It is to be studied how they compare in in terms of power saving gain and capacity, (a) solutions proposed for Issue 1-1; (b) solutions proposed for Issue 2-1.*

*Low priority Issue 2-2: XR-dedicated PDCCH monitoring window to supplement CDRX for multi-flow traffic.*

*o Note: some companies think Rel-17 PDCCH monitoring adaptation can solve issue 2-2 or achieve similar intended outcome*

*o Note: Solutions proposed for Issue 2-2 and those proposed for Issue 1-3 are motivated by the same issue, namely multiple XR traffic flows. It is to be studied how they compare in in terms of power saving gain and capacity, (a) solutions proposed for Issue 1-3; (b) solutions proposed for Issue 2-2.*

*Proposal 1: suggest RAN2 to focus on the high priority issues as identified by RAN1 for power saving, as well necessary parameters XR-awareness to support such enhancements, i.e.:*

*- DRX enhancements to address the issues of DRX cycle mismatch and jitter*

*- Enhancements to Rel-17 PDCCH adaptation if RAN1 identifies any RAN2 impact*

*- Identify necessary parameters from CN for XR-awareness for power saving*

*Proposal 2: RAN2 will not study further the medium and low priority issues listed in RAN1 unless otherwise requested by RAN1.*

- Xiaomi agrees with Nokia on high priority but thinks medium priority should also be considered for multiple XR flows. Apple is not opposed to this but wonders how this impacts the TR since we separated TR structure? Some could be better handled by RAN1. thinks multi-flow needs to be considered from the beginning as otherwise it may not scale in the future.

- QC thinks some issues were prioritized low/medium because they were not in RAN1 scope and can be discussed in RAN2. Samsung thinks it’s fine to take RAN1 as starting point. This does not mean we need follow it. Lenovo agrees with QC and also with Apple on multi-flows, which is clearly on RAN2 scope. Multi-modal traffic may have multiple QoS flows, all of which need to be considered.

- NEC thinks we don't think SFN wraparound is low priority. If RAN2 can propose a more simple way to address the issue, we can think about it.

- Nokia thinks the point was to consider those aspects that could solve most of the issues. Best would be to have unified solution but should consider all the aspects.

- vivo thinks RAN1 will evaluate power saving but not all RAN2 issues are sent to RAN1?

- Ericsson thinks we shouldn’t base our priorities based on RAN1 decisions.

* 1: RAN2 to focus on the following issues for power saving, as well necessary parameters XR-awareness to support such enhancements, i.e.:

- DRX enhancements to address the issues of DRX cycle mismatch and jitter

- Identify necessary parameters from CN for XR-awareness for power saving

* Enhancements to Rel-17 PDCCH adaptation can be discussed based on RAN1 feedback, if they have any RAN2 impact
* RAN2-specific aspects can be studied based on contributions (e.g. multiple XR traffic flows with different periodicities, SFN wrap-around, RAN2-specific CDRX aspects, …).

[R2-2207084](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207084.zip) Consideration on CDRX enhancement for XR KDDI Corporation discussion Rel-18

*Observation 1: XR traffic is periodic, and adjusting CDRX parameters can synchronize traffic to improve performance.*

*Observation 2: Base station needs to recognize its XR traffic patterns to optimize CDRX parameters.*

*Proposal 1: For downlink communication, RAN2 agree that base station identifies traffic patterns from at least observing ingress PDU user plane packets, timing and volume.*

*Proposal 2: RAN2 discuss whether XR parameters (XR traffic relevant information) are notified to gNB from application layer via AMF or UE.*

*Proposal 3: If RAN2 agree that the XR information is notified to gNB via AMF, then agree to develop LS to RAN3.*

*Proposal 4: For uplink communication, RAN2 discusses which option is adopted.*

*- Option 1: UE side observation: UE identifies XR traffic patterns and notifies it to gNB.*

*- Option 2: gNB side Observation: observing the BSR and scheduling request and gNB identifies XR traffic patterns.*

- Intel thinks XR traffic characteristics is more about XR awareness. Samsung thinks for CDRX, baseline should be awareness of XR features. Wonders if it makes sense to send LS to RAN3 since they don’t have TUs. KDDI thinks we can also wait for SA2 conclusions before sending LSs. vivo agrees with Samsung and thinks it’s more relevant to send LSs to SA2 frst.

