3GPP TSG-RAN WG2 Meeting #116 electronic [R2-2111291](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111291.zip)

Online, November, 2021

**Agenda item: 10.1**

**Source: Vice Chairman (Nokia)**

**Title: Report on LTE legacy, 71 GHz, DCCA, Multi-SIM and RAN slicing**

**Document for: Approval**

# Organizational

**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)**

**Organizational**

* [AT116-e][200] Organizational – LTE legacy, 71 GHz, DCCA, Multi-SIM and RAN slicing (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: 2nd week Mon, UTC 0900

**LTE Legacy** **(kicked off at meeting start)**

* [AT116-e][205][LTE] Miscellaneous LTE CRs (Lenovo)

Scope:

* + - Discuss LTE CRs marked for this discussion (if needed)

Intended outcome:

* + - Discussion report in [R2-2111305](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111305.zip)
    - Agreeable CRs (if any)

Deadline for providing comments, for rapporteur inputs, conclusions and CR finalization:

* + - Initial deadline (for company feedback): 1st week Thu, UTC 0900
    - Initial deadline (for rapporteur summary): 1st week Thu, UTC 1700
    - Deadline for CR finalization: 2nd week Wed, UTC 0900

**LTE Rel-17 (kicked off after 1st week online session)**

* [AT116-e][206][LTE] Addition of NR-U RSSI/CO measurement UE capability (Apple)

Scope:

* + - Discuss comments to [R2-2111462](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111462.zip) and [R2-2111463](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111463.zip) to come up with endorsable CRs.

Intended outcome:

* + - Endorsed CRs in [R2-2111319](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111319.zip) (revision of [R2-2111462](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111462.zip)) and [R2-2111320](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111320.zip) (revision of [R2-2111463](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111463.zip))

Deadline for providing comments and CR finalization:

* + - Initial deadline (for company feedback): 2nd week Thu, UTC 0900
    - Initial deadline (for final CRs): 2nd week Thu, UTC 1600

**NR Extension to 71 GHz (TBD - only started after 2nd week online discussion)**

**TBA**

**NR Rel-17 DCCA (started after 1st week Tue session)**

* [AT116-e][220][R17 DCCA] TRS-based Scell activation details (OPPO)

Scope:

* + - Discuss remaining RAN2 aspects on of TRS-based SCell activation based on online discussion.

Intended outcome:

* + - Discussion summary in [R2-2111311](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111311.zip) (by email rapporteur).

Deadline for providing comments, for rapporteur inputs, conclusions and CR finalization:

* + - Initial deadline (for company feedback): 1st week Fri, UTC 0900
    - Initial deadline (for rapporteur summary): 2nd week Mon, UTC 1000

* [AT116-e][221][R17 DCCA] UP issues for SCG deactivation (Samsung)

Scope:

* + - Discuss remaining UP issues for SCG (de)activation based on [R2-2109942](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109942.zip). Discuss also whether we need to do MAC reset at SCG deactivation.

Intended outcome:

* + - Discussion summary in [R2-2111314](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111314.zip) (by email rapporteur).

Deadline for providing comments, for rapporteur inputs, conclusions and CR finalization:

* + - Initial deadline (for company feedback): 2nd week Mon, UTC 0900
    - Initial deadline (for rapporteur summary): 2nd week Mon, UTC 1300

**NR Rel-17 DCCA (TBD, only started after 2nd week Monday session)**

**TBA**

**NR Rel-17 Multi-SIM (kicked off after 1st week online session)**

* [AT116-e][230][MUSIM] LS on RAN2 agreements for MUSIM (vivo)

Scope:

* + - Discuss what RAN2 should reply to CT1 on [R2-2109304](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109304.zip) and provide draft LS reply (if agreeable).
    - Include also RAN2 agreement (under 8.3.2) on AS calculating the alternative IMSI/offset and request SA2/CT1 to specify the necessary details.

Intended outcome:

* + - Draft LS in [R2-2111307](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111307.zip) (by email rapporteur).

Deadline for providing comments, for rapporteur inputs, conclusions and CR finalization:

* + - Initial deadline (for company feedback): 1st week Fri, UTC 0700
    - Initial deadline (for draft LS): 2nd week Mon, UTC 1200
* [AT116-e][232][MUSIM] Paging with serving indication for MUSIM (Huawei)

Scope:

* + - Update the CRs to paging with serving indication for MUSIM in [R2-2109755](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109755.zip) and [R2-2109756](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109756.zip) based on agreements.
    - Draft LS to SA2/RAN3/CT1 in this thread informing them if the RAN2 agreeements for paging service indication.

Intended outcome:

* + - Discussion summary in [R2-2111312](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111312.zip) (by email rapporteur), draft LS in [R2-2111313](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111313.zip) (by email rapporteur).

Deadline for providing comments, for rapporteur inputs, conclusions and CR finalization:

* + - Initial deadline (for company feedback): 1st week Fri, UTC 0700
    - Initial deadline (for rapporteur summary and draft LS): 2nd week Mon, UTC 1200

**NR Rel-17 Multi-SIM (TBD, only kicked off after 2nd week online session)**

* [AT116-e][231][MUSIM] UE capabilities (NN)

Scope:

* + - Discuss remaining RAN2 UE capability aspects and create UE capability descriptions. Can handle summary document in this thread if not handled online

Intended outcome:

* + - Discussion summary in [R2-2111310](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111310.zip) (by email rapporteur).

Deadline for providing comments, for rapporteur inputs, conclusions and CR finalization:

* + - Initial deadline (for company feedback): 2nd week Mon, UTC 1200
    - Initial deadline (for rapporteur summary): 2nd week Tue, UTC 1000

**NR Rel-17 RAN Slicing (kicked off after 1st week online session)**

* [AT116-e][240][Slicing] LS reply on slice list and priority information (CMCC)

Scope:

* + - Continue discussion on reply LS to [R2-2111235](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111235.zip) and provide draft LS reply.

Intended outcome:

* + - Discussion summary in [R2-2111308](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111308.zip) and draft LS in [R2-2111309](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111309.zip) (by email rapporteur).

Deadline for providing comments, for rapporteur inputs, conclusions and CR finalization:

* + - Initial deadline (for company feedback): 2nd week Thu, UTC 0700
    - Initial deadline (for rapporteur summary and draft LS): 2nd week Thu, UTC 1700
* [AT116-e][241][Slicing] Slice-based cell re-selection algorithm (Ericsson)

Scope:

* + - Continue discussion on approach from [R2-2110699](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110699.zip) and sort out the details of this solution. Should try to have a draft CR and identify if/how the approach can be simplified.

Intended outcome:

* + - Discussion summary (including TP) in [R2-2111306](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111306.zip) (by email rapporteur).

Deadline for providing comments, for rapporteur inputs, conclusions and CR finalization:

* + - Initial deadline (for comments): 2nd week Wed, UTC 1000
    - Initial deadline (for rapporteur summary): 2nd week Thu, UTC 1000

**Summary documents**

* [201]: Summary of 8.2.3.3 (Other CPAC aspects) - Interdigital
* [202]: Summary of 8.3.2 (MUSIM Paging collision avoidance) - vivo
* [203]: Summary of 8.3.5 (MUSIM UE capabilities) - Ericsson
* [204]: Summary of RAN 8.8.4 (RAN slicing UE capabilities) - Qualcomm

**Dates and deadlines – Technical Meeting**

Oct 21 5th 23.59 PDT (Oct 22th 06.59 UTC) Tdoc number allocation deadline.  
Tdoc Submission Deadline. Kick off, summaries.

Oct 28th 0700 UTC Tdocs submission deadline for Summaries

Nov 1st 0700 UTC e-Meeting Start (by email), Week 1

Nov 5th 1000 UTC Weekend break, Suspend decision making in email discussions (= no deadlines etc)

It should be possible for a delegate to take the weekend off, rejoin and not miss decisions.

Nov 8th 0800 UTC Resume after weekend. Resume decision making in email discussions, Week 2.

Nov 12th 1000 UTC e-Meeting Stop, no more email comments for AT-meeting email discussions. Decision confirmations announced within 24h. Session notes for email checking.

Nov 19th Deadline Short Post116-e email discussions.

**Web Conference Schedule**

Note that this schedule is indicative and can change. After Week 1 the schedule for Week 2 will be updated. No Overtime, Hard stop at UTC 15.55 (1st week) / 16:25 (2nd week) and UTC 05:40 (1st week) / 06:10 (2nd week)

**PLEASE NOTE THAT DAYLIGHT SAVING TIME CHANGES DURING THIS MEETING (all over the world but at different times) SO THE SCHEDULE TIMES ARE DIFFERENT WEEK1 and WEEK2**

**Web Conference Schedule, WEEK 1:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Time Zone UTC** | **Web Conference R2 - Main** | **Web Conference R2 - BO1** | **Web Conference R2 - BO2** |
| **Monday** |  |  |  |
| 12:05-12:15 | Rel17 Planning (TS creation, UE caps, RRC parameters, running CRs, need for coord etc) |
| 12:15-13:05 | NR17 Measurement Gap Enh (Johan) | NR16 Pos (Nathan) | NR17 NTN, non-pos aspects (Sergio) |
| 13:05-14:25 | NR15 NR16 Main session (Johan) | NR17 Multi-SIM (Tero)  - 8.3.1: Organizational (LSs, running CRs)  - 8.3.4: Outcome of [115e][236], additional details  - 8.3.2: Summary document  - 8.3.3: Gap handling remaining details  - 8.3.5: Summary document | NR17 NTN (Sergio) |
| 14:25-15:45 | NR17 TEI (Johan) | NR17 SL enh (Kyeongin) | LTE17 IoT (Brian) |
| **Tuesday** |  |  |  |
| 12:15-13:05 | NR17 QoE (Johan) | NR17 RAN Slicing (Tero)  - 8.8.1: Organizational (LSs, running CRs)  - 8.8.2: Outcome of [115e][244], slice group definition, decision on solution directions | NR17 Small Data Enh (Diana) |
| 13:05-14:25 | NR17 eIAB (Johan) | NR16 V2X (Kyeongin) | NR17 Small Data Enh (Diana) |
| 14:25-15:45 | NR17 ePowSav (Johan) | NR17 SL enh (Kyeongin)  15:15 (tbd): NR17 NTN (Sergio) | NR17 DCCA (Tero)  - 8.2.1: Organizational (LSs, running CRs)  - 8.2.4: Outcome of [115e] [218]  - 8.2.2.1: SCG deactivation topics, focus on UP details (CP to go offline if needed)  - 8.2.2.2: TCI state activation, UE measurements, BFD/BFR and RLM/RRM) details  - 8.2.2.3: Outcome of [115e][219], LS reply to RAN4, UP details  - 8.2.5: Outcome of [115e][214] |
| **Wednesday** |  |  |  |
| 12:15-13:05 | NR17 eNPN (Johan) | 12:15-13:35: NR17 RedCap (Sergio) | NR17 SL Relay (Nathan) |
| 13:05-14:25 | NR17 Multicast (Johan) | 13:35-14:25: NR17 CovEnh (Sergio) | NR17 Pos (Nathan) |
| 14:25-15:45 | NR17 Multicast (Johan) | NR17 SONMDT (HuNan) | NR17 IIOT URLLC (Diana) |
| **Thursday** |  |  |  |
| 04:30-05:30 | NR17 feMIMO (Johan) | NR17 SL Relay (Nathan) | LTE16e IoT (Emre, Brian) |
| **Friday** |  |  |  |
| 04:30-05:30 | NR17 Other (Johan) | NR17 SL Relay (Nathan) | LTE All releases Misc (Tero)  - 9.4: Inclusive language (if needed)  - 4.5/7.4: Outcome of [205] (if needed)  - 7.1.1/7.1.2 if needed  - 9.3:Outcome of [115e][203], TEI17 proposals |

**Web Conference Schedule, WEEK 2:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Time Zone UTC** | **Web Conference R2 - Main** | **Web Conference R2 - BO1** | **Web Conference R2 - BO2** |
| **Monday** |  |  |  |
| 12:45-13:35 | NR17 IoT NTN (Johan) | NR17 up to 71 GHz (Tero)  - 8.20.1: Discussion on running CRs  - 8.20.2: UE capabilities, UP aspects and L2 buffer, RRC/MAC impacts | NR16 SONMDT (HuNan) |
| 13:35-14:55 | NR17 Other (Johan) | CB Tero (DCCA session)  - 8.2.3.2: Outcome of [115e][217], other topics  - 8.2.3.1: Outcome of [115e][216], decision on WA for solution 2, other topics  - 8.2.3.3: Summary document [201] (if time allows)  - 8.2.5: Outcome of [115e][214] (if time runs out, will be handled via email) | CB Kyeongin |
| 14:55-16:15 | NR15 NR16 Main session  CB Measurement Gap Enh (Johan) | NR17 RACH indication / partitioning (Diana) | NR17 Pos (Nathan) |
| **Tuesday** |  |  |  |
| 12:45-13:35 | CB eNPN, QoE, (Johan) | CB Sergio | CB Nathan |
| 13:35-14:55 | CB eIAB, TEI (Johan) | CB Tero (RAN slicing, Multi-SIM, DCCA)  - 8.8.3: Outcome of [115e][242], other RACH details  - 8.3.3: Network switching aspects  - 8.3.5: Summary document [203]  - 8.8.4: Summary document [204] (if time runs out, will be handled via email) | CB Brian Emre |
| 14:55-16:15 | CB Multicast, IoT NTN (Johan) | CB Diana | CB Kyeongin |
| **Wednesday** |  |  |  |
| 05:00-06:00 | CB ePowsav, feMIMO (Johan) | CB TBD Sergio | CB TBD Kyeongin |
| **Thursday** |  |  |  |
| 05:00-06:00 | CB NR16 NR15 (Johan) | CB HuNan | CB Nathan |
| **Friday** |  |  |  |
| 05:00-06:00 | CB TBD (Johan) | CB Sergio | CB Tero  DCCA  - 8.2.2.1: Outcome of [221]  - 8.2.4: Outcome of [220]  MUSIM  - 8.3.1: Outcome of [230]  - 8.3.4: Outcome of [232]  RAN slicing  - 8.8.2: Outcome of [240]  - 8.8.2: Outcome of [241] |

# 4 EUTRA corrections Rel-15 and earlier

See Appendix A for reference to Work items, work item codes and WIDs.

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

## 4.5 Other LTE corrections Rel-15 and earlier

Documents in this agenda item will be handled in a break out session.

Purely editorial corrections should be avoided, text enhancements may be deprioritized. Corrections should be taken up with the specification editor before submitting to avoid CR duplication. If this is not done, the contribution may not be treated.

By Email [205] (2+2+2)

Missing LTE capability descriptions:

[R2-2109828](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109828.zip) Addition of missing TEI15 features Lenovo, Motorola Mobility (Rapporteur) CR Rel-15 36.306 15.10.0 1825 - F TEI15

* Move the 2nd change on 7.10.x to 4.3.13.1
* Revised in [R2-2111315](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111315.zip) according to above change.

[R2-2111315](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111315.zip) Addition of missing TEI15 features Lenovo, Motorola Mobility (Rapporteur) CR Rel-15 36.306 15.10.0 1825 1 F TEI15

* [205] To be agreed over email

[R2-2109829](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109829.zip) Addition of missing TEI15 features and other corrections Lenovo, Motorola Mobility (Rapporteur) CR Rel-16 36.306 16.6.0 1826 - F TEI15, 5G\_V2X\_NRSL-Core, LTE\_NR\_DC\_CA\_enh-Core

* Move the 2nd change on 7.10.x to 4.3.13.1
* Revised in [R2-2111316](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111316.zip) according to above change.

[R2-2111316](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111316.zip) Addition of missing TEI15 features and other corrections Lenovo, Motorola Mobility (Rapporteur) CR Rel-16 36.306 16.6.0 1826 1 F TEI15, 5G\_V2X\_NRSL-Core, LTE\_NR\_DC\_CA\_enh-Core

* [205] To be agreed over email

HSDN cell reselection: Do we need to dummify the SIB5 field?