- Apple is fine with P1 but it’s network implementation. So maybe no need to agree in specifications. KDDI thinks we don’t need to downscope and can have options in the TR. Can also have recommendations.

* Noted

[R2-2207430](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207430.zip) Power Saving for Periodical XR Traffics Apple discussion Rel-18 FS\_NR\_XR\_enh

*Proposal 1: RAN2 should consider power saving issues under both dynamic scheduling and configured scheduling frameworks.*

*Proposal 2: RAN2 should study how to minimize UE power consumption when dealing with jitter issues in SPS-based XR data communications. The scenarios to be considered include supplementary dynamic resource allocation, and Over-Provision of denser SPS resources.*

*Proposal 3: RAN2 should consider mechanisms allowing time alignment of transmissions of different XR traffic flows, in order to improve user experience as well as saving power by reducing UE’s active time.*

- Nokia wonders what would be needed for SPS? MediaTek has a similar question: For DL data, PDCCH and DL data is in the same slot for dynamic grants. SPS adds no value. Apple agrees SPS is already quite dynamic but thinks sometimes UE cannot reply on time.

- Xiaomi wonders if we need separate solutions for UL and DL in P1? Apple clarifies P2 is more for DL.

- CMCC is fine with P2, but we think other approaches should be considered. and to our understanding, P3 seems more of an implementation issue in gNB.

- CATT, LGE supports P1+2.

- Samsung thinks focus should be C-DRX and PDCCH monitoring for power saving as WID. However, those two proposals are not related to such two aspects.

- OPPO thinks P1 should focus on dynamic scheduling only.

- CATT thinks this is in the scope of power saving because multiple flows with different periodicities can make packets occur outside OnDuration, which needs to be addressed via SPS/CG.

* Noted

[R2-2208440](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208440.zip) Discussion on XR-specific power saving CMCC discussion Rel-18 FS\_NR\_XR\_enh

*Observation 1: XR and CG applications have high data rate and tight PDB, with limited battery capacity.*

*Observation 2: The average packet arrival periodicity of XR and CG application is non-integer, which cause periodicity mismatch between XR traffic periodicity and C-DRX cycle/PDCCH monitoring periodicity.*

*Observation 3: The jitter of packet arrival time may cause extra power consumption for UE.*

*Observation 4：There could be multiple flows for XR application，multiple C-DRX configuration may be needed.*

*Observation 5： From RAN1 perspective, the following issues are with high priority:*

* For CDRX enhancements, high priority issues are alignment between CDRX and XR traffic for resolving the mismatch between CDRX cycle and XR traffic periodicity for each flow and jitter handling.*

* For PDCCH monitoring enhancements, high priority issue is the enhancements to Rel-17 PDCCH monitoring adaptation.*

*Proposal 1: RAN2 is kindly confirm that the following issues will be addressed in XR-specific power saving:*

* Mismatch between C-DRX cycle/PDCCH monitoring periodicity and XR traffic periodicity*

* Extra power consumption due to periodicity jitter*

* Multiple data flows for XR applications*

* Potential enhancements due to XR unique characteristics like tight PDB*

*Proposal 2. The following enhanced DRX schemes can be considered for alignment between CDRX and XR traffic and multiple XR data flow:*

* Scheme #1: Configure multiple DRX cycles which used in a round;*

* Scheme #2：Configure multiple drx-StartOffset values in one DRX cycle.*

*Proposal 3: For jitter handling, the following two schemes can be taken into consideration:*

* Scheme#1: Configure larger drx-onDurationTimer to cover the time distribution of jitter*

* Scheme#2: Configuring a fixed drx-onDurationTimer as baseline, and network can activate a larger drx-onDurationTimer when necessary.*

*Proposal 4: For PDCCH monitoring enhancements, RAN2 should wait for RAN1’s progress first.*

P1

- MediaTek thinks mismatch is useful and important. Same for jitter and tight PDB. Wonders what the multiple data flows means here? Thinks XR can be mix of many things (e.g. audio/video), so would be good to understand. CMCC thinks it’s multiple QoS (sub-)flows

P2/3:

- OPPO thinks it’s too early to discuss specific solutions.

- vivo thinks multiple DRX is just one directions. Could consider other things e.g. DRX activation. So it’s too early to make decisions. RAN1 is also handling jitter handling.

- CATT thinks Frame size variation is also an issue to address for C-DRX: Packet sizes can vary in bursts, which makes assigning the pattern and grants more difficult.

* Noted

[R2-2207509](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207509.zip) Consideration on power saving for XR services CATT discussion Rel-18 FS\_NR\_XR\_enh

[R2-2207846](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207846.zip) Discussion on power saving scheme for XR Samsung discussion Rel-18 FS\_NR\_XR\_enh

[R2-2207888](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207888.zip) Discussion on XR-specific power saving techniques Huawei, HiSilicon discussion FS\_NR\_XR\_enh

[R2-2208020](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208020.zip) XR Power Saving enhancements Nokia, Nokia Shanghai Bell discussion Rel-18 FS\_NR\_XR\_enh

[R2-2207294](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207294.zip) C-DRX enhancement for XR-specific power saving NEC Telecom MODUS Ltd. discussion

[R2-2207979](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207979.zip) Power Saving enhancements for XR ZTE Corporation, Sanechips discussion

[R2-2208680](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208680.zip) Discussion on power saving enhancements for XR Ericsson discussion Rel-17

[R2-2207045](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207045.zip) Power saving enhancements for XR Qualcomm Incorporated discussion Rel-18 FS\_NR\_XR\_enh

[R2-2207999](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207999.zip) C-DRX enhancements for XR MediaTek Inc. discussion Rel-18 FS\_NR\_XR\_enh

[R2-2206986](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2206986.zip) Discussion on XR-specific power saving FGI discussion

[R2-2206996](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2206996.zip) Discussion on CDRX enhancement for XR OPPO discussion Rel-18 FS\_NR\_XR\_enh

[R2-2207119](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207119.zip) Study of C-DRX enhancements for XR traffic Intel Corporation discussion Rel-18 FS\_NR\_XR\_enh

[R2-2207171](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207171.zip) Discussion on XR power saving III discussion

[R2-2207211](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207211.zip) Discussing on XR-specific power saving Xiaomi Communications discussion

[R2-2207368](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207368.zip) Discussion on XR-specific power saving TCL Communication discussion Rel-18

[R2-2207409](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207409.zip) Discussion on XR-specific power saving techniques DENSO CORPORATION discussion Rel-18 FS\_NR\_XR\_enh

[R2-2207490](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207490.zip) Discussion on XR-specific power saving InterDigital, Inc. discussion Rel-18 FS\_NR\_XR\_enh

[R2-2207569](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207569.zip) DRX enhancement for power saving in XR LG Electronics Inc. discussion FS\_NR\_XR\_enh

[R2-2207673](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207673.zip) Discussion on power saving in XR Spreadtrum Communications discussion Rel-18

[R2-2207757](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207757.zip) Discussion on XR-specific power saving vivo discussion Rel-18 FS\_NR\_XR\_enh

[R2-2207832](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207832.zip) Considerations on XR specific C-DRX power saving enhancements Sony discussion Rel-18 FS\_NR\_XR\_enh

[R2-2207864](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207864.zip) XR-specific power saving techniques Google Inc. discussion

[R2-2207877](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207877.zip) Discussion on Power saving enhancements Lenovo discussion Rel-18 FS\_NR\_XR\_enh

[R2-2208620](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208620.zip) Impacts of XR traffics on UE power saving Futurewei discussion Rel-18 FS\_NR\_XR\_enh

[R2-2208295](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208295.zip) Draft Reply LS on UE Power Saving for XR and Media Services Nokia LS out Rel-18 FS\_NR\_XR\_enh To:SA2 Cc:RAN1 Late

### 8.5.4 XR-specific capacity improvements

Including discussion on how scheduler is impacted by XR traffic in UL/DL and what kinds of scheduling mechanisms are required.