[R2-2109830](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109830.zip) Corrections to HSDN cell reselection enhancement Lenovo, Motorola Mobility CR Rel-15 36.331 15.15.0 4726 - F TEI15

* Not pursued

[R2-2109831](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109831.zip) Corrections to HSDN cell reselection enhancement Lenovo, Motorola Mobility CR Rel-16 36.331 16.6.0 4727 - A TEI15

* Not pursued

Indication to upper layers on QMC release when fullConfig is used:

[R2-2111148](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111148.zip) Correction to application layer measurement and reporting Google Inc. CR Rel-15 36.331 15.15.0 4746 - F LTE\_QMC\_Streaming-Core

* Not pursued

[R2-2111149](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111149.zip) Correction to application layer measurement and reporting Google Inc. CR Rel-16 36.331 16.6.0 4747 - A LTE\_QMC\_Streaming-Core

* Not pursued

Email discussions ([205])

* [AT116-e][205][LTE] Miscellaneous LTE CRs (Lenovo)

Scope:

* + - Discuss LTE CRs marked for this discussion

Intended outcome:

* + - Discussion report in [R2-2111305](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111305.zip)
    - Agreeable CRs (if any)

Deadline for providing comments, for rapporteur inputs, conclusions and CR finalization:

* + - Initial deadline (for company feedback): 1st week Thu, UTC 0900
    - Initial deadline (for rapporteur summary): 1st week Thu, UTC 1700
    - Deadline for CR finalization: 2nd week Wed, UTC 0900

# 7 Rel-16 EUTRA Work Items

Only essential corrections. No documents should be submitted to 7. Please submit to 7.x

## 7.1 EUTRA Rel-16 General

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

Purely editorial corrections should be avoided, text enhancements may be deprioritized. Corrections should be taken up with the specification editor before submitting to avoid CR duplication. If this is not done, the contribution may not be treated.

### 7.1.1 Cross WI RRC corrections

Including RRC corrections that impact multiple WIs and require discussion in the common session.

### 7.1.2 Feature Lists and UE capabilities

Corrections to UE capabilities should be taken up with the 36.331 and 36.306 specification editors before submitting to avoid CR duplication. If this is not done, the contribution may not be treated.

## 7.4 LTE Other WIs

(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 corrections and issues that do not fit under any other topic.

Purely editorial corrections should be avoided, text enhancements may be deprioritized. Corrections should be taken up with the specification editor before submitting to avoid CR duplication. If this is not done, the contribution may not be treated.

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 6.1.X instead.

By Email [205] (1+1+1+1)

Stage-2 miscellaneous corrections (1024QAM, MTC):

[R2-2110805](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110805.zip) Miscellaneous corrections Nokia (rapporteur), Qualcomm Incorporated CR Rel-16 36.300 16.6.0 1350 - F LTE\_feMTC-Core, LTE\_1024QAM\_DL-Core, TEI16

* MTC session decision: The contents of the CR in [R2-2110471](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110471.zip) is agreed. The CR can be merged to TS 36.300 rapporteur CR in [R2-2110805](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110805.zip). (Offline-205)
* Intent of the CR is agreed
* Revised in [R2-2111317](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111317.zip)

[R2-2111317](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111317.zip) Miscellaneous corrections Nokia (rapporteur), Qualcomm Incorporated CR Rel-16 36.300 16.6.0 1350 1 F LTE\_feMTC-Core, LTE\_1024QAM\_DL-Core, TEI16

* [205] To be agreed over email

UAV: Procedural text of multiple-cell triggering condition doesn't work correctly?

[R2-2111136](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111136.zip) Correction on cellsTriggeredList Samsung R&D Institute UK CR Rel-16 36.331 16.6.0 4745 - F LTE\_Aerial-Core

*(moved from 7.1.1)*

* Can discuss in the next meeting if there should be some clarification text (e.g. in Stage-2) to avoid having the same discussion again.
* Not pursued

CHO capability: Is the two-trigger even capability mandatory or optional in Rel-16?

[R2-2111178](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111178.zip) Conditional Handover with Two Trigger Events MediaTek Inc. CR Rel-16 36.306 16.6.0 1832 - F LTE\_feMob-Core

* Moved to NR session

RRC segmentation (related to RACS but LTE-only CR - is anything needed to NR RRC?):

[R2-2109803](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109803.zip) Discard of received segments of RRC messages Samsung CR Rel-16 36.331 16.6.0 4725 - F TEI16

* The CR can be agreed with the following modifications:
* • Keep only the 1st change.
* • Add on coversheet some description of the cases in which the UE discards received segments of RRC messages upon leaving connected or inactive state.
* The 2nd issue (general question on multiple parallel segmented DL RRC messages) can be raised up in NR session (to be discussed jointly for NR and LTE) in the next meeting.
* Revised in [R2-2111318](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111318.zip)

[R2-2111318](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111318.zip) Discard of received segments of RRC messages Samsung CR Rel-16 36.331 16.6.0 4725 1 F TEI16

* [205] To be agreed over email

Web Conf (1st week Friday)

[R2-2111305](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111305.zip) Summary of [AT116-e][205][LTE] Miscellaneous LTE CRs (Lenovo) Lenovo discussion Rel-16 TEI15, 5G\_v2X\_NRSL-Core, LTE\_NR\_DC\_CA\_enh-Core, LTE\_QMC\_Streaming-Core, LTE\_feMTC-Core, LTE\_1024QAM\_DL-Core, TEI16, LTE\_Aerial-Core, LTE\_feMob-Core

Proposal 1: The CRs in [R2-2109828](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109828.zip) and [R2-2109829](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109829.zip) are agreed.

- QC agrees with the intent but thinks this is not needed for the 2nd change. Could combine with existing description of MDT.

- Lenovo thinks these are equivalent and both ways are possible. QC thinks we should have just one section for all. Chair wonders if this is any different than other condtiional mandatory features? QC thinks we rarely do this so should try to have things combined.

* Move the 2nd change on 7.10.x to 4.3.13.1
* [R2-2109828](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109828.zip) is revised in [R2-2111315](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111315.zip) and [R2-2109829](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109829.zip) is revised in [R2-2111316](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111316.zip) according to above change.
* 3: The CRs in [R2-2111148](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111148.zip) and [R2-2111149](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111149.zip) are not pursued.
* 4: Intent of the CR in [R2-2110805](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110805.zip) is agreed. Revised in [R2-2111317](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111317.zip) to include changes from MTC session and agreed.

- Ericsson thinks the UAV correction came up already earlier so it's not obvious. Can we do something to prevent this later? Should we have Stage-2 description to explain later? QC agrees we could try to prevent this somehow.

* 5: The CR in [R2-2111136](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111136.zip) is not pursued. Can discuss if there is some clarification text (e.g. in Stage-2) to avoid having the same discussion again.

- Lenovo indicates all supported 1st change. Thereis a fundamental question on whether parallel segmented RRC messages are supported. This is unclear currently. Samsung explains that the 2nd change is about multiple messages but agrees this is grey area. But wonders how to discuss this in the next meeting?

* 6: The CR in [R2-2109803](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109803.zip) will be revised in [R2-2111318](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111318.zip) and agreed with the following modifications:
* • Keep only the 1st change.
* • Add on coversheet some description of the cases in which the UE discards received segments of RRC messages upon leaving connected or inactive state.
* The 2nd issue (general question on multiple parallel segmented DL RRC messages) can be raised up in NR session (to be discussed jointly for NR and LTE) in the next meeting.

- Lenovo explains we will have Rel-17 NR feature on HSDN. This was spotted there and there is desire to align the procedures. NR already fixed these. Qualcomm is not sure this is completely redundant. And even if it is, should we change Rel-15 ASN.1?

- Nokia wonders what happens if we agree to these CRs? Will there be inter-operability issues? If the dummified field doesn't matter, is there an issue? Lenovo thinks this will be up to network and there should be compatibility issues.

* 2: CRs in [R2-2109830](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109830.zip) and [R2-2109831](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109831.zip) are not pursued.

# 8 Rel-17 NR Work Items

No documents should be submitted to 8. Please submit to 8.x

## 8.2 MR DC/CA further enhancements

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

Time budget: 1 TU

Tdoc Limitation: 5 tdocs (note that email discussion outcome documents or rapporteur inputs do not count against Tdoc limitations)

Email max expectation: 4 threads

No documents should be submitted to 8.2. Please submit to.8.2.x

Contributions should illustrate the Stage-3 details of the proposals (e.g. in an Annex containing TP against the running CRs).

### 8.2.1 Organizational, Requirements and Scope

Including LSs, any rapporteur inputs and results of running CR email discussions [210]-[213], and [215]

Web Conf (1st week Tuesday) (1)

[R2-2109365](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109365.zip) Reply LS on temporary RS for efficient SCell activation in NR CA (R4-2115370; contact: Huawei) RAN4 LS in Rel-17 LTE\_NR\_DC\_enh2 To:RAN1, RAN2

* RAN2 actions needed, discussed under 8.2.4 (likely no reply LS needed)

Web Conf (1st week Tuesday) (1)

[R2-2109368](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109368.zip) LS on efficient activation/de-activation mechanism for one SCG R4-2115440; contact: Huawei) RAN4 LS in Rel-17 LTE\_NR\_DC\_enh2 To:RAN2

*RAN4 would like check with RAN2 on the following:*

*Q1-A: Is RRC reconfiguration for selecting SCG activation state limited to the three cases (PSCell addition/change, RRC resume, and HO) or additional cases are supported?*

*Q1-B: Is MAC CE based SCG (de)activation supported?*

*Q2: RAN4 will define SCG deactivation requirements assuming that all cells in the SCG including all active SCells get deactivated as soon as the target MN indicates SCG state as “deactivated” without waiting for a separate higher layer signal deactivating the SCells. RAN4 would like to check if this assumption is consistent with RAN2 assumption.*

* RAN2 actions needed, reply LS discussed under 8.2.2.3

Web Conf (1st week Tuesday) (1+1+1+2)

Running CRs from email discussions [210]-[213], [215]

Running CRs for SCG (de)activation:

Outcome of [212]:

[R2-2110866](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110866.zip) [Post115-e][212][R17 DCCA] Running NR/LTE RRCs CR for SCG deactivation (Huawei) Huawei, HiSilicon discussion LTE\_NR\_DC\_enh2-Core Late

*The signalling for SCG activation/deactivation signalling is as follows:*

*- presence/absence of scg-State in the MN RRC message indicates that the SCG is activated/deactivated*

*- deactivatedSCG-Config in the SN RRC message includes any parameter that is required for the SCG deactivated state (currently: whether the UE performs RLM/BFD). This can be configured at SCG deactivation or before.*

*- scg-State is also added to AS-Config in TS 36.331 for handover preparation (in TS 38.331, since the whole source MN configuration is provided, there is no need for explicit addition).*

*The remaining aspects not fully addressed are (FFS added):*

*- the UE behaviour at PSCell change while the SCG is deactivated:*

*- trigger RACH*

*- start 304*

*- synchronize to the DL of the target SpCell, apply BCCH configuration, acquire MIB*

*- any restriction on which message the scg-State can be included in (e.g. in any reconfiguration, at MCG link recovery)*

*The aspects not addressed at all:*

*- handling of UP while the SCG is deactivated*

*- UE behaviour upon SCG RLF while the SCG is deactivated*

*Proposal: Endorse [1] and [2] as running CRs for SCG deactivation.*

* Noted

[R2-2110867](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110867.zip) Introduction of SCG deactivation Huawei, HiSilicon draftCR Rel-17 38.331 16.6.0 B LTE\_NR\_DC\_enh2-Core Late

* Endorsed as running CR

[R2-2110868](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110868.zip) Introduction of SCG deactivation Huawei, HiSilicon draftCR Rel-17 36.331 16.6.0 B LTE\_NR\_DC\_enh2-Core Late

* Endorsed as running CR

Outcome of [215]:

[R2-2109892](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109892.zip) [Post115-e][215][R17 DCCA] Running 37.340 CR for SCG deactivation ZTE Corporation, Sanechips draftCR Rel-17 37.340 16.7.0 LTE\_NR\_DC\_enh2

* Endorsed as running CR

Outcome of [213]:

[R2-2110504](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110504.zip) Running CR to 38.321 for SCG deactivation vivo draftCR Rel-17 38.321 16.6.0 B LTE\_NR\_DC\_enh2-Core

* Endorsed as running CR

Running CRs for CPAC:

Outcome of [210]:

[R2-2110427](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110427.zip) Introduction of CPA and inter-SN CPC CATT draftCR Rel-17 37.340 16.7.0 B LTE\_NR\_DC\_enh2-Core

* ?? Endorsed as running CR?

Outcome of [211]:

[R2-2110428](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110428.zip) Introduction of CPA and inter-SN CPC CATT draftCR Rel-17 38.331 16.6.0 B LTE\_NR\_DC\_enh2-Core

* ?? Endorsed as running CR?

[R2-2110429](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110429.zip) Introduction of CPA and inter-SN CPC CATT draftCR Rel-17 36.331 16.6.0 B LTE\_NR\_DC\_enh2-Core

* ?? Endorsed as running CR?

Withdrawn:

[R2-2110001](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110001.zip) Inter-MN RRC resume without SN change - RAN2 aspects Qualcomm Incorporated, Nokia, Nokia Shanghai Bell discussion Rel-17 Withdrawn

Post-meeting email discussions (TBD, running CRs for CPAC, SCG (de)activation and TRS-based Scell activation?)

* [Post115-e][2xx][R17 DCCA] Running Stage-2 CRs for CPAC (CATT)

Scope: Update running 37.340 CR for CPAC.

Intended outcome: Running CR

Deadline: Short

* [Post115-e][2xx][R17 DCCA] Running NR/LTE RRCs CR for CPAC (CATT)

Scope: Update running NR and LTE RRC CRs for CPAC.

Intended outcome: Running CR

Deadline: Short

* [Post115-e][2xx][R17 DCCA] Running NR/LTE RRCs CR for SCG deactivation (Huawei)

Scope: Update running NR and LTE RRC CRs for SCG deactivation.

Intended outcome: Running CR

Deadline: Short

* [Post115-e][2xx][R17 DCCA] Running MAC CR for SCG deactivation (vivo)

Scope: Update running MAC CR for SCG deactivation.

Intended outcome: Running CR

Deadline: Short

* [Post115-e][2xx][R17 DCCA] UE capabilities (Intel)

Scope: Update RRC and 38.306 CRs for UE capabilities

Intended outcome: Running CRs for RRC and 38.306

Deadline: Short

* [Post115-e][2xx][R17 DCCA] Running Stage-2 CRs for SCG deactivation (ZTE)

Scope: Create running 37.340 CRs for SCG deactivation.

Intended outcome: Running CR

Deadline: Short

* [Post115-e][2xx][R17 DCCA] Running MAC CR for TRS-based SCell activation (NN)

Scope: Update running 38.321 CR for TRS-based SCell activation.

Intended outcome: Running CR

Deadline: Short

* [Post115-e][2xx][R17 DCCA] Running NR RRC CR for TRS-based SCell activation (NN)

Scope: Create running NR RRC CR for TRS-based SCell activation.

Intended outcome: Running CR

Deadline: Short

### 8.2.2 Efficient activation / deactivation mechanism for one SCG and SCells

No documents should be submitted to 8.2.2. Please submit to.8.2.2.x

#### 8.2.2.1 Deactivation of SCG

Including discussion on UP details of SCG deactivation (e.g. PDCP/MAC impacts, bearer handling) - UP aspects will be prioritized in this meeting.

Including whether the UE performs RACH at PSCell change

Web Conf (1st week Tuesday) (1)

Does UE perform RACH at PSCell change or at SCG activation?

[R2-2110871](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110871.zip) Remaining issues on deactivation of SCG Huawei, HiSilicon discussion LTE\_NR\_DC\_enh2-Core

* 2: The UE does not perform RACH after TAT expires while the SCG is deactivated.
* 3: At PSCell addition/change/HO/RRC resume, in case the SCG state is configured as deactivated, the UE does not perform random access. If the network wants the UE to perform random access, it can indicate the SCG as activated and deactivate it after the random access by RRC or MAC CE if supported.

- Nokia is fine with P2 and P3. NTT DOCOMO, CATT, MTK, QC, NEC, ZTE, Ericsson, Intel, Lenovo and LGE agrees. vivo agrees with P2 but thinks P3 could require additional efforts. Huawei thinks we only avoid complexity if we mandate activation at PSCell change.

- Samsung wonders if PSCell addition is intentionally excluded from P3? Huawei indicates this was not considered but could be included. Interdigital wonders if addition makes sense? Apple thinks there could still be some speed-up due to measurements.

- Interdigital agrees with vivo that we may need something extra for P3.

*Proposal 1: After the UE has indicated to the MN that the UE would like the SCG to be deactivated, the MN indicates to the UE whether it accepts the request or not. RAN2 to further discuss the indication is via an explicit response or in an implicit way e.g. timer.*

Web Conf (1st week Tuesday) (2)

UP details of SCG deactivation:

[R2-2110870](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110870.zip) UP handling while SCG is deactivated Huawei, HiSilicon discussion LTE\_NR\_DC\_enh2-Core

*Proposal 1: The PDCP entity shall performs data recovery when UE receives the SCG deactivation command and no PDCP PDUs are submitted to any SCG RLC bearer.*

*Proposal 2: The SN RLC entity performs re-establishment when UE receives the SCG deactivation command.*

*Proposal 4: The UE autonomously performs PDCP data recovery and RLC re-establishment at SCG deactivation (no need for explicit signalling).*

- Samsung wonders what the intention is: AM split bearer? Thinks that doesn't work and this would be PDCP data recovery at activation. Also P1,2,4 are possible by explicit signalling. Apple agrees and would limit this to split DRBs.

- OPPO thinks PDCP/RLC actions are up to NW indication. This would change that.

- QC agrees with P1,2,4 and would like also P3. Not sure if P1 works for SCG DRBs because there is no data recovery via MCG.

- Ericsson thinks that NW can also release RLC entity and add it later. So should not mandate but agree with the intention for split bearers.

- ZTE thinks PDCP recovery is not needed since NW will know there is no pending data. RAN2 discussed this issue in Rel-15 for RRC\_INACTIVE and we didn't do this for RRC resume. Thinks this is a corner case. LGE agrees.

- Nokia is fine with P1,2,4 but thinks NW can configure these so no need for implicit actions.

- Fujitsu thinks data recovery is not needed for UM DRB. But we need some action at SCG deactivation.

- Huawei thinks that we never agreed deactivation is for the case when there is no data for split bearers. Agrees that RLC release is possible.

*Proposal 1: The PDCP entity shall performs data recovery when UE receives the SCG deactivation command and no PDCP PDUs are submitted to any SCG RLC bearer.*

*Proposal 2: The SN RLC entity performs re-establishment when UE receives the SCG deactivation command.*

*Proposal 4: The UE autonomously performs PDCP data recovery and RLC re-establishment at SCG deactivation (no need for explicit signalling).*

*Proposal 3: Proposal 1 is applicable to split bearers and can be applied to SCG bearers if it makes the specifications simpler (to be checked at stage 3).*

* Network should ensure PDCP entity and RLC entity are "cleaned" when doing SCG   
  (de)activation, e.g. using PDCP data recovery and RLC re-establishment or RLC entity release. But this is already possible via existing RRC signalling, no we don't need to specify implicit actions.

- QC wonders if we need to keep other timers beside TAT also running?

- LGE thinks we either reset MAC or no, we don't need extra behaviour.

* FFS if we need to reset MAC at SCG deactivation. Discuss further offline [221] (Samsung)

*Proposal 5: If the SCG is deactivated, the UE performs the MAC reset for the SCG with one exception, i.e. keep the TAT running.*

[R2-2109942](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109942.zip) UP issues for SCG deactivation Samsung discussion Rel-17 LTE\_NR\_DC\_enh2-Core

*Proposal 1. Upon SCG deactivation, except for timeAlignmentTimer associated with PTAG, if configured, consider all timeAlignmentTimers as expired.*

*Proposal 2. SRB3 is suspended upon SCG deactivation, if configured.*

*Proposal 3. For SRB3, the old RRC message is discarded upon SCG deactivation, if any.*

*Proposal 4. Upon SCG deactivation, suspend UM DRB.*

*Proposal 5. Upon SCG deactivation, trigger the PDCP suspend procedure for UM DRB.*

*Proposal 6. Upon SCG deactivation, suspend AM DRB.*

* Discuss in offline [221] (Samsung) how to handle these.

[R2-2109943](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109943.zip) DC power sharing for deactivated SCG Samsung discussion Rel-17 LTE\_NR\_DC\_enh2-Core

*Proposal 1. UE performs DC power sharing mechanisms unless SCG state is configured with deactivated state.*

*Proposal 2. RAN2 send a LS to ask RAN1 if there is any issue with Proposal 1.*

[R2-2109708](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109708.zip) QoS flow remapping during SCG deactivation Fujitsu discussion Rel-17 LTE\_NR\_DC\_enh2-Core

*Observation 1: RAN2 has agreed that MN and SN RRC reconfiguration message can configure any parameter while SCG is deactivated (any restriction requires an explicit decision).*

*Observation 2: If QoS flow remapping from a DRB associated to the deactivated SCG to another DRB would be performed, the deactivated SCG may need to be reactivated to transmit the end-marker control PDU.*

*Observation 3: The simplest solution would be the network never perform QoS flow remapping from the DRB associated to the deactivated SCG to another DRB by RRC Reconfiguration or Reflective mapping.*

*Proposal: RAN2 discusses whether the configuration for QoS remapping could be restricted to solve the issue on transmitting the end-marker control PDU through the DRB associated to the deactivated SCG.*

[R2-2109707](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109707.zip) PDCP re-establishment during SCG deactivation Fujitsu discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2110082](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110082.zip) SCG bearer handling for the SCG deactivation Apple discussion Rel-17 LTE\_NR\_DC\_enh2-Core

Other details of SCG deactivation:

[R2-2110554](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110554.zip) Deactivation of SCG Nokia, Nokia Shanghai Bell discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2110516](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110516.zip) Efficient SCG deactivation Ericsson discussion LTE\_NR\_DC\_enh2-Core

[R2-2110296](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110296.zip) Deactivation of SCG LG Electronics discussion Rel-17

[R2-2109539](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109539.zip) Discussion on SCG deactivation NTT DOCOMO, INC. discussion Rel-17

[R2-2110013](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110013.zip) Deactivation of SCG Qualcomm Incorporated discussion Rel-17

[R2-2110323](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110323.zip) Miscellaneous issues on SCG deactivation Lenovo, Motorola Mobility discussion Rel-17

[R2-2110430](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110430.zip) Discussion on Deactivation of SCG CATT discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2110893](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110893.zip) Deactivation of SCG InterDigital discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2110212](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110212.zip) Mobility for deactivated SCG NTT DOCOMO INC. discussion Rel-17 [R2-2107753](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2107753.zip)

[R2-2111175](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111175.zip) UE assistance information for UE trigered SCG deactivation Sharp discussion Rel-17 LTE\_NR\_DC\_enh2-Core [R2-2108678](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2108678.zip)

* Revised in [R2-2111249](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111249.zip)

[R2-2111249](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111249.zip) UE assistance information for UE trigered SCG deactivation Sharp discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2111176](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111176.zip) reconfigurationwithsync for SCG change with SCG deactivation Sharp discussion Rel-17 LTE\_NR\_DC\_enh2-Core

* Revised in [R2-2111250](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111250.zip)

[R2-2111250](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111250.zip) reconfigurationwithsync for SCG change with SCG deactivation Sharp discussion Rel-17 LTE\_NR\_DC\_enh2-Core

Withdrawn:

[R2-2109839](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109839.zip) Deactivation of SCG InterDigital discussion Rel-17 LTE\_NR\_DC\_enh2-Core Withdrawn

Email discussions ([221])

* [AT116-e][221][R17 DCCA] UP issues for SCG deactivation (Samsung)

Scope:

* + - Discuss remaining UP issues for SCG (de)activation based on [R2-2109942](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109942.zip). Discuss also whether we need to do MAC reset at SCG deactivation.

Intended outcome:

* + - Discussion summary in [R2-2111314](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111314.zip) (by email rapporteur).

Deadline for providing comments, for rapporteur inputs, conclusions and CR finalization:

* + - Initial deadline (for company feedback): 2nd week Mon, UTC 0900
    - Initial deadline (for rapporteur summary): 2nd week Mon, UTC 1300

Comeback (2nd week) (1)

[R2-2111314](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111314.zip) Summary of [AT116-e][221][R17 DCCA] UP issues for SCG deactivation (Samsung) Samsung discussion Rel-17 LTE\_NR\_DC\_enh2-Core Late

#### 8.2.2.2 UE measurements and reporting in deactivated SCG

Including discussion on details of BFD and RLM for deactivated SCG (e.g. while the SCG is deactivated, does UE report S-RLF/BFD immediately upon detection according to existing procedures or is there a different behaviour?)

Including discussion on RRM measurements when SCG is deactivated (e.g. is there need to have anything different than currently for activated SCG?)

Web Conf (2nd week) or By Email (1)

TCI state activation:

[R2-2111192](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111192.zip) Further discussion on TCI State indication in RRC MediaTek Inc. discussion

*Proposal 1: Add TCI State information in NR RRC IE ServingCellConfig. The network could use this indication for RACH-less PSCell activation and direct SCell activation.*

*Proposal 2: RAN2 to adopt the TP in Annex for TCI state indication in RRC configuration.*

Web Conf (2nd week) or By Email (3)

UE measurements, BFD/BFR and RLM/RRM:

[R2-2110872](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110872.zip) UE measurement and reporting while the SCG is deactivated Huawei, HiSilicon discussion LTE\_NR\_DC\_enh2-Core

*Proposal 1: Relaxing RRM measurements is not considered until all the main functional issues of SCG activation/deactivation are resolved.*

*Proposal 2: While the SCG is deactivated, upon SCG RLF, the UE performs the same procedure like in case case of SCG RLF while the SCG is not deactivated.*

*Proposal 3: While the SCG is deactivated, upon beam failure on the PSCell, the UE informs the network via an RRC message, but there is no need to include neighbour cell measurement results such as in the case of SCG RLF. The indication could use the SCG failure information message.*

[R2-2111017](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111017.zip) UE Measurements in SCG Deactivation LG Electronics discussion Rel-17 LTE\_NR\_DC\_enh2-Core [R2-2108721](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2108721.zip)

*Proposal 1. While the SCG is deactivated, the UE performs a beam recovery procedure on PSCell if the UE detects beam failure on PSCell.*

*Proposal 2. To perform the beam recovery procedure, the UE in the SCG deactivation can initiate the random access procedure on PSCell w/o SCG activation or can transmit BFR MAC CE via MCG.*

*Proposal 3. While the SCG is deactivated, the UE declare S-RLF if beam recovery is failed on PSCell as like the legacy procedure.*

*Proposal 4. Upon S-RLF of the deactivated SCG, the UE send SCG failure information message via MCG without SCG activation.*

*Proposal 5. The network can configure sparse RLM resources for power-efficient RLM on deactivated SCG.*

*Proposal 6. For nonessential frequencies pre-configured by SN, UE suspends the measurements when SCG is deactivated and resumes it when SCG is activated.*

*Proposal 7. RAN2 leaves the further relaxation of RRM measurements as RAN4 decision.*

*Proposal 8. While the SCG is deactivated, UE keeps performing the UE measurement, e.g. beam measurement, RLM, on PSCell regardless of TA timer expiry.*

[R2-2110555](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110555.zip) Measurements of deactivated SCG Nokia, Nokia Shanghai Bell discussion Rel-17 LTE\_NR\_DC\_enh2-Core

*Observation 1: Valid use case is to change SCG and keep it deactivated until data transmission on SCG is required.*

*Observation 2: Currently once BFD triggers BFR on the SCG will cause UE to access SCG with RACH*

*Proposal 1: Focus the work on NR-DC SCG activation and deactivation (i.e. NR RRC changes) and only start working on EN-DC use case (i.e. LTE RRC changes) if time allows.*

*Proposal 2: Do not introduce mechanism to keep timing alignment up to date on deactivated SCG*

*Proposal 3: When deactivated SCG PSCell is changed UE does not initiate RACH until there is need to activate SCG.*

*Proposal 4: There is no need to restrict implicitly measurements on deactivated SCG as NW can always reconfigure measurement when deactivating SCG with RRC signalling.*

*Proposal 5: Network can configure different measurement cycle (similar to measCycleSCell) for deactivated SCG to relax RRM measurements.*

*Proposal 6: Do not introduce new parameter for deactivating RLM/BFD as that can be done by just removing the configuration in case we have only RRC as possibility to activate/deactivate SCG*

*Proposal 7: There is no need to have anything special for SCG RLF handling for deactivated SCG*

*Proposal 8: UE will not initiate beam failure recovery (RACH on SCG) while the SCG is deactivated (see Annex for TP)*

*Proposal 9: Whenever PSCell (SCG activation) is activated a PHR is triggered similarly to SCell activation*

All 3 above discussed jointly

RRM measurements (Huawei, LGE, Nokia)

*Proposal 1: Relaxing RRM measurements is not considered until all the main functional issues of SCG activation/deactivation are resolved.*

*Proposal 7. RAN2 leaves the further relaxation of RRM measurements as RAN4 decision.*

*Proposal 5: Network can configure different measurement cycle (similar to measCycleSCell) for deactivated SCG to relax RRM measurements.*

*Proposal 4: There is no need to restrict implicitly measurements on deactivated SCG as NW can always reconfigure measurement when deactivating SCG with RRC signalling.*

*Proposal 6. For nonessential frequencies pre-configured by SN, UE suspends the measurements when SCG is deactivated and resumes it when SCG is activated.*

*Proposal 8. While the SCG is deactivated, UE keeps performing the UE measurement, e.g. beam measurement, RLM, on PSCell regardless of TA timer expiry.*

SCG RLM and SCG failure reporting (Huawei, LGE, Nokia)

*Proposal 2: While the SCG is deactivated, upon SCG RLF, the UE performs the same procedure like in case case of SCG RLF while the SCG is not deactivated.*

*Proposal 3. While the SCG is deactivated, the UE declare S-RLF if beam recovery is failed on PSCell as like the legacy procedure.*

*Proposal 4. Upon S-RLF of the deactivated SCG, the UE send SCG failure information message via MCG without SCG activation.*

*Proposal 7: There is no need to have anything special for SCG RLF handling for deactivated SCG*

*Proposal 5. The network can configure sparse RLM resources for power-efficient RLM on deactivated SCG.*

*Proposal 6: Do not introduce new parameter for deactivating RLM/BFD as that can be done by just removing the configuration in case we have only RRC as possibility to activate/deactivate SCG*

SCG BFD/BFR (Huawei, LGE, Nokia)

*Proposal 3: While the SCG is deactivated, upon beam failure on the PSCell, the UE informs the network via an RRC message, but there is no need to include neighbour cell measurement results such as in the case of SCG RLF. The indication could use the SCG failure information message.*

*Proposal 1. While the SCG is deactivated, the UE performs a beam recovery procedure on PSCell if the UE detects beam failure on PSCell.*

*Proposal 2. To perform the beam recovery procedure, the UE in the SCG deactivation can initiate the random access procedure on PSCell w/o SCG activation or can transmit BFR MAC CE via MCG.*

*Proposal 8: UE will not initiate beam failure recovery (RACH on SCG) while the SCG is deactivated (see Annex for TP)*

TA/PHR (Nokia)

*Proposal 2: Do not introduce mechanism to keep timing alignment up to date on deactivated SCG*

*Proposal 9: Whenever PSCell (SCG activation) is activated a PHR is triggered similarly to SCell activation*

Scope (Nokia)

*Proposal 1: Focus the work on NR-DC SCG activation and deactivation (i.e. NR RRC changes) and only start working on EN-DC use case (i.e. LTE RRC changes) if time allows.*

RACH (Nokia)

*Proposal 3: When deactivated SCG PSCell is changed UE does not initiate RACH until there is need to activate SCG.*

[R2-2109471](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109471.zip) UE measurements and reporting in SCG deactivation OPPO discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2109891](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109891.zip) Discussion on UE behaviour when SCG is deactivated ZTE Corporation, Sanechips discussion Rel-17 LTE\_NR\_DC\_enh2

[R2-2110000](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110000.zip) UE measurements and reporting in deactivated SCG Qualcomm Incorporated discussion Rel-17

[R2-2110517](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110517.zip) UE measurements, mobility and suspend/resume in deactivated SCG Ericsson discussion LTE\_NR\_DC\_enh2-Core

[R2-2110660](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110660.zip) Measurements when configured with RACH-less activation NEC discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2110894](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110894.zip) Measurements while the SCG is deactivated InterDigital discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2110324](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110324.zip) Discussion on RLF and BFD in deactivated SCG Lenovo, Motorola Mobility discussion Rel-17

[R2-2110431](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110431.zip) UE Behavior in Deactivated SCG CATT discussion Rel-17 LTE\_NR\_DC\_enh2-Core

Other:

[R2-2110092](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110092.zip) Simple MCG recovery procedure using deactivated SCG for Rel-17 Apple discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2111009](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111009.zip) PSCell change while SCG is deactivated DENSO CORPORATION discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2111014](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111014.zip) Remaining issues for UE behaviour in deactivated SCG SHARP Corporation discussion Rel-17 LTE\_NR\_DC\_enh2-Core [R2-2108649](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2108649.zip)

[R2-2111094](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111094.zip) UE behavior in deactivated SCG vivo discussion Rel-17 LTE\_NR\_DC\_enh2-Core

Withdrawn:

[R2-2109840](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109840.zip) Measurements while the SCG is deactivated InterDigital discussion Rel-17 LTE\_NR\_DC\_enh2-Core Withdrawn

#### 8.2.2.3 Activation of deactivated SCG

Including outcome of [Post115-e][219][R17 DCCA] UE-initiated SCG activation (Huawei)

Including discussion on UP details of SCG activation (PDCP/MAC impacts, bearer handling, ...) - UP aspects will be prioritized in this meeting.