By Web Conf (2nd Week Monday) (3)

[R2-2207785](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207785.zip) Discussion on XR capacity improvements KT Corp. discussion

*Proposal 1: SPS/CG periodicity configuration should be enhanced to adapt the non-integer XR traffic characteristics.*

*Proposal 2: Multiple PDSCHs SPS transmission occasions in a period and Multiple PUSCHs CG transmission occasions in a period should be supported.*

[R2-2208417](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208417.zip) Support for XR-specific scheduler enhancements AT&T discussion Rel-18

*Observation 1: For the XR video traffic, absolute delay prioritization schedulers out perform a baseline PF scheduler in coverage-limited outdoor deployments.*

*Proposal 1: RAN2 should study how the RAN (specifically the scheduler) can be made aware of DL and UL XR traffic flow characteristics or assisted in the development of predictive models used in resource allocation.*

[R2-2208302](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208302.zip) Discussion on XR-specific capacity improvement Samsung discussion Rel-18 FS\_NR\_XR\_enh

*Observation 1: Some solutions in TR 38.838 are related to the existing L2 operation (e.g., BSR, LCP, scheduling, PDCP discarding) and need further study in RAN2.*

*Proposal 1: RAN2 is asked to further discuss the solutions in TR 38.838 that can impact on L2 operation (e.g., BSR, LCP, scheduling, PDCP discarding) for XR-specific capacity improvement.*

[R2-2208422](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208422.zip) Discussion on XR-specific capacity improvements CMCC discussion Rel-18 FS\_NR\_XR\_enh

[R2-2207295](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207295.zip) XR-specific capacity improvements NEC Telecom MODUS Ltd. discussion

[R2-2207510](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207510.zip) XR-specific Capacity Improvement CATT discussion Rel-18 FS\_NR\_XR\_enh

[R2-2207978](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207978.zip) Capacity enhancements of XR support in RAN ZTE Corporation, Sanechips discussion

[R2-2208498](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208498.zip) Discussion on XR-specific capacity enhancements techniques Huawei, HiSilicon discussion Rel-18 FS\_NR\_XR\_enh

[R2-2208676](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208676.zip) XR capacity enhancements Ericsson discussion Rel-17

[R2-2207378](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207378.zip) XR Capacity Improvements Nokia, Nokia Shanghai Bell discussion Rel-18 FS\_NR\_XR\_enh Late

[R2-2207719](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207719.zip) XR-specific capacity improvements MediaTek Beijing Inc. discussion Rel-18

[R2-2207050](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207050.zip) Capacity enhancements for XR Qualcomm Israel Ltd. discussion Rel-18

[R2-2207173](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207173.zip) Discussion on the UL enhancement for XR ITRI discussion FS\_NR\_XR\_enh

[R2-2207212](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207212.zip) Discussing on XR-specific capacity improvements Xiaomi Communications discussion

[R2-2207367](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207367.zip) Discussion on XR-specific capacity improvements TCL Communication discussion Rel-18

[R2-2207410](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207410.zip) Discussion on XR-specific capacity improvements DENSO CORPORATION discussion Rel-18 FS\_NR\_XR\_enh

[R2-2207431](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207431.zip) Capacity Enhancement based on XR PDU Set Characteristics Apple discussion Rel-18 FS\_NR\_XR\_enh

[R2-2207491](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207491.zip) Discussion on XR-specific capacity improvements InterDigital, Inc. discussion Rel-18 FS\_NR\_XR\_enh

[R2-2207674](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207674.zip) Some improvements on XR capacity Spreadtrum Communications discussion Rel-18

[R2-2207758](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207758.zip) Discussion on XR Capacity Enhancements vivo discussion Rel-18 FS\_NR\_XR\_enh

[R2-2207762](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207762.zip) Discussion on XR-specific capacity improvements III discussion FS\_NR\_XR\_enh

[R2-2207802](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207802.zip) Discussion on XR-specific capacity improvements OPPO discussion Rel-18 FS\_NR\_XR\_enh

[R2-2207833](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207833.zip) Considerations on XR specific capacity improvements Sony discussion Rel-18 FS\_NR\_XR\_enh

[R2-2207878](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207878.zip) Discussion on XR-specific capacity enhancements Lenovo discussion Rel-18 FS\_NR\_XR\_enh

[R2-2207921](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207921.zip) XR-specific capacity improvements Google Inc. discussion

[R2-2208232](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208232.zip) Scheduling method for XR packets ETRI discussion

[R2-2208401](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208401.zip) Discussion on Capacity enahancement for XR LG Electronics Inc. discussion Rel-18 FS\_NR\_XR\_enh

[R2-2208621](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208621.zip) Layer 2 based XR capacity enhancement Futurewei discussion Rel-18 FS\_NR\_XR\_enh

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

(NR\_QoE\_enh-Core; leading WG: RAN3; REL-18; WID: [RP-221803](https://www.3gpp.org/ftp/tsg_ran/TSG_RAN/TSGR_96/Docs/RP-221803.zip))

Time budget: 0.5 TU

Tdoc Limitation: 2 tdocs

### 8.14.1 Organizational

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

By Web Conf (2nd Week Monday) (1)

[R2-2208619](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208619.zip) Work Plan for Rel-18 NR QoE Enhancement China Unicom Work Plan Rel-18 NR\_QoE\_enh

### 8.14.2 QoE measurements in RRC\_IDLE INACTIVE

including discussion on QoE measurements for RRC\_IDLE/INACTIVE for MBS broadcast services.

By Web Conf (2nd Week Monday) (3)

[R2-2208622](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208622.zip) Discussion on MBS configuration and reporting for NR QoE in Rel-18 China Unicom discussion Rel-18 NR\_QoE\_enh

*Proposal 1: To support QoE measurement for MBS service in Rel-18, RAN2 shall send an LS to SA4 with some assumptions, e.g. taking QoE measurement for MBMS as baseline, and the procedures of configurations and reporting in RRC IDLE/INACTIVE/CONNECTED state for MBS service.*

*Proposal 2: When transiting from RRC\_CONNECTED or RRC\_INACTIVE state to RRC\_ IDLE state, the gNB or MCG can send the QoE configuration for MBS broadcast service to UE by RRC message (e.g. RRCRelease). The UE AS layer stores the UE AS configuration for QoE and the application layer measurement for MBS broadcast service is continued.*

*Proposal 3: When the UE is in RRC\_INACTIVE state or RRC\_ IDLE state, the gNB or MCG can configure the QoE configuration for MBS broadcast service to UE. The UE AS layer stores the UE AS configuration for QoE and the application layer measurement for MBS broadcast service is continued.*

*Proposal 4: when transiting to the RRC\_CONNECTED state from RRC\_INACTIVE state or RRC\_ IDLE state, the UE transfers the QoE reports or indication of MBS broadcast service to the gNB or MCG during RRC setup/resume procedures.*

[R2-2208423](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208423.zip) Discussion on QoE measurement in RRC\_IDLE and RRC\_INACTIVE CMCC discussion Rel-18 NR\_QoE\_enh-Core

*Proposal 1: RAN2 is kindly asked to discuss the indicator to perform QMC in RRC\_IDLE/RRC\_INACTIVE and whether to inform SA4/SA5 for their comments, and there are 2 options for the indicator:*