Including discussion on SCG activation details, e.g. RACH resource configuration and how network indicates whether random access is used, whether to support configuring RACH resources to UE before SCG activation (with Stage-3 TP to illustrate the impacts)

Web Conf (1st week Tuesday) (1)

[R2-2110869](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110869.zip) [Post115-e][219][R17 DCCA] UE-initiated SCG activation (Huawei) Huawei, HiSilicon discussion LTE\_NR\_DC\_enh2-Core Late

* 1: RAN2 will not ask RAN3 to allow SCG activation by the SN without MN's response.

- Nokia thinks everyone supports 2.1 but for 2.2 there may be more issues. Chair thinks we could just not support SCG bearers in deactivated SCG.

- LGE is fine with P2 but thinks MCG BSR is sufficient. We don't need the FFS points.

- Interdigital is fine with 2.1 but we need to clarify what happens when split buffer threshold is exceeded: Do we trigger SCG activation? Agrees with Nokia that UE could just support RACH (i.e. P3). Lenovo agrees.

- QC supports P2.1 and P2.2. Futurewei agrees.

- QC thinks BSR is not sufficient for activation because UE can't transmit it for SCG DRBs. Apple agrees that RRC should be used. Thinks P3 is not necessary. UE can just inform network about SCG activation. Ericsson agrees with P2.1 and P2.2 would be simplest for SCG DRBs but is fine with this. UE should indicate via MCG using RRC. Then we don't need P3. Samsung agrees.

- LGE woinders how 2.1 can be implemented in specification? PDCP doesn't know about SCG deactivation. This requires transmitting data to SCG leg being stopped at PDCP. Huawei thinks this could be configured by network parameters. Could also have autonomous actions.

* 2: Support the following solutions for UL data arrival while the SCG is deactivated:
* 1) for split bearers, send the data via the MCG leg. FFS how this can be implemented in Stage-3.
* 2) for SCG bearers, the UE indicates via the MCG that it has UL data to send for an SCG bearer.
* - FFS indication contents and format (e.g. MN RRC message, embedded SN RRC message)
* - FFS whether this indication can be used for split bearers

*Proposal 3: Proponents of a solution in which the UE performs RACH towards the SCG upon UL data arrival (and the SCG waits for the MN's response to complete the RACH) can provide more details on the proposal (e.g. SCG activation reject by MN/SN, RACH failure due to late MN's response).*

CB during the meeting

4: As working assumption, we support MCG link recovery via the deactivated SCG. Proponents should bring CR to next meeting to indicate Stage-3 details.

Web Conf (2nd week Monday) (1)

Replies to the RAN4 LS on SCG deactivation via MAC CE:

[R2-2110090](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110090.zip) Discussion on LS reply for SCG deactivation and MAC CE based SCG deactivation Apple discussion Rel-17 LTE\_NR\_DC\_enh2

*(moved from 8.2.1)*

Decision on whether to support MAC CE-based SCG (de)activation

*Proposal 2: MAC CE based SCG (de)activation is not supported in Rel-17*

*Observation 1: Along with the scenarios provided by RAN4, we also see that the basic scenario of the SCG de(re)activation where no explicit change to MN/SN is needed/triggered, with the NW simply intending the SCG of the UE to be deactivated (or re-activated).*

*Observation 2: SCG (de)activation requires MN-SN co-ordination using RRC/inter-node messages*

*Observation 3: SCG (de)activation is always via the MCG to the UE. And any reconfiguration as part of the (de)activation from the SCG needs to be encapsulated in the MCG message, better with RRC message.*

*Observation 4: No significant gain with MAC CE based approach other than the RRC processing delay, but UE anyway needs to send an confirmation to the SCG change to the corresponding nodes, which is extra effort if done with MAC CE.*

*Observation 5: SCG (de)activation can involve additional reconfiguration and MAC CE is not conducive to such actions.*

*Observation 6: MAC CE based SCG (de)activation is not security protected as RRC message*

*Observation 7: For (NGEN)EN-DC cases, LTE MAC needs to be changed to use MAC CE based, which is additional work that is not needed for Rel-17.*

*Proposal for handling Q1: RAN2 to reply to Q1-A as below*

*The RRC reconfiguration message that changes the SCG state (from deactivated to activated and vice-versa) is not limited to the three cases, and there can also be the case where there is no change to PSCell or any other cells, but just the SCG state can be changed with no other changes to any other configuration in the RRC reconfig message that changes the SCG state (from deactivated to activated and vice-versa). RAN2 would also like to inform that while NR RRC reconfiguration message is used for (de)activation of SCG, this message could be sent to the UE via the LTE MN.*

*Proposal 3: Reply this to RAN4 in the LS*

*Proposal 4: Reply to Q2 stating that RAN4 assumption is correct that all the SCG SCell would be deactivated implicitly with the RRC message that deactivated the SCG.*

*Proposal 5: RAN2 to agree that the SCG SCells will remain deactivated at SCG activation, and will need explicit activation using the MAC CE separate from the RRC message that activates the SCG.*

*Proposal 6: Reply with the above agreement to the RAN4 LS.*

[R2-2110873](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110873.zip) Reply LS on efficient activation/de-activation mechanism for one SCG Huawei, HiSilicon LS out LTE\_NR\_DC\_enh2-Core To:RAN4

[R2-2110091](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110091.zip) [Draft] LS reply for SCG deactivation Apple LS out Rel-17 LTE\_NR\_DC\_enh2 To:RAN4

*(moved from 8.2.1)*

[R2-2110015](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110015.zip) Activation of deactivated SCG Qualcomm Incorporated discussion Rel-17

[R2-2110518](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110518.zip) Efficient activation of deactivated SCG Ericsson discussion LTE\_NR\_DC\_enh2-Core

[R2-2109470](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109470.zip) Discussion on SCG deactivation for RRC\_INACTIVE UE OPPO discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2109541](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109541.zip) Discussion on SCG activation NTT DOCOMO, INC. discussion Rel-17

[R2-2109656](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109656.zip) Open issues for activation of deactivated SCG OPPO discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2109944](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109944.zip) PHR issues for SCG activation Samsung discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2110122](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110122.zip) Discussion on activation of SCG Spreadtrum Communications discussion Rel-17

[R2-2110325](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110325.zip) Discussion on SCG activation Lenovo, Motorola Mobility discussion Rel-17

[R2-2110432](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110432.zip) Considerations on Activation of Deactivated SCG CATT discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2110661](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110661.zip) UE request for SCG activation NEC discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2110895](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110895.zip) Activation of SCG InterDigital discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2110909](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110909.zip) Discussion on UE initiated SCG fast activation Futurewei discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2111015](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111015.zip) Discussion for bearer handling in deactivated SCG SHARP Corporation discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2111018](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111018.zip) Activation of SCG LG Electronics discussion Rel-17 LTE\_NR\_DC\_enh2-Core [R2-2108722](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2108722.zip)

[R2-2111019](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111019.zip) TP for dedicated RACH resource in SCG deactivation LG Electronics discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2111077](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111077.zip) Considerations for fast MCG link recovery with deactivated SCG CMCC discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2111181](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111181.zip) Discussion on UE initiated SCG activation SHARP Corporation discussion Rel-17 LTE\_NR\_DC\_enh2-Core [R2-2108728](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2108728.zip)

[R2-2110506](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110506.zip) Activation of a deactivated SCG vivo discussion Rel-17 LTE\_NR\_DC\_enh2-Core

*(moved from 8.2.3)*

Withdrawn:

[R2-2109841](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109841.zip) Activation of SCG InterDigital discussion Rel-17 LTE\_NR\_DC\_enh2-Core Withdrawn

#### 8.2.2.4 Other aspects of SCG activation/deactivation

Including essential parts of SCG activation/deactivation that do not fit under other AIs.

This agenda item may be deprioritized in this meeting .

### 8.2.3 Conditional PSCell change / addition

No documents should be submitted to 8.2.3. Please submit to.8.2.3.x

#### 8.2.3.1 CPAC procedures from network perspective

Including discussion on remaining details of network coordination for CPAC preparation/exceution (e.g. whether T-SN is informed on the execution conditions, whether the execution conditions can be updated after the T-SN response , coordination for measurement for gap configuration at source SN configuration update after T-SN response and before CPC configuration to the UE).

Including decision on working assumption for solution 2

Including outcome of [Post115-e][216][R17 DCCA] Inter-node message design (Ericsson)

Web Conf (2nd week Monday) (2)

Outcome of [Post115-e][216][R17 DCCA] Inter-node message design (Ericsson)

[R2-2109871](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109871.zip) Report of e-mail discussion on inter-node message design Ericsson discussion Rel-17 LTE\_NR\_DC\_enh2-Core

*(moved from 8.2.1)*

Inter-node message: New or existing?

* 1: Introduce a new inter-node RRC message that includes the full list of CG-Config(s).

Target PSCell signalling details

*Proposal 2: Specify the accepted target PSCell identity (frequency and PCI) outside the corresponding CG-Config in the new inter-node message.*

- Huawei wonders what "accepted" means - from which node to which node is this? Ericsson explains this was a mistake and it should be "candidate". Nokia agrees this is from MN to target SN or from source SN to MN. Lenovo and ZTE thinks it's from target SN to MN.

- Huawei thinks P4 covers source SN to MN case.

* 2: Specify the target PSCell identity (frequency and PCI) from target SN to MN (accepted) outside the corresponding CG-Config in the new inter-node message. FFS if we use the same message for all cases where target PSCell identity is uindicated (e.g. from source SN to MN for candidate PSCell)

??? 2: Specify the target PSCell identity (frequency and PCI) from target SN to MN (accepted) and from source SN to MN (candidate) outside the corresponding CG-Config in the new inter-node message.

*Proposal 4: Define a separate list of proposed PSCell candidates in CG-Config, including optional execution conditions.*

- Huawei wonders why execution conditions would be optional? Agreement so far was that we would provide them anyway. Ericsson explains source SN may update the execution conditions, that's why they are optional.

* 4: Define a separate list of proposed PSCell candidates in CG-Config, including execution conditions (FFS on whether decision on solution 1 or 2 impacts this).

*Proposal 6: A list of proposed PSCell candidates is sent from MN to T-SN in the same way as from S-SN to MN. The execution conditions are not sent to T-SN and therefore a separate list is defined for proposed PSCell candidates.*

- Futurewei thinks the execution conditions should be sent to T-SN. ZTE wonders if the candidate PSCell list is for both MN- and SN-initiated CPC? Nokia thinks we do not distinguish these on purpose. It's easier not to separate these so would be OK to send the conditions to T-SN.

- QC wonders how T-SN uses with the execution conditions? Futurewei thinks target knows how the decision was made. Nokia agrees and thinks this was discussed also for CHO and T-SN can use the information to decide which cells to prepare. QC thinks measurement information already has this. Huawei thinks measurement results change over time. NEC thinks we agreed not to provide conditions in MN-initiated CPC. Samsung has concern in allowing execution conditions.

* 6: A list of proposed PSCell candidates is sent from MN to T-SN in the same way as from S-SN to MN. The execution conditions are not sent to T-SN and therefore a separate list is defined for proposed PSCell candidates.

- Lenovo wonders what this means for MN-initiated case. Does "not required" mean optional?

*Proposal 5: Discuss whether to include the execution conditions in an OCTET STRING or as integers.*

Interaction with RAN3

* 3: Send an LS to RAN3 to inform about the new inter-node RRC message that includes a full list of CG-Config(s), and the corresponding impact to RAN3 specification.
* Offline [2xx](Ericsson) to draft LS to RAN3 on relevant agreements on CPAC (can include also other details if needed).

*Proposal 7: Wait for RAN3 conclusion on signalling of accepted target candidate cells.*

[R2-2109872](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109872.zip) Update of inter-node messages for CPAC Ericsson draftCR Rel-17 38.331 16.6.0 LTE\_NR\_DC\_enh2-Core

*(moved from 8.2.1)*

Web Conf (2nd week Monday) (3)

[R2-2109869](C:\\Users\\terhentt\\Documents\\Tdocs\\RAN2\\RAN2_116-e\\R2-2109869.zip) Network procedures and signalling for CPAC Ericsson discussion Rel-17 LTE\_NR\_DC\_enh2-Core

*Proposal 1 In order to progress the work, RAN2 to make an agreement of the current working assumption to adopt solution 2 for SN initiated inter-SN CPC.*

*Proposal 2 The second part of the SN initiated inter-SN CPC procedure should always be performed, i.e. the MN always informs the S-SN about the accepted/rejected candidate PSCell(s), and gets the response from the S-SN, before transmitting the RRC Reconfiguration message to the UE. SCG MeasConfig for CPC and execution conditions are not included in the SN Change Required.*

*Proposal 3 In case the second part of the SN initiated inter-SN CPC procedure is optional (i.e. Proposal 2 is not agreed), then it should be up to the MN to determine whether to skip the second step, e.g. in case all suggested PSCell candidates have been accepted.*

*Proposal 4 Include the execution conditions for SN initiated inter-SN CPC within an OCTET STRING in CG-Config from source SN to MN.*

[R2-2110615](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110615.zip) Resolving open points of Rel-17 CPAC Nokia, Nokia Shanghai Bell discussion Rel-17 LTE\_NR\_DC\_enh2-Core

*Observation 1: The S-SN knows in advance the acceptance/rejection of which suggested candidate target PSCells will lead to the change of S-SN measurement configuration.*

*Observation 2: T-SN needs to know whether it can use full or delta configuration when preparing configurations for each accepted candidate PSCell.*

*Observation 3: A single container in the message from T-SN to MN will comprise a list of CG-Configs, one per each candidate PSCell.*

*Observation 4: It may be more problematic for MN to actually remove the execution conditions if those are sent jointly with the list of candidate PSCell PCIs, to be provided to the T-SN.*

*Observation 5: MN may not have CPC execution conditions at the time it sends SN Addition Request towards the T-SN.*

*Proposal 1: S-SN can provide the CPC execution conditions only after it is informed by the MN which candidate PSCells have been accepted by T-SN. I.e. it is not mandatory to include those conditions in SN Change Required.*

*Proposal 2: S-SN informs the MN in SN Change Required the acceptance/rejection of which cells requires an update of S-SN measurement configuration.*

*Proposal 3: T-SN prepares full or delta-config for measurement related IEs depending on the information if CPC is SN/MN-initiated or by following an explicit indication from S-SN to use full-/delta-config.*

*Proposal 4: RAN2 confirms the working assumption taken at RAN2#115 and adopts Solution 2 for SN-initiated CPC.*

*Proposal 5: As the MN may not be able to read the contents of the container, T-SN sends the list of PSCells outside of the container and CG-Config IEs in the container are ordered in line with that list.*

*Proposal 6: If the issue which arises due to using a single container for all prepared PSCells, cannot be resolved, RAN2 is asked to reconsider the agreement and support having each CG-Config in a separate container for T-SN to MN signalling.*

*Proposal 7: CPC execution conditions, if available, can be included by MN in SN Addition Request sent to T-SN.*

[R2-2110520](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110520.zip) Further consideration on CPAC procedure ZTE Corporation, Sanechips discussion Rel-17 LTE\_NR\_DC\_enh2-Core

*Proposal 1: The MN is not required to indicate a separate list of suggested candidate PSCell(s) to the candidate SN in MN initiated inter-SN CPC and CPA.*

*Proposal 2: RAN2 discuss how/when to inform the source SN about MN initiated inter-SN CPC to enable the CPC modification triggered timely due to the update of source SN configuration.*

*Proposal 3: The maximum number of candidate PSCells for CPAC (i.e. including CPAC with MN involvement and CPAC without MN involvement) is 8.*

*Proposal 4: The MN and the source SN should coordinate the maximum number of candidate PSCells prepared in SN initiated CPC (including both intra-SN and inter-SN CPC), to ensure the maximum number of all candidate PSCells is not exceeded.*

*Proposal 5: An inter-node renegotiation solution is used to allocate the maximum number of candidate PSCell that the source SN is allowed to configure for CPC:*

*− The MN indicates the maximum number of candidate PSCell allowed to be configured to the source SN;*

*− If the source SN wants to configure more candidate PSCells, the source SN can send the requested value to the MN.*

*Proposal 6: RAN2 discuss whether to support the coexistence of CPC with MN involvement and CPC without MN involvement.*

Discussion

All 3 above discussed jointly

Working assumption on "solution 2" (Ericsson, Nokia)

*Proposal 1 In order to progress the work, RAN2 to make an agreement of the current working assumption to adopt solution 2 for SN initiated inter-SN CPC.*

*Proposal 4: RAN2 confirms the working assumption taken at RAN2#115 and adopts Solution 2 for SN-initiated CPC.*

- CATT thinks the impacts are in RAN3. So RAN2 should ask them. Intel and ZTE agrees. Nokia thinks we should agree and communicate the decision to RAN3. If they find problems, they will tell so. QC and Ericsson agree.