*- Option 1: Introduce a new explicit indicator.*

*- Option 2: Introduce MBS broadcast as a new service type and use service type as an implicit indicator.*

*Proposal 2: RAN2 is kindly asked to discuss whether to introduce a new reserved memory for QoE report in RRC\_IDLE/RRC\_INACTIVE and the size of the reserved memory or reuse the memory for paused QoE report.*

*Proposal 3: RAN2 is kindly asked to discuss whether to introduce valid time for QoE report generated in RRC\_IDLE/RRC\_INACTIVE, and how to send valid QoE report in RRCSetup/RRCResume, e.g., full content or abstract.*

*Proposal 4: RAN2 is kindly asked to discuss whether RAN should store or transfer QMC configuration performed in RRC\_IDLE.*

*Proposal 5: RAN2 is kindly asked to discuss whether there will be new QMC configuration in RRC\_INACTIVE and RRC\_IDLE and how to handle it when UE switches to RRC\_CONNECTED.*

[R2-2207992](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207992.zip) QoE measurements for MBS broadcast services Huawei, HiSilicon discussion Rel-18 NR\_QoE\_enh-Core

*Observation 1: It is expected that SA4 will define QoE metrics for MBS broadcast services.*

*Proposal 1: The baseline principles of logged MDT framework can be reused as a baseline for QoE measurement collection for MBS services in RRC\_INACTIVE and RRC\_IDLE states, i.e.:*

*4. The UE is configured with IDLE/INACTIVE QoE when the UE is in RRC\_CONNECTED state.*

*5. The UE buffers the QoE reports generated while in RRC IDLE/INACTIVE state.*

*6. 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 2: QoE measurement configuration for MBS service received in RRC IDLE/INACTIVE is provided in the same IE/message as QoE configuration for services received in RRC\_CONNECTED mode (i.e. in AppLayerMeasConfig IE).*

*Proposal 3: When the UE moves to RRC\_CONNECTED state, the UE sends the QoE measurements availability indication to the gNB and the gNB setups SRB4 to allow the UE to send the measurement reports.*

*Proposal 4: For buffering of QoE reports generated in RRCL IDLE/INACTIVE state, RAN2 should discuss:*

*- the minimal memory size requirement*

*- which protocol layer is responsible for storing the QoE reports*

*Proposal 5: It should be possible for the UE to continue the MBS broadcast QoE measurements for a particular QoE measurement session after the UE changes its RRC state.*

[R2-2207026](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207026.zip) QoE measurement collection for IDLE and Inactive state Qualcomm Incorporated discussion NR\_QoE\_enh-Core

[R2-2207427](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207427.zip) IDLE/INACTIVE Mode QoE Measurements and Reporting Apple discussion Rel-18 NR\_QoE\_enh-Core

[R2-2207532](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207532.zip) Considerations on QoE measurements in RRC\_IDLE and RRC\_INACTIVE Lenovo discussion Rel-18 NR\_QoE\_enh-Core

[R2-2207725](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207725.zip) Discussion on QoE for MBS Ericsson discussion Rel-17 NR\_QoE\_enh-Core

[R2-2207822](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207822.zip) Discussion on MBS broadcast services CATT discussion Rel-18 NR\_QoE\_enh-Core

[R2-2208248](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208248.zip) QMC enhancements for NR MBS Nokia, Nokia Shanghai Bell discussion Rel-18 NR\_QoE\_enh-Core

[R2-2208391](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208391.zip) QoE measurement in RRC\_IDLE and RRC\_INACTIVE Samsung discussion Rel-18

[R2-2208615](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208615.zip) Discussion on Rel-18 QoE measurement ZTE Corporation, Sanechips discussion Rel-18 NR\_QoE\_enh-Core

### 8.14.3 Rel-17 leftover topics for QoE

Including discussion on Rel-17 leftover topics: Whether/how RRC should support per-slice QoE measurement configuration, RAN-visible QoE aspects, or QoE reporting for overload scenario?