- Futurewei still thinks solution 1 is better.

* 4: RAN2 confirms the working assumption taken at RAN2#115 and adopts Solution 2 for SN-initiated CPC. Indicate this to LS in RAN3 and ask them to work on it (offline 2xx from Ericsson). If they find a problem, we can revisit the decision.

Accepted/rejected candidate PSCell(s) in SN-initiated CPC (Ericsson, Nokia)

*Proposal 2 The second part of the SN initiated inter-SN CPC procedure should always be performed, i.e. the MN always informs the S-SN about the accepted/rejected candidate PSCell(s), and gets the response from the S-SN, before transmitting the RRC Reconfiguration message to the UE. SCG MeasConfig for CPC and execution conditions are not included in the SN Change Required.*

*-* Nokia thinks the message could be skipped based on S-SN decision since this is SN-initiated procedure. NEC agrees. If all candidates cells are accepted, there's no need to wait. Ericsson agrees with NEC on the use case. Lenovo and Huawei agree.

- Nokia wonders how S-SN knows about this? Does MN indicate this to S-SN.

*Proposal 3 In case the second part of the SN initiated inter-SN CPC procedure is optional (i.e. Proposal 2 is not agreed), then it should be up to the MN to determine whether to skip the second step, e.g. in case all suggested PSCell candidates have been accepted.*

* 3: The second part of the SN initiated inter-SN CPC procedure is optional (i.e. Proposal 2 is not agreed), and it's up to the MN to determine whether to skip the second step, e.g. in case all suggested PSCell candidates have been accepted. Request RAN3 to work on details (e.g. how does MN tell this to S-SN, etc.)
* Offline (2xx, Nokia) to discuss whether it's MN who decides this.

*Proposal 2: S-SN informs the MN in SN Change Required the acceptance/rejection of which cells requires an update of S-SN measurement configuration.*

Signalling details of candidate PSCell(s) in MN-initiated CPAC (ZTE, Nokia)

*Proposal 1: The MN is not required to indicate a separate list of suggested candidate PSCell(s) to the candidate SN in MN initiated inter-SN CPC and CPA.*

*Proposal 5: As the MN may not be able to read the contents of the container, T-SN sends the list of PSCells outside of the container and CG-Config IEs in the container are ordered in line with that list.*

*Proposal 6: If the issue which arises due to using a single container for all prepared PSCells, cannot be resolved, RAN2 is asked to reconsider the agreement and support having each CG-Config in a separate container for T-SN to MN signalling.*

*Proposal 3: The maximum number of candidate PSCells for CPAC (i.e. including CPAC with MN involvement and CPAC without MN involvement) is 8.*

*Proposal 4: The MN and the source SN should coordinate the maximum number of candidate PSCells prepared in SN initiated CPC (including both intra-SN and inter-SN CPC), to ensure the maximum number of all candidate PSCells is not exceeded.*

*Proposal 5: An inter-node renegotiation solution is used to allocate the maximum number of candidate PSCell that the source SN is allowed to configure for CPC:*

*− The MN indicates the maximum number of candidate PSCell allowed to be configured to the source SN;*

*− If the source SN wants to configure more candidate PSCells, the source SN can send the requested value to the MN.*

Indicating CPC execution conditions (Nokia, ZTE)

*Proposal 1: S-SN can provide the CPC execution conditions only after it is informed by the MN which candidate PSCells have been accepted by T-SN. I.e. it is not mandatory to include those conditions in SN Change Required.*

*Proposal 7: CPC execution conditions, if available, can be included by MN in SN Addition Request sent to T-SN.*

*Proposal 4 Include the execution conditions for SN initiated inter-SN CPC within an OCTET STRING in CG-Config from source SN to MN.*

Configuration changes (Nokia, ZTE)

*Proposal 3: T-SN prepares full or delta-config for measurement related IEs depending on the information if CPC is SN/MN-initiated or by following an explicit indication from S-SN to use full-/delta-config.*

*Proposal 2: RAN2 discuss how/when to inform the source SN about MN initiated inter-SN CPC to enable the CPC modification triggered timely due to the update of source SN configuration.*

Coexistence of CPC with and without MN involvement (ZTE)

*Proposal 6: RAN2 discuss whether to support the coexistence of CPC with MN involvement and CPC without MN involvement.*

[R2-2109658](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109658.zip) Discussion on execution condition of CPAC NTT DOCOMO INC. discussion

[R2-2109675](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109675.zip) Discussion on association of execution condition and SN configuration Intel Corporation discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2109734](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109734.zip) Discussion on CPAC procedures from NW perspective vivo discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2110014](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110014.zip) CPAC procedures and CHO with MR-DC Qualcomm Incorporated discussion Rel-17

[R2-2110326](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110326.zip) Discussion on CPAC from NW perspective Lenovo, Motorola Mobility discussion Rel-17

[R2-2110433](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110433.zip) Discussion on CPAC Procedure from NW Perspective CATT discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2110519](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110519.zip) Remaining issues on SN initiated inter-SN CPC ZTE Corporation, Sanechips discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2111085](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111085.zip) CPAC procedure for SCG update Samsung Electronics discussion LTE\_NR\_DC\_enh2-Core

#### 8.2.3.2 CPAC procedures from UE perspective

Including discussion on UE measurements for CPAC purposes (e.g. details of measurement events).

Including outcome of [Post115-e][217][R17 DCCA] Support of A3/A5 for inter-SN CPC (Ericsson)

Web Conf (2nd week Monday) (2)

Outcome of [Post115-e][217][R17 DCCA] Support of A3/A5 for inter-SN CPC (Ericsson)

[R2-2109873](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109873.zip) Report of e-mail discussion on support of A3 A5 events for inter-SN CPC Ericsson discussion Rel-17 LTE\_NR\_DC\_enh2-Core

*(moved from 8.2.1)*

*The following solutions have been proposed:*

*• a) UE uses PSCell in A3/A5 if target candidate is an SCG (implicit)*

*• b) PSCell flag in Cond A3/A5 (explicit)*

*Proposal 1: Option a) is chosen for the draft CR as outcome of the e-mail discussion.*

- Huawei thinks MN is only expected to initate PSCell change for load balancing. There's not much difference here so the reasoning is still the same and MN doesn't need to do this. So doesn't see this as useful. Ericsson thinks UE doesn't know about load and this is about changing to a better cell. Samsung agrees with Huawei and thinks 37.340 indicates load balancing. CATT, Intel and LGE agrees with Huawei.

- Nokia supports the A3/A5 and thinks this is not the same as in Rel-15. Would prefer b) as it's cleaner solution and requires less from UE. Can also accept a. QC also fine with both a and b). ZTE agrees. Ericsson thinks removing MN-initiated CPC could be removed if we don't have this.

* No consensus to support A3/A5 for PSCell in MN-initiated CPC.

[R2-2109874](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109874.zip) A3 and A5 events for PSCell Ericsson draftCR Rel-17 38.331 16.6.0 LTE\_NR\_DC\_enh2-Core

*(moved from 8.2.1)*

Web Conf (2nd week Monday) (1)

[R2-2110874](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110874.zip) Remaining issue of CPAC Huawei, HiSilicon discussion LTE\_NR\_DC\_enh2-Core

*Observation 1: The unsynchronized update of MCG configuration between UE and MN result in CP and UP transmission failure when a candidate PSCell is trigged to addition or change.*

*Proposal 1: If the option 1 “UE notifies the network of CPAC execution before transmitting RRCReconfigurationComplete with newly applied MCG configuration” is agreeable, we suggest that ULInformationTransferMRDC is used to indicate the conditional reconfiguration ID.*

*Proposal 2: Adopt option 1: “the UE notifies the network of CPAC execution before transmitting RRCReconfigurationComplete with the newly applied MCG configuration”.*

*Proposal 3: In R17, CHO and CPAC cannot be configured simultaneously.*

[R2-2109735](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109735.zip) Discussion on CPAC procedures from UE perspective vivo discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2109870](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109870.zip) UE procedures and signalling for CPAC Ericsson discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2110085](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110085.zip) Discussion on CPAC open issues Apple discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2110935](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110935.zip) Enhancements for CPAC LG Electronics discussion Rel-17 LTE\_NR\_DC\_enh2-Core [R2-2108723](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2108723.zip)

#### 8.2.3.3 Other CPAC aspects

This agenda item may use a summary document.

Including discussion on CPAC failure handling (e.g. will we have CHO recovery - like procedure for CPAC?) and CPAC co-existence with CHO (e.g. what, if anything, is needed to enable using both CPAC and CHO?)

Web Conf (2nd week Monday) (1)

[R2-2111301](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111301.zip) [201] Summary of agenda 8.2.3.3: Other CPAC aspects (DCCA) Interdigital discussion Rel-17 LTE\_NR\_DC\_enh2-Core Late

CHO/CPAC coexistence:

*Proposal 5: A UE can be configured simultaneously with independent CHO and CPAC configurations.*

- Interdigital indicates only Huawei did not support this. But there are several ways how to support this so it should be as simple as possible.

- Ericsson thinks this is not that important and we can look at this in the next release.

- Nokia supports P5 and thinks this is most important aspect. ZTE agrees.

- QC agrees with both Ericsson and Nokia, so hard to figure which has more priority.

- Huawei thinks we have too many open issues. If we can skip all UE behavioural aspects, we can do it.

*Proposal 6: RAN2 to discuss the details of independent CHO and CPAC coexistence, including aspects like:*

*• The capability on the total number of target cells for CHO and CPAC (and associated measurement configurations) supported by the UE and possible split/negotiation b/n the MN and SN*

*• The reconfiguration ID space to be used for the conditional reconfigurations of CHO and CPAC and possible split/negotiation b/n the MN and SN*

*• Should the UE keep evaluating CPAC trigger conditions when CHO is triggered?*

*• Should the UE keep evaluating CHO trigger conditions when CPAC is triggered?*

*• What to do when a CHO is triggered while a CPAC is being executed?*

*• What to do when a CPAC is triggered while a CHO is being executed?*

*• What to do when the CHO and CPAC trigger conditions are fulfilled at the same time?*

*• What happens to CHO configurations when CPAC is complete, and vice versa?*

CPAC failure/recovery:

*Proposal 1: SCGFailureInformation to be enhanced to include CPAC failure information. RAN2 to agree on one or more of the following to be included:*

*• Indication that a CPC was configured when the SCG failure happened*

*• List of prepared PSCells*

*• List of CPC conditions*

*-* Ericsson thinks this is up to SON WI to do. QC and ZTE agree. Lenovo agrees and this was postponed to R18. Nokia thinks some aspects are not for SON. CATT thinks no enhancements are needed and we could reuse CHO aspects.

*Proposal 2: CPAC recovery enhancements to be made where, upon SCG failure, the UE may execute one of the CPAC configurations. RAN2 to discuss the exact conditions to trigger this CPAC execution upon SCG RLF (e.g., radio link thresholds).*

*Proposal 3: In case proposal 2 is agreed, the CPAC recovery is an optional feature for the UE and the network may enable/disable it.*

*Proposal 4: In case proposal 2 is agreed, RAN2 to decide whether the UE still sends an SCGFailureInformation after successful CPAC recovery.*

[R2-2109762](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109762.zip) Discussion on failure handling for CPAC in NR China Telecom discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2110282](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110282.zip) SCG RLF handling in case CPC is configured ITRI discussion LTE\_NR\_DC\_enh2-Core [R2-2105518](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2105518.zip)

[R2-2110327](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110327.zip) Miscellaneous issues on CPAC Lenovo, Motorola Mobility discussion Rel-17

[R2-2110434](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110434.zip) Discussion on CPAC Failure Handling and CPAC Co-existence with CHO CATT discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2110521](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110521.zip) Discussion on coexistence of CHO and CPAC ZTE Corporation, Sanechips discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2110616](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110616.zip) Final views on CPAC Procedures and Other Functionalities Nokia, Nokia Shanghai Bell discussion Rel-17 LTE\_NR\_DC\_enh2-Core [R2-2107524](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2107524.zip)

[R2-2110662](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110662.zip) CPA with SN-terminated MCG bearer configuration NEC discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2110663](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110663.zip) Co-existence of CHO and CPAC NEC discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2110896](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110896.zip) Coexistence of CHO and CPC InterDigital, Nokia, Nokia Shanghai Bell,ZTE Corporation, Sanechips discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2110998](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110998.zip) Failure handling of Conditional PSCell Addition DENSO CORPORATION discussion Rel-17 LTE\_NR\_DC\_enh2-Core [R2-2107871](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2107871.zip)

[R2-2111078](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111078.zip) Combination of CPAC and CHO CMCC discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2111082](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111082.zip) Other CPAC issues Samsung Electronics discussion LTE\_NR\_DC\_enh2-Core

Withdrawn:

[R2-2109842](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109842.zip) Coexistence of CHO and CPC InterDigital, Nokia, Nokia Shanghai Bell,ZTE Corporation, Sanechips discussion Rel-17 LTE\_NR\_DC\_enh2-Core Withdrawn

### 8.2.4 Temporary RS for SCell activation

Including outcome of [Post115-e][218][R17 DCCA] TRS-based SCell activation (OPPO)

Web Conf (1st week Tuesday) (2+1)

Outcome of [Post115-e][218][R17 DCCA] TRS-based SCell activation (OPPO)

[R2-2109473](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109473.zip) Email report of [Post115-e][218][R17 DCCA] TRS-based SCell activation (OPPO) OPPO discussion Rel-17 LTE\_NR\_DC\_enh2-Core

*Proposal 1: For TRS based SCell activation, RAN2 finalizes the MAC CE based SCell activation case first and come back on RRC case if time allows.*

- ZTE is fine but would like to clarify if there is any RAN2 specification impact if we reuse SCell configuration. Samsung agrees. LGE, Intel, Ericson, Apple and Qualcomm supports the proposal.

* 1: For TRS based SCell activation, RAN2 finalizes the MAC CE based SCell activation case first and come back on RRC case if time allows.

- vivo is fine with a+b, but thinks that for c), it's unclear if we can use legacy MAC CE to activate the cell? Chair thinks legacy is unchanged. vivo clarifies that the question is whether the new MAC CE can trigger legacy behaviour?

- Jialin agrees with new MAC CE but would like to allow legacy MAC CE as well.

* Proposal 2: The TRS can be activated for fast SCell activation, only when all following conditions are met:
* (a) The TRS for SCell activation is configured for this SCell;
* (b) The SCell is activated from deactivated state by New SCell A/D MAC CE;
* (c) The BWP indicated by firstActiveDownlinkBWP-Id is not dormant BWP;
* FFS how we handle the case when some Scells use TRS and some don't
* RAN2 will not specify UE behaviour for the case when new MAC CE is used but a)+c) are not fulfilled for the SCell that uses TRS
* 3: One new MAC CE for to trigger both SCell activation and corresponding temporary RS.

- Nokia, ZTE, Ericsson, Samsung, QC support using eLCID instead of LCID.

* 4: Define 2 eLCIDs for new MAC CEs with “one octet” SCell activation indication and with “four octet” SCell activation indication respectively.

*Proposal 5: RAN2 is kindly asked to confirm which solution is used for TRS activation part in new MAC CE, i.e. based “Z-bit Block” or based on A-TRS triggering framework.*

*Proposal 6: If Alt1 (based on “Z-bit Block”) is chosen, Only temporary configuration index is included in MAC CE for TRS activation part.*

*Proposal 7: If Alt2(based on A-TRS triggering framewor) is chosen, Only temporary RS trigger state index is included in MAC CE for TRS activation part for all SCells configured with TRS. The size of temporary RS trigger state index is FFS.*

* Discuss MAC CE structure in offline [220] (OPPO) based on concrete TPs. Should try to converge to a RAN2 proposal. Can discuss if we need to send LS to RAN4 on RAN2 decisions on TRS-based SCell activation.

*Proposal 8: RRC configuration for TRS based SCell activation is up to RAN1.*

*Proposal 9: UE capapbiltiies for TRS based SCell activation is up to RAN1.*

* Wait for RAN1 input on RRC parameters and capabilities

- OPPO thinks we need to send LS to RAN4 since we will define new MAC CEs for activation/deactivation.

MAC CR from [Post115-e][218][R17 DCCA] TRS-based SCell activation (OPPO):

[R2-2109657](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109657.zip) Introduction of TRS based SCell activation OPPO CR Rel-17 38.321 16.6.0 1164 - B LTE\_NR\_DC\_enh2-Core

* ?? Are TRS-based SCell activation handled in separate CRs or merged to the SCG (de)activation running CRs?

[R2-2110875](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110875.zip) Temporary RS based fast SCell activation Huawei, HiSilicon discussion LTE\_NR\_DC\_enh2-Core

*Proposal 1: RRC triggered SCell activation with temporary RS is no considered in R17.*

*Proposal 2: The temporary RS cannot be triggered for the dormant BWP.*

*Proposal 3: Suggest to RAN1 using the Alt 1: Bitmap approach in MAC-CE to trigger the temporary RS.*

*Proposal 4: The new MAC CE only includes the SCell activation indication and the temporary RS configuration index for each SCell.*

*Proposal 5: Configure the following information in RRC for the temporary RS for each cell*

*- The temporary RS configuration list including the configuration index, the number of RS bursts and the gap length between the RS bursts, triggering offset, QCL information*

[R2-2110556](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110556.zip) Temporary RS activation Nokia, Nokia Shanghai Bell discussion Rel-17 LTE\_NR\_DC\_enh2-Core

*Observation 1: whenever SCell is activated that is configured with temporary RS one needs to also signal whether temporary RS is activated with appropriate parameters*

*Proposal 1: Define new MAC CE for combined activation SCell and associated temporary RS*

*Proposal 1b: Introduce separate MAC CE for activating up to 7 SCells and up to 31 SCells*

*Proposal 2: Whenever existing legacy MAC CE for SCell activation is signalled UE does not activate temporary RS*

*Proposal 3: Discuss whether TRS activating MAC CE needs to be able to not activate TRS for some SCell(s)*

*Proposal 4: For each activated SCell MAC CE indicates a index to RRC configuration which has the applicable parameters of temporary RS for the activated SCell*

*Proposal 5: The UE should consider the MAC-CE activation of an SCell as a trigger temporary more frequent (than regular CSI reporting) CSI reporting for that cell*

[R2-2109472](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109472.zip) Discussion on TRS activation for fast SCell activation OPPO discussion Rel-17 LTE\_NR\_DC\_enh2-Core

*Proposal 1: The new MAC CE will include temporary RS index for each SCell, i.e. Z bit block, for TRS activation part.*

*Proposal 2: For TRS configuration in RRC signalling, a list of temporary RS are configured per SCell and number of temporary RS bursts, gap length between the RS bursts, triggering offset, QCL information are configured per TRS.*

*Proposal 3: Define a new IE, e.g. temporaryRS-Config, to configure temporary RS for SCell activation.*

*- A list of temporaryRS-Config, i.e. temporaryRS-ConfigToAddModList, is configured in CSI-MeasConfig.*

*- temporaryRS-Config includes temporaryRS-ConfigId，temporaryRSBurst-Resources，temporaryRS-Number，gapBetweenTemporaryRSbursts，temporaryRS-TriggeringSlotOffset，qcl-Info.*

[R2-2110910](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110910.zip) Discussion on support of Temporary RS for SCell activation Futurewei discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2110505](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110505.zip) Discussion on Temporary RS activation for fast SCell activation vivo discussion Rel-17 LTE\_NR\_DC\_enh2-Core Revised

* Revised in [R2-2111201](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111201.zip)

[R2-2111201](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111201.zip) Discussion on Temporary RS activation for fast SCell activation vivo discussion Rel-17 LTE\_NR\_DC\_enh2-Core [R2-2110505](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110505.zip)

Email discussions ([220])

* [AT116-e][220][R17 DCCA] TRS-based Scell activation details (OPPO)

Scope:

* + - Discuss remaining RAN2 aspects on of TRS-based SCell activation based on online discussion.

Intended outcome:

* + - Discussion summary in [R2-2111311](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111311.zip) (by email rapporteur).

Deadline for providing comments, for rapporteur inputs, conclusions and CR finalization:

* + - Initial deadline (for company feedback): 1st week Fri, UTC 0900
    - Initial deadline (for rapporteur summary): 2nd week Mon, UTC 1000

Comeback (2nd week) (1)

[R2-2111311](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111311.zip) Summary of [AT116-e][220][R17 DCCA] TRS-based Scell activation details (OPPO) OPPO discussion Rel-17 LTE\_NR\_DC\_enh2-Core Late

### 8.2.5 UE capabilities

Including discussion on RAN2 aspects of UE capabilities for SCG deactivation, CPAC and temporary RS.

This agenda item may use a summary document.

This agenda item may be deprioritized in this meeting (apart from the email discussion outcome).

Including outcome of [Post115-e][214][R17 DCCA] UE capabilities (Intel)

Web Conf (2nd week) (3)

Outcome of [Post115-e][214][R17 DCCA] UE capabilities (Intel)

[R2-2109676](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109676.zip) Report of email discussion [Post115-e][214][R17 DCCA] Capabilities (Intel) Intel Corporation discussion Rel-17 LTE\_NR\_DC\_enh2-Core

*Proposal 1: consider the following UE capabilities and corresponding descriptions as baseline:*

*Index Feature group Components Prerequisite feature groups Need of FDD/TDD differentiation Need of FR1/FR2 differentiation Type*

*(the ‘type’ definition from UE features should be based on the granularity of 1) Per UE or 2) Per Band or 3) Per BC or 4) Per FS or 5) Per FSPC) Mandatory/Optional*

*x-1 Activation/Deactivation of SCG Support of activation/deactivation of SCG. No Yes Per UE Optional with capability signalling*

*x-2 Activation/Deactivation of SCG RACH-less SCG activation. FFS No Yes Per UE Optional with capability signalling*

*x-3 CPAC CPA for NR-DC*

*No No Per UE Optional with capability signalling*

*x-4 CPAC*

*CPA for (NG)EN-DC*

*No No Per UE Optional with capability signalling*

*x-5 CPAC MN initiated CPC in NR-DC*

*FFS No No Per UE Optional with capability signalling*

*x-6 CPAC MN initiated CPC in (NG)EN-DC*

*FFS No No Per UE Optional with capability signalling*

*Proposal 2: RAN2 to further discuss the following open issues:*

*1) Whether to use condPSCellChange-r16 as the Prerequisite for R17 MN initiated CPC?*

*2) Whether to reuse R15 RLF/BFD UE capabilities for RLF/BFD monitoring on deactivated SCG?*

*3) Whether to make support of RLM/BFD monitoring on deactivated SCG as the Prerequisite for Rachless SCG activation?*

*4) Whether to have separate capabilities for Activation/Deactivation of SCG in Resume and Reconfiguration cases?*

*Proposal 3: the discussion on the following UE capabilities is postponed until they are agreed.*

*1) UE initiated SCG activation*

*2) A3/A5 based execution condition for inter-SN CPC*

[R2-2109677](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109677.zip) draft 331 CR for DCCA UE capabilities Intel Corporation draftCR Rel-17 38.331 16.6.0 B LTE\_NR\_DC\_enh2-Core

[R2-2109678](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109678.zip) draft 306 CR for DCCA UE capabilities Intel Corporation draftCR Rel-17 38.306 16.6.0 B LTE\_NR\_DC\_enh2-Core

* ?? Endorsed as running CRs for DCCA UE capabilities?

## 8.3 Multi SIM

(LTE\_NR\_MUSIM-Core; leading WG: RAN2; REL-17; WID: RP-210316)

Time budget: 1 TU

Tdoc Limitation: 4 tdocs (note that email discussion outcome documents or rapporteur inputs do not count against Tdoc limitations)

Email max expectation: 4 threads

Contributions should illustrate the Stage-3 details of the proposals (e.g. in an Annex containing TP against the running CRs).

### 8.3.1 Organizational, Requirements and Scope

Including LSs, any rapporteur inputs and results of running CR email discussions [231]-[234]

Web Conf (1st week Monday) (1+1+1)

LS from SA2 on network switching (AS/NAS-level release):

[R2-2109374](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109374.zip) Reply LS on Network Switching for MUSIM (S2-2106673; contact: Qualcomm) SA2 LS in Rel-17 LTE\_NR\_MUSIM To:RAN2 Cc:RAN3, CT1

*- Only NAS-level connection release is supported for E-UTRAN/5GS access.*

*- Both RRC-level connection release and NAS-level connection release procedure are supported for NR/5GS. A UE may provide a Paging Restriction Information to AMF during the NAS-level connection release procedure. The UE always enters RRC\_IDLE mode after the NAS-level connection release procedure.*

*- It is not supported to provide the Paging Restriction Information from a UE to RAN in the RRC-level connection release procedure.*

*- There is no need to define the interaction between RRC-level connection release procedure and NAS-level connection release procedure.*

*- When both NAS-level Connection Release or RRC-level connection release are supported by the UE and the network, SA2’s current assumption is that it is up to the UE implementation to determine which one to use, for example based on the preferred end state (RRC\_Inactive or IDLE) and whether Paging Restriction Information is to be provided to the AMF by the UE. RAN2 are welcome to comment on this assumption in case they see an issue.*

* Noted

LS from SA2 on UE assistance information for paging collision GUTI reallocation:

[R2-2111242](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111242.zip) LS reply on UE assistance information for paging collision avoidance (S2-2108144; contact: vivo) SA2 LS in Rel-17 LTE\_NR\_MUSIM-Core, MUSIM To:RAN2 Cc:CT1, RAN3

*SA2 has discussed paging collision avoidance in 5GS and reached the following conclusions: a Multi-USIM UE may need a new 5G-GUTI to modify the timing of the Paging Occasions (POs) for a USIM. When a Multi-USIM UE needs a 5G-GUTI assignment, it performs a Mobility Registration Update. The AMF allocates a new 5G-GUTI and provides it to the Multi-USIM UE in the Registration Accept message, as described in the approved S2-2108145.*

* Noted

Web Conf (1st week Monday) (1+1)

LS from CT1 about AS/NAS interaction of busy indication:

[R2-2109304](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109304.zip) Reply LS on NAS-based busy indication (C1-214917; contact: vivo) CT1 LS in Rel-17 LTE\_NR\_MUSIM-Core, MUSIM To:RAN2 Cc:RAN3, SA3, SA2

*Question 1: CT1 respectfully asks RAN2’s guidance on the interaction between the NAS layer and the AS layer when the AS layer receives RAN paging.*

*Qusetion 2: Is a paging cause, if any, indicated together with indication about RAN paging from the AS layer to NAS layer?*

- Huawei indicates these have been discusssed under [236] already.

* Noted
* Action requested from RAN2, discuss via offline [230]

*Reply LS on Busy indication:*

[R2-2110391](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110391.zip) Reply LS on NAS-based busy indication vivo LS out Rel-17 LTE\_NR\_MUSIM-Core To:CT1 Cc:RAN3, SA3, SA2

* Reply LS to CT1 discussed in offline [230] based on agreements

Email discussions ([230])

* [AT116-e][230][MUSIM] LS on RAN2 agreements for MUSIM (vivo)

Scope:

* + - Discuss what RAN2 should reply to CT1 on [R2-2109304](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109304.zip) and provide draft LS reply (if agreeable).
    - Include also RAN2 agreement (under 8.3.2) on AS calculating the alternative IMSI/offset and request SA2/CT1 to specify the necessary details.

Intended outcome:

* + - Draft LS in [R2-2111307](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111307.zip) (by email rapporteur).

Deadline for providing comments, for rapporteur inputs, conclusions and CR finalization:

* + - Initial deadline (for company feedback): 1st week Fri, UTC 0700
    - Initial deadline (for draft LS): 2nd week Mon, UTC 1200

Comeback (2nd week) (1)

[R2-2111307](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111307.zip) [Draft] LS on RAN2 agreements for MUSIM vivo LS out Rel-17 LTE\_NR\_MUSIM-Core To:CT1, SA2 Cc:RAN3, SA3

Web Conf (1st week Monday) (5)

Running CRs from email discussions [231]-[234]

Outcome of [231]:

[R2-2110390](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110390.zip) Running NR RRC CR for MUSIM vivo draftCR Rel-17 38.331 16.6.0 B LTE\_NR\_MUSIM-Core

* Endorsed as running CR

Outcome of [232]:

[R2-2111179](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111179.zip) Running LTE RRC CR for MUSIM Samsung Electronics Co., Ltd draftCR Rel-17 36.331 16.6.0 LTE\_NR\_MUSIM-Core

* Endorsed as running CR

Outcome of [233]:

[R2-2111096](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111096.zip) Running CR to 36.304 for Multi-USIM devices China Telecommunications draftCR Rel-16 36.304 16.5.0 LTE\_NR\_MUSIM-Core

* Endorsed as running CR

Outcome of [234]:

[R2-2110789](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110789.zip) Running CR to 36300 for Multi-USIM devices support Ericsson CR Rel-17 36.300 16.6.0 1349 - B LTE\_NR\_MUSIM-Core

* Endorsed as running CR

[R2-2110790](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110790.zip) Running CR to 38300 for Multi-USIM devices support Ericsson CR Rel-17 38.300 16.7.0 0396 - B LTE\_NR\_MUSIM-Core

* Endorsed as running CR

Post-meeting email discussions (TBD, running CRs)

* [Post116-e][23x][MUSIM] Running NR RRC CR for MUSIM (vivo)

Scope: Update running NR RRC CR for MUSIM

Intended outcome: Running CR

Deadline: Short

* [Post116-e][23x][MUSIM] Running LTE RRC CR for MUSIM (Samsung)

Scope: Update running LTE RRC CR for MUSIM

Intended outcome: Running CR

Deadline: Short

* [Post116-e][23x][MUSIM] Running 36.304 CR for MUSIM (China Telecom)

Scope: Update running 36.304 CR for MUSIM

Intended outcome: Running CRs

Deadline: Short

* [Post116-e][23x][MUSIM] Running Stage-2 CRs for MUSIM (Ericsson)

Scope: Update running Stage-2 CRs (36.300 and 38.300) for MUSIM

Intended outcome: Running CR

Deadline: Short

* [Post116-e][23x][MUSIM] Running UE capability CR for MUSIM (Huawei)

Scope: Create UE capability inputs (36.306/36.331 CRs for LTE, capability descriptions for NR) for MUSIM

Intended outcome: Running CR

Deadline: Short

### 8.3.2 Paging collision avoidance

This agenda item may use a summary document.

Including discussion on RAN2 aspects of paging collision avoidance (if any).

Web Conf (1st week Monday) (1+2)

[R2-2111302](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111302.zip) [202] Summary of agenda 8.3.2: Paging Collision Avoidance (MUSIM) vivo discussion Rel-17 LTE\_NR\_MUSIM-Core Late

EUTRA aspects

- vivo clarifies that we didn't discuss CN but 5GC is included in the WID.

* 4: RAN2 confirms that E-UTRA connected to 5GC scenario is also in the WID scope for paging collision avoidance. The solution agreed for NR is the baseline solution for this scenario.

*Proposal 1: for EPS, RAN2 to decide in which layer the alternative IMSI should be calculated, i.e., RRC or upper layer. Send an LS to SA2 and CT1 to indicate RAN2’s preference.*

- OPPO thinks we have to decide on this and we can't leave it to UE implementation. Prefer to go with AS-based approach. LGE agrees we should decide and current paging configuration comes from AS so it's easier to calculate there. Apple agrees. Nokia prefers AS solution. vivo thinks most likely that the UE RRC layer detects the POs collision problem, it is better to go with AS based solution. Huawei, Lenovo and NEC agree.

- Samsung prefers NAS calculations since there are some parameters only in NAS. We can go with SA2 solution without RAN2 impacts. ZTE agrees. Ericsson agrees.

- ZTE thinks that AS calculation may require NAS parameter. Do we specify this or leave it up to UE implementation? MTK thinks we should specify this. If we go with NAS procedure, it will be simpler. Lenovo thinks it's just offset from AS perspective.

- Samsung thinks AS solution requires SA2 specification. Intel thinks SA2 can do this.

* 1: RAN2 prefers that for EPS, the alternative IMSI or offset should be calculated in AS, i.e., RRC. Send an LS to SA2 and CT1 to indicate RAN2’s preference and request to specify the necessary details. LS will be discussed in offline [230].

UE ID offset and GUTI reallocation mechanism

*Proposal 2: RAN2 to discuss whether to support Option 2b (UE ID offset) as a complementary solution to the Option 1 (5G-GUTI reassignment via MRU) agreed by SA2 for 5GS.*

*Proposal 3: If Option 2b is adopted to handle the paging collision issue in in 5GS, request SA2/CT1 to introduce an explicit signaling for paging collision in the NAS Registration Request.*

* Option 1 already agreed earlier, no need to optimize

AS/NAS interactions and UE assistance information

*Proposal 5: RAN2 to discuss whether to specify that UE AS indicates to UE NAS that paging collision issue is identified.*

- OPPO thinks this can be done with UE implementation. Xiaomi and Apple agree.