By Web Conf (2nd Week Monday) (1)

[R2-2207993](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207993.zip) Support of left-over features from Rel-17 Huawei, HiSilicon discussion Rel-18 NR\_QoE\_enh-Core

*Proposal 1: Introduce the slice scope in the QoE configuration container and inform SA4 about this.*

*Proposal 2: For the QoE value reporting, wait for the progress of RAN3 and other WGs before discussing RAN2 impacts.*

*Proposal 3: RAN2 and RAN3 should evaluate the benefits versus complexity of introducing event-based RAN visible QoE reporting considering that the existing periodic reporting can serve the same purpose.*

*Proposal 4: Introduce the QoS flows information in the RAN visible QoE report from the UE. Request CT1/SA4 to introduce this information in the RAN visible QoE report provided from application layer to the UE.*

*Proposal 5: It is proposed that OAM sends the priorities for the management based QoE configurations to the gNB.*

[R2-2208616](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208616.zip) Discussion on Rel-17 leftover issues for QoE ZTE Corporation, Sanechips discussion Rel-18 NR\_QoE\_enh-Core

*Observation 1: If both Option 1 and 2 are supported, it may result in inconsistent configuration information and incorrect UE behavior.*

*Observation 2: It is necessary to wait for the conclusion of whether or not to introduce RVQoE value into RAN3.*

*Proposal 1: The QoE measurement configuration container includes the slice information, and the gNB should not send the slice information by the RRC signalling.*

[R2-2207533](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207533.zip) Discussion on Rel-17 leftover features for QoE Lenovo discussion Rel-18 NR\_QoE\_enh-Core

*Observation: All leftover features are RAN3-centric and require further discussion in RAN3 whether they should be supported in Rel-18.*

*Proposal: RAN2 to start discussion on the leftover features for which there is consensus in RAN3 and impacts to RAN2 and radio interface signaling.*

[R2-2207027](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207027.zip) Discussion on Rel-17 leftover issues Qualcomm Incorporated discussion NR\_QoE\_enh-Core

[R2-2207428](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207428.zip) Views on Potential Enhancements of Existing QoE Features Apple discussion Rel-18 NR\_QoE\_enh-Core

[R2-2207724](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207724.zip) Discussion on rel-17 leftovers Ericsson discussion Rel-17 NR\_QoE\_enh-Core

[R2-2207823](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2207823.zip) Discussion on Rel-17 leftover issues for QoE CATT discussion Rel-18 NR\_QoE\_enh-Core

[R2-2208249](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208249.zip) QMC enhancements for RAN overload Nokia, Nokia Shanghai Bell discussion Rel-18 NR\_QoE\_enh-Core

[R2-2208392](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208392.zip) Timing information of measured samples Samsung discussion Rel-18

### 8.14.4 Other topics

Including any other QoE enhancement discussion (e.g. service type aspects, QoE in NR-DC, QoE continuity).

NOTE: This agenda item will not be treated in this meeting.

[R2-2208613](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208613.zip) Recommended bitrate for XR services MediaTek Beijing Inc. discussion Rel-18

[R2-2208629](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_119-e\R2-2208629.zip) On RAN visible QoE parameters for new services China Telecom discussion

# Summary

**Agreed documents ()**

*4.1, 4.4: LTE legacy ()*

*7.1.X: LTE Rel-17 ()*

*6.2: NR Rel-17 DCCA ()*

*6.3: NR Rel-17 MUSIM ()*

*6.8: NR Rel-17 RAN slicing ()*

*6.14: NR Rel-17 QoE ()*

*6.20: NR Rel-17 71 GHz ()*

**Endorsed documents ()**

*8.5: Rel-18 XR ()*

*8.14: Rel-18 QoE enhancements ()*

**Approved LS out ()**

**Post-meeting email discussions (short, LSs) ()**

**Post-meeting email discussions (short, TR update or CR agreement) ()**

**Post-meeting email discussions (long, until next meeting) ()**