- LGE thinks we need to specify how the offset value is transferred. Lenovo agrees and thinks TA information is in NAS.

* 5: For LTE and NR, RAN2 leaves it up to UE implementation how UE AS indicates to UE NAS that paging collision issue is identified.
* 7: For LTE and NR, RAN2 leaves other detailed UE behavior up to UE implementation, including how to make predictable UE behavior for RAT/Network selection to avoid paging collision, rules for declaring paging collision issue, and RAT/Network selection for reporting paging collision issue.

*Proposal 6: RAN2 to discuss whether to specify the AS-NAS interaction for UE assistant information.*

Agreement during online session

**=> RAN2 already agreed not to have assistance information**

Chair note clarification after online session

* After the session, it was noted that the agreement on no assistance information only applied for 5GS, so the notes were amended by adding the "for 5GS" as per below:
* RAN2 already agreed not to have assistance information for 5GS

[R2-2109766](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109766.zip) Paging Collision Avoidance Open Issues Huawei, HiSilicon discussion Rel-17

*Proposal 1: For the paging collision avoidance in NR+NR, RAN2 will follow the conclusion from SA2 [4] and confirm that there is no impact to any AS specifications. There is no need to discuss any further optimizations.*

*Proposal 2: No need to have predictable behaviour on how UE selects one of the two RATs/NWs to address the paging collision issue.*

*Proposal 3: For LTE, NAS forwards Accepted IMSI offset to AS.*

*Proposal 4: For LTE, AS calculates Alternative IMSI value based on the Accepted IMSI offset received from NAS and uses it for UE\_ID calculation.*

*Proposal 5: If Proposals 3 and 4 are agreed, send an LS to SA2/CT1 informing of the agreements to align the use of the IMSI offset.*

[R2-2110190](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110190.zip) Way forward on paging collision Qualcomm Incorporated discussion

*Observation 1: When paging collision occurs, this can be persistent across all cycles.*

*Observation 2: Even though collision may not always be a common occurrence, it is important to find a solution which is robust and always works.*

*Observation 3: A simple re-allocation of GUTI will not be an efficient solution in all scenarios.*

*Observation 4: A paging instance on one USIM which triggers a new GUTI can cause a paging collision problem.*

*Observation 5: AMF implementation may not be able to allocate a GUTI which solves the collision since only the last 10 bits of S-TMSI are relevant for PO determination.*

*Observation 6: Keeping the PO in a fixed location when GUTI changes will make the paging collision solution more robust.*

*Observation 7: Using and offset to the UE ID for PO determination, which is already agreed for EPS, can also address the limitations of pure GUTI re-allocation scheme.*

*Observation 8: In the agreed 23.501 CR for GUTI re-allocation, the AMF will not be aware whether the Mobility Registration Update from a MUSIM UE is due to actual mobility or paging collision.*

*Proposal 1: For NAS based solutions, introduce a new ID offset parameter which is added to 5G-S-TMSI in PO calculation. The AMF allocates this along with GUTI.*

*Proposal 2: RAN2 should act upon the RAN2#113bis-e agreement and request SA2/CT1 to introduce an explicit signaling for paging collision in the NAS Registration Request.*

*Proposal 3: For NAS/AS based solutions, AMF indicates the paging collision problem and any additional information to the gNB.*

*Proposal 4: For NAS/AS based solution, RAN2 to consider introducing different PF/PO offset(s) which are used by UE(s) that report paging collision problem to the NW.*

[R2-2109407](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109407.zip) Leftover Issues for Paging Collision Avoidance OPPO discussion LTE\_NR\_MUSIM-Core

[R2-2109690](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109690.zip) Remaining Issues on the Paging Collision ZTE Corporation, Sanechips discussion Rel-17 LTE\_NR\_MUSIM-Core

[R2-2109714](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109714.zip) Draft LS on the alternative IMSI ZTE Corporation, Sanechips LS out Rel-17 LTE\_NR\_MUSIM-Core To:CT1,SA2

[R2-2109721](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109721.zip) Definition and solution for paging collision, SI change Lenovo, Motorola Mobility discussion LTE\_NR\_MUSIM-Core

[R2-2109802](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109802.zip) Considerations on Paging Collision Avoidance Samsung discussion

[R2-2110294](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110294.zip) Discussion on misalignment on EPS paging collision avoidance among SA2, CT1 and RAN2 China Telecommunications discussion

[R2-2110392](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110392.zip) Paging collision avoidance vivo discussion Rel-17 LTE\_NR\_MUSIM-Core

[R2-2111020](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111020.zip) Considerations on Paging Collision LG Electronics discussion Rel-17 LTE\_NR\_MUSIM-Core [R2-2108724](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2108724.zip)

### 8.3.3 UE notification on network switching for multi-SIM

Including discussion on remaining details for periodic/aperiodic gaps, e.g. MUSIM gap support for MR-DC,how the gaps are released (i.e. implicitly or explicitly), need for additional gap assistance information (e.g. gap purpose).

Including discussion on MUSIM assistance information from UE to network (e.g. UAI or other signalling, whether to reuse some parts of existing signalling, possibility of "early return")

Including remaining details of "configured time" (e.g. how to configure UE to always wait for network response,)

Web Conf (1st week Monday) (2)

*MUSIM gaps:*

[R2-2110253](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110253.zip) Open issues on scheduling gap for network switching NEC discussion Rel-17 LTE\_NR\_MUSIM-Core

*Proposal 1: Per-UE scheduling gap is applicable for MR-DC scenario in Rel-17, otherwise should be specified in Rel-18.*

*Proposal 2: Do not support autonomous release of scheduling gap after N repetitions.*

*Proposal 3. RAN discuss how to handle the overlapping of one scheduling gap with measurement gap or other scheduling gap.*

[R2-2109409](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109409.zip) Discussion on Remaining Details for Periodic and Aperiodic Gaps OPPO discussion LTE\_NR\_MUSIM-Core

*Proposal 1: Gap purpose is not introduced for MUSIM.*

*Proposal 2: MAC CE is not used to activate/deactivate the RRC configured MUSIM gap(s).*

*Proposal 3: Explicit RRC signaling is used to activate/deactivate MUSIM gap(s). Upon received by RRC signaling, all the configured MUSIM gap(s) will be activated immediately.*

*Proposal 4: Each MUSIM gap configured by network A is associated with an index, UE can indicate which MUSIM gap should be released by including the corresponding MUSIM gap index into UEAssistanceInformation Msg.*

*Proposal 5: Release and add signaling is used to release and add MUSIM gap(s) and this is both applied to UL and DL RRC message.*

*Proposal 6: MUSIM gap is not supported for DC scenario in R17.*

*Proposal 7: ‘Early return’ method is not specified for MUSIM in R17.*

*Proposal 8: RAN2 postpones the discussion on MUSIM gap length and gap cycle value range definition before getting more inputs from RAN4.*

MR-DC gaps

- QC thinks DC would require some MN-SN signalling (as all other gaps). This can also make a big difference from UE perspective.

- Samsung thinks we should postpone this to Rel-18. Intel agrees.

* RAN2 will not specify MN-SN coordination of MUSIM gaps with MR-DC in Rel-17

MAC CE

- Intel thinks MAC CE may not be needed but we may need to harmonize.

* RAN2 will not create MAC CE activation of gaps in MUSIM, but if the common gap discussion allows this anyway, RAN2 will not prevent that, either.

[R2-2110168](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110168.zip) Further details of MUSIM Gaps Qualcomm Incorporated discussion

*Observation 1: For non-DC case, per UE level gap configuration may not be optimal in certain CA band combinations for CA.*

*Observation 2: In many DC scenarions, for example EN-DC + NR, NR-DC + NR, the gaps may be needed only for SN.*

*Observation 3: Using per-UE gaps will cause an unnecessary disruption to the CG which does not need a gap.*

*Observation 4: Using a single periodic gap configuration for paging reception will not be optimal when the SSB and PO are not in close proximity.*

*Observation 5: It is possible that PUCCH resources can fall within the MUSIM gap and the existing procedures can trigger a new PUCCH transmission.*

*Observation 6: Configuring the gap pattern with the number of repetitions can eliminate the release message for periodic gaps and provide a common signaling for both periodic and aperiodic gaps.*

*Observation 7: “Gap purpose” is not needed for MUSIM gap configuration by the gNB and the actual usage of the gap by the UE is not a testable and verifiable behavior.*

*Proposal 1: MUSIM gaps only for MCG or SCG should be supported.*

*Proposal 2: Any cell selection procedure should also be captured as a potential scenario for MUSIM gaps.*

*Proposal 3: More than two periodic gap patterns should be supported. This can be an optional UE capability.*

*Proposal 4: The UE should be allowed to initiate uplink transmission during the gap, when it is able to do so due to early termination of the gap, when this transmission is triggered by the existing procedures. No specification changes are needed.*

*Proposal 5: If MUSIM gaps require longer duration than measurement gaps, RAN2 should discuss options for handling of RLM and BFD.*

*Proposal 6a: The gap configuration can include a number N for the number of repetitions of the gap. N can also take values 1 and infinity and be requested by the UE.*

*Proposal 6b: If N is configured, the gap pattern is released after the gap is used N times. The NW can release the gap pattern before N repetitions by explicit signaling.*

*Proposal 7: “Gap purpose” is not included in UE assistance information for MUSIM gap request.*

*Proposal 8: RAN2 assumes that MUSIM gaps are configured separately from existing measurement gaps.*

*Proposal 9: The UE will provide MUSIM gap assistance information by sending UEAssistanceInformation. The MUSIM gaps are configured by RRCReconfiguration procedure.*

[R2-2110048](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110048.zip) Aspects of MUSIM NW Switching and Scheduling Gaps Apple discussion Rel-17 LTE\_NR\_MUSIM-Core

[R2-2110393](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110393.zip) Discussion on MUSIM Gap Configuration and switching message vivo discussion Rel-17 LTE\_NR\_MUSIM-Core

Web Conf (2nd week Tuesday) (2)

*Network switching with/without leaving RRC\_CONNECTED:*

[R2-2110542](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110542.zip) Disucssion on the remaining issues for NW switching Huawei, HiSilicon discussion Rel-17 LTE\_NR\_MUSIM-Core

*Scenario for NW switching*

*Proposal 1: The case that Dual-RX/Single-TX UE or Single-RX/Single-TX UE stays in RRC\_CONNECTED mode in NW A while performing reception and transmission in NW B (in RRC\_ CONNECTED or during RRC setup/resume period ), is not considered in the WI.*

*Proposal 2: MR-DC is not supported in Rel-17.*

*Switching procedure without leaving RRC\_CONNECTED*

*Proposal 3: Signalling framework to support more than 3 gap patterns is not supported.*

*Proposal 4: The following principle for aperiodic gap should be followed:*

*- If until the end of the aperiodic gap the UE still has not completed activity in NW B, e.g. due to the random access for on-demand SI request, the UE should stop the activity in NW B and switch to NW A. If needed, the UE can request another aperiodic gap in NW A.*

*- If the UE successfully completes activity in NW B before the end of the aperiodic gap, there is no need for the UE to send the early return indication in NW A.*

*Proposal 5: Do not introduce gap purpose for gap related MUSIM assistance information.*

*Proposal 6: The absence of suggested gap pattern(s) in UAI message implicitly indicates that these gap pattern(s) are preferred to be released by the UE.*

*Proposal 7: UE is allowed to update UAI message after the UE performs cell reselection in NW B or after the UE performs handover in NW A.*

*Proposal 8: Autonomous release of MUSIM gap by UE after N repetitions is not supported.*

*Switching procedure with leaving RRC\_CONNECTED*

*Proposal 9: UE reports the preferred RRC state with value set to idle, inactive or outofconnected in MUSIM assistance information when the UE initiates the switching procedure with leaving RRC\_CONNECTED state.*

*Proposal 10: A finite value of “configured time” is always configured by the network for switching procedure with leaving RRC\_CONNECTED”.*

*Proposal 11: The following handling for the timer of controlling “configured time” is supported:*

*- UE starts the timer upon successfully transmitting UAI message with release preference for MUSIM;*

*- UE stops the timer at least upon receiving the corresponding configuration set to release, or upon receiving the RRCRelease message;*

*- UE does not detect RLF or initiate connection re-establishment procedure upon the RLF occurs if the switching procedure with leaving RRC\_CONNECTED is initiated or the timer is running.*

*Proposal 12: For the interaction of AS-based solution and NAS-based for NW switching, it is confirmed by RAN2 that the SA2’s agreements in [5] is aligning with RAN2’s understanding, and no further discussion is needed in RAN2.*

*Switching procedure enabled/disabled*

*Proposal 13: Switching procedure with/without leaving RRC\_CONNECTED is enabled/disabled simultaneously.*

[R2-2110142](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110142.zip) Further analysis on switching notification without leaving RRC connection Nokia, Nokia Shanghai Bells discussion Rel-17

*Proposal 1: Network may configure more than 3 gap patterns although at most 3 of the gap patterns (2 periodic and 1 aperiodic) may be active at the same time at the UE. The maximum number of supported active configurations is a UE capability.*

*Observation 1: Gap length needed by a UE for paging monitoring may be different depending on the UE radio conditions.*

*Proposal 2: RAN2 to consider the adaptation of gap duration without change of periodicity using lower layer signalling mechanism.*

*Proposal 3: RAN2 to provide signalling mechanisms to allow the UE’s early return and NTWK-A’s possibility to schedule traffic in the remaining (non-used) part of the gap.*

*Proposal 4: RAN2 to provide means to partially accept a requested gap by directly configuring gap with reduced periodicity/time or provide assistance information along with the reject to UE and allow the UE to request different pattern.*

*Proposal 5: Send LS to SA2 informing about the RAN2 agreement that UE cannot be in RRC-CONNECTED state in NTWK-A and NTWK-B during aperiodic gap and its possible impact for NAS level BUSY indication procedure. Draft LS to SA2 is provided in Annexure A.*

*Proposal 6: RAN2 to study the behaviour of the UE in case the timer T310 for RLF declaration in NTWK-A is running and UE switches to NTWK-B without leaving RRC\_CONNECTED state.*

* ?? Do we need to send LS to SA2?

[R2-2110775](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110775.zip) Discussion on switchover procedure without leaving RRC\_CONNECTED state Ericsson discussion

*Proposal 1 The support for MR-DC is not included in Rel.17, since only single TX UEs are part of the current WID.*

*Proposal 2 The Multi-USIM UE may be configured by the network with a prohibit timer to avoid frequent report of preferred gaps.*

*Proposal 3 If the UEAssistanceInformation does not include a field for aperiodic or periodic gap preference, it implies no preference for the corresponding field for aperiodic or periodic gap.*

*Proposal 4 No UE autonomous release of periodic gaps is introduced.*

*Proposal 5 No gap purpose information is needed when requesting the gap.*

*Proposal 6 The MAC signaling is not used for switchover procedure without leaving RRC\_CONNECTED.*

[R2-2110781](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110781.zip) Discussion on switchover procedure for leaving RRC\_CONNECTED state Ericsson discussion

*Observation 1 If the Multi-USIM UE interrupts abruptly the connection with the current PLMN, the network KPI might be affected negatively.*

*Observation 2 Switchover procedure for leaving RRC\_CONNECTED state can be used to perform longer actions in PLMN1, which need the connection setup. The UE may be moved to RRC\_IDLE/RRC\_INACTIVE in PLMN2.*

*Observation 3 The presence of the timer may cause a state mismatch in case the network moves the UE to RRC\_INACTIVE, but the UE enters RRC\_IDLE because the timer expired.*

*Proposal 1 The network configures the UE to report its preference for switchover with leaving RRC\_CONNECTED state, or switchover without leaving RRC\_CONNECTED state, or both.*

*Proposal 2 The Multi-USIM UE may be configured by the network with a prohibit timer to avoid frequent report of preference for switchover with leaving RRC\_CONNECTED.*

*Proposal 3 For the switchover procedure for leaving RRC\_CONNECTED state, the UE sends the UEAssistanceInformation message indicating OutOfConnect as preferred leaving state.*

*Proposal 4 The new RRC leaving timer is defined as optional timer: if the timer is not configured by the network, the UE shall behave as in legacy and wait until the network response is received.*

*Proposal 5 As a result of leaving PLMN2 caused by the timer expiration, the UE performs a NAS recovery (i.e. connection setup) in PLMN2 as soon as the UE goes in IDLE/INACTIVE in PLMN1.*

*Proposal 6 The UE can use the NAS procedure, or RRC procedure (if configured) or both, when the UE leaves RRC\_CONNECTED state. When both procedures are supported, it is up to UE to decide which of the two to use*

[R2-2111180](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111180.zip) UE Notification on Network Switching for Multi-SIM Rakuten Mobile, Inc discussion Rel-17

[R2-2110189](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110189.zip) Remaining Issues for MUSIM Network Switching Charter Communications, Inc discussion

[R2-2110144](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110144.zip) Analysis on signalling procedures and messages for MUSI switching notification Nokia, Nokia Shanghai Bells discussion Rel-17

[R2-2110143](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110143.zip) On remaining issues for switching notification for leaving RRC connection Nokia, Nokia Shanghai Bells discussion Rel-17

[R2-2109688](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109688.zip) Further Consideration on the Remaining Issues of Scheduling Gap ZTE Corporation, Sanechips discussion Rel-17 LTE\_NR\_MUSIM-Core

[R2-2109689](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109689.zip) Consideration on the Remaining Issues of Switching Procedure ZTE Corporation, Sanechips discussion Rel-17 LTE\_NR\_MUSIM-Core

[R2-2109788](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109788.zip) Further discussion on network switching for MUSIM Samsung discussion

[R2-2109410](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109410.zip) Discussion on MUSIM Assistance Information for Leaving Case OPPO discussion LTE\_NR\_MUSIM-Core

[R2-2109624](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109624.zip) Remaining issues on network switching Intel Corporation discussion Rel-17 LTE\_NR\_MUSIM-Core

[R2-2110188](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110188.zip) Remaining issues of network switching for Multi-SIM Qualcomm Incorporated discussion

[R2-2111197](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111197.zip) Further details on network switching notification MediaTek Inc. discussion

* Revised in [R2-2111222](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111222.zip)

[R2-2111222](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111222.zip) Further details on network switching notification MediaTek Inc. discussion

[R2-2111023](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111023.zip) Problems when NAS based Busy Indication LG Electronics discussion Rel-17 LTE\_NR\_MUSIM-Core

[R2-2109408](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109408.zip) Leftover Issues for Busy Indication OPPO discussion LTE\_NR\_MUSIM-Core

[R2-2110129](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110129.zip) Busy indication transmission Spreadtrum Communications discussion Rel-17

[R2-2110332](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110332.zip) Switching notification and busy indication Lenovo, Motorola Mobility discussion Rel-17

[R2-2111021](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111021.zip) Scheduling Gap Handling LG Electronics discussion Rel-17 LTE\_NR\_MUSIM-Core

Web Conf (2nd week Tuesday) (2)

*AS and NAS solution interactions, paging filtering:*

[R2-2111103](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111103.zip) Analysis on AS-based solution and NAS-based solution China Telecommunications discussion

*Proposal 1: AS-based solution should not include NAS information*

*Proposal 2: For NAS-based leaving solution, RAN considers whether UE is allowed to leave before receive any acknowledge message from network.*

*Proposal 3: RAN2 does not restrict the solutions under different switching scenarios.*

[R2-2111022](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111022.zip) Paging filtering when AS-based leaving LG Electronics discussion Rel-17 LTE\_NR\_MUSIM-Core

*Proposal 1. RAN2 discusses whether the MT restriction information for paging filtering can be sent together with AS-based leaving procedure.*

*Proposal 2. To send paging filter rules when performing AS-based leaving via UAI, the UE includes the paging filtering rules in the UAI message instead of sending NAS signalling.*

*Proposal 3. As an alternative solution, to send paging filter rules when performing AS-based leaving via UAI, the UE includes an additional indication in the UAI message that the UE will request the service release via NAS signalling soon. Upon reception of this indication, gNB waits without immediately sending the RRC release message until the paging filtering rules are sent to 5GS.*

*Proposal 4. To send paging filter rules when performing AS timer-based leaving, the UE includes the paging filtering rules in the UAI message instead of sending NAS signalling.*

[R2-2111001](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111001.zip) Interaction between NAS and AS for network switching ASUSTeK discussion Rel-17 LTE\_NR\_MUSIM-Core

*RRC\_INACTIVE and busy indication:*

[R2-2111186](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111186.zip) Signalling design on busy indication procedure DENSO CORPORATION discussion LTE\_NR\_MUSIM-Core [R2-2108804](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2108804.zip)

*Proposal 1: Add a new cause value for resumeCause of RRCResumeRequest to indicate the purpose of the connection is sending busy indication.*

*Proposal 2: UE is allowed to indicate preferred RRC state after sending busy indication.*

[R2-2110117](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110117.zip) RAN Initiated Paging in MUSIM Sharp discussion

[R2-2110118](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110118.zip) RNAU and BUSY indication in MUSIM Sharp discussion

### 8.3.4 Paging with service indication

Including details of the paging cause value support and, if necessary, discussion on additional feedback to SA2

Including outcome of [Post115-e][236][MUSIM] Paging with service indication (Huawei)

Web Conf (1st week Monday) (3)

Including outcome of [Post115-e][236][MUSIM] Paging with service indication (Huawei)

[R2-2109761](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109761.zip) Report of [Post115-e][236][MUSIM] Paging with service indication Huawei, HiSilicon discussion Rel-17

*For easy agreements:*

Bulk agreements

* 1: Introduce paging cause by using the ”nonCriticalExtension” in the Paging record.
* 2: No need to study solution proposals based on extending legacy Paging record.
* 4: The solution proposal to introduce paging cause in NR will be used for LTE.
* 5: No need to send an LS to SA2 asking to consider a NAS solution to introduce paging cause in LTE.
* 6: For paging reception in RRC\_IDLE, UE forwards the paging cause to NAS. It’s up to NAS whether to accept or reject the paging.
* 8: The AS-NAS interaction principles for NR are applied to LTE.

P4/P5:

- Nokia would like to reduce LTE RRC impacts but there is also privacy issue. SA3 indicated this is not issue in NR but in LTE IMSI reallocation is not necessary. So could need to inform SA3.

- Huawei thinks SA3 already looked into it and thinks this is not a security issue.

- Apple thinks P4 could have multiple causes. Huawei clarifies we have only one cause but encoding can vary.

- Samsung thinks SA2 already published TS so SA3 would know. Ericsson is fine to inform the agreement.

* No LS to SA3 needed on the LTE solution. Companies can raise this up directly in SA3 if needed.

Specification impacts

*For further discussion:*

*Proposal 3: FFS if B.1 (parallel list with 1 paging cause value “voice”) or B.2 (parallel list with 2 paging cause values “voice, other”) is the preferred ASN.1 coding approach.*

- Ericsson indicates B2 was seen needed as SA2 raised the problem, but is now fine with B.1.

- OPPO thinks both options can work but has slight preference on B.1.

- Samsung thinks we should only introduce a single paging cause so B.1 would be fine if that addresses SA2 scenario. Would prefer spearate list.

- Apple prefers B.2 but thinks also B.1 works. vivo agrees but thinks B.1 is simpler.

- MediaTek indicates B.1 should be single paging cause that is optional. Huawei supports B.1

- ZTE thinks B.1 may need some AS/NAS interactions but if we leave that to UE implementation it's OK.

* 3: Adopt B.1 (parallel list with 1 optional paging cause value “voice”).
* 9: Introduction of paging cause impacts 38.331 and 36.331 specs; FFS if it impacts stage 2 specs (38.300 and 36.300)

AS-NAS interactions

*Option 1: the AS layer resumes the RRC connection upon receipt of RAN paging and then the AS layer informs the NAS layer an indication that the UE has transitioned to RRC\_CONNECTED state and indication about the RAN paging;*

*Option 2: the AS layer informs the NAS layer an indication about the RAN paging and the AS layer resumes the RRC connection based on a request from the NAS layer to the AS layer to transition to RRC\_CONNECTED state (the request from NAS layer is triggered by acceptance of RAN paging or the SERVICE REQUEST message containing the “NAS signalling connection release" indication);*

*Option 3: No need to specify AS-NAS interaction, up to UE implementation;*

*Summary: Since there is no consensus on the preferred Option for AS-NAS interaction to receive paging in RRC\_INACTIVE, if RAN paging cause is delivered to NAS can be discussed together with Proposal 7.*

*Proposal 7: For the AS-NAS interaction for paging reception in RRC\_INACTIVE, FFS Option 2 or Option 3 (i.e. up to UE implementation) is the preferred solution.*

- OPPO thinks for RAN paging can be discussed in offline. Prefers option 3 but can accept option 2. Samsung thinks current specification is specified as option 1 so there will be specification impact. So slight preference to option 2. Lenovo is fine with option 2. Xiaomi prefers option 3.

- Huawei thinks we should keep the legacy behaviour so thinks option 4 is best. Can accept leaving to UE implementation.

- NEC thinks this depends on whether NAS or AS makes decision on busy indication. If NAS accepts, we need some interactions to be specified.

- MediaTek thinks it's not testable who takes the decision. So no point to discuss.

*Option 3: No need to specify AS-NAS interaction, up to UE implementation;*

* 7: The AS-NAS interaction for paging reception in RRC\_INACTIVE is left up to UE implementation.

[R2-2109755](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109755.zip) Draft CR to TS36.331 to support paging with service indication for MUSIM Huawei, HiSilicon draftCR Rel-17 36.331 16.6.0 LTE\_NR\_MUSIM-Core

[R2-2109756](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109756.zip) Draft CR to TS38.331 to support paging with service indication for MUSIM Huawei, HiSilicon draftCR Rel-17 38.331 16.6.0 LTE\_NR\_MUSIM-Core

* Update the above CRs [R2-2109755](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109755.zip) and [R2-2109756](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109756.zip) based on agreements in offline [232] (Huawei). Will be merged to running CRs after the meeting. Can draft LS to SA2/RAN3/CT1 in this thread.

[R2-2109767](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109767.zip) Discussion on the paging with service indication Huawei, HiSilicon discussion Rel-17

[R2-2110128](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110128.zip) Supporting of Paging Cause Solution detection Spreadtrum Communications discussion Rel-17

[R2-2110137](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110137.zip) Discussion on the transmission of paging cause Spreadtrum Communications discussion Rel-17

[R2-2110394](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110394.zip) Remaining issues for paging with service indication vivo discussion Rel-17 LTE\_NR\_MUSIM-Core

[R2-2110776](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110776.zip) Introduction of a Paging cause indication Ericsson discussion

[R2-2110947](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110947.zip) Discussion on paging service indication for MUSIM Futurewei Technologies discussion [R2-2108549](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2108549.zip)

[R2-2111171](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111171.zip) Discussion on support of paging cause for MUSIM UE Samsung Electronics Co., Ltd discussion Rel-17 LTE\_NR\_MUSIM-Core

[R2-2111194](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111194.zip) Paging with service indication MediaTek Inc. discussion Rel-17 LTE\_NR\_MUSIM-Core [R2-2108738](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2108738.zip)

Email discussions ([232])

* [AT116-e][232][MUSIM] Paging with serving indication for MUSIM (Huawei)

Scope:

* + - Update the CRs to paging with serving indication for MUSIM in [R2-2109755](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109755.zip) and [R2-2109756](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109756.zip) based on agreements.
    - Draft LS to SA2/RAN3/CT1 in this thread informing them if the RAN2 agreeements for paging service indication.

Intended outcome:

* + - Discussion summary in [R2-2111312](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111312.zip) (by email rapporteur), draft LS in [R2-2111313](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111313.zip) (by email rapporteur).

Deadline for providing comments, for rapporteur inputs, conclusions and CR finalization:

* + - Initial deadline (for company feedback): 1st week Fri, UTC 0700
    - Initial deadline (for rapporteur summary and draft LS): 2nd week Mon, UTC 1200

Comeback (2nd week) (2)

[R2-2111312](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111312.zip) Summary of [232][MUSIM] Paging with serving indication for MUSIM (Huawei) Huawei discussion Rel-17 LTE\_NR\_MUSIM-Core

[R2-2111313](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111313.zip) [Draft] LS on RAN2 agreements for paging with service indication Huawei LS out Rel-17 LTE\_NR\_MUSIM-Core To:CT1, SA2, RAN3

### 8.3.5 UE capabilities and other aspects

This agenda item may use a summary document.

This agenda item may be deprioritized in this meeting.

Including discussion on UE capabilities and any other essential aspects of MUSIM that need to be resolved during Rel-17.

Web Conf (2nd week) Or By Email (1)

Summary document [203]:

[R2-2111303](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111303.zip) [203] Summary of agenda 8.3.5: UE capabilities (MUSIM) Ericsson discussion Rel-17 LTE\_NR\_MUSIM-Core Late

No capability bits needed for certain parts of the feature?

*Proposal 1 AS capability for paging collision avoidance is not needed for both NR+NR case and LTE+LTE case.*

*Proposal 2 There is no need for AS capability for Busy indication.*

*Proposal 6 There is no need for AS capability for Paging cause value.*

RRC switching procedures

*Proposal 3 RAN2 to discuss whether to introduce the following UE capabilities:*

*1 optional per UE bit (without xDD/FRx differentiation) for RRC based switching procedures for leaving RRC\_CONNECTED state, and*

*1 optional per UE bit (without xDD/FRx differentiation) for RRC based switching procedures without leaving RRC\_CONNECTED state.*

Network configuration aspects

*Proposal 4 Network should be able to configure whether UE can send gap preferences for MU-SIM. It should be possible for network to configure individually whether UE is allowed to send preferences for periodic and aperiodic gaps.*

*Proposal 5 Network can configure the UE to report MUSIM UE assistance information for leaving RRC\_CONNECTED state and without leaving RRC\_CONNECTED state independently.*

Is generic "MUSIM capability" needed?

*Proposal 7 RAN2 to select one of the options below:*

*Option 1: There is no need for an overall MUSIM capability at AS level, i.e. it is sufficient to have AS capabilities defined for specific MUSIM features.*

*Option 2: An AS capability is introduced to indicate overall support of MUSIM, i.e. inclusion of this indication in UE capability report would imply that the UE supports at least one of the defined features for MUSIM.*

Chair proposal on "other capability aspects" proposed to be postponed in the summary document:

*3) Introduce separate UE capabilities for periodic and aperiodic gap request for MUSIM.[1]*

*6) RAN2 to further discuss the capabilities of “leave without response timer” and “reception of paging cause”.[4]*

*7) Clarify in LTE and RRC specifications for Release-17 that the existing RRC Processing Delay requirements is applicable only for UE operating in Single-SIM mode and is NOT applicable for RRC procedures for UE’s operating in MUSIM mode of operation.[3]*

*8) RAN2 to further study the RRC Processing Delay Requirements for MUSIM UEs based on the solutions agreed for the other MUSIM WI objective (Paging Collision, Network Switching, Busy Indication etc.)[3]*

* ?? Can discuss UE capabilities for periodic/aperiodic gap request and RRC processing delay requirements for MUSIM in Rel-17 further in the next RAN2 meeting.

*4) RAN2 to discuss in switching notification in dual connectivity scenario request to release the SCG rather than leaving RRC\_CONNECTED fully with dual connectivity. [4]*

*5) If RAN2 decided to support release of SCG for switching without leaving RRC connection, UAI can include new parameter ‘SCG-Release’ within leave-indication information. [4]*

*9) RAN2 to consider such Band conflict scenarios for MUSIM to arrive at a graceful specification-based solution intended to mitigate such conflicts.[3]*

*10) RAN2 to consider the problem statements for MUSIM UEs related to caller ID identification and optimal signalling to ensure faster RRC Connection Release with the intent to avoid radio resource wastage.[3]*

* ?? Do not consider SCG release, band conflicts and caller ID identification aspects in Rel-17. Can consider discussing them in Rel-18.

[R2-2109625](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109625.zip) UE capabilities for MU-SIM Intel Corporation discussion Rel-17 LTE\_NR\_MUSIM-Core

* ?? Shows example of "stage-2" for UE capability text

[R2-2110788](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110788.zip) UE capabilities for Multi-USIM Ericsson discussion

[R2-2110543](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110543.zip) Discussion on UE capability for MUSIM Huawei, HiSilicon discussion Rel-17 LTE\_NR\_MUSIM-Core

[R2-2110145](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110145.zip) On MUSIM UE capability and additional switching scenario Nokia, Nokia Shanghai Bells discussion Rel-17

[R2-2110150](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110150.zip) Discussion on UE capability for MUSIM Samsung discussion

[R2-2110395](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110395.zip) Multi-USIM related UE capabilities vivo discussion Rel-17 LTE\_NR\_MUSIM-Core

[R2-2110049](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110049.zip) Aspects of MUSIM UE Capability Apple discussion Rel-17 LTE\_NR\_MUSIM-Core

[R2-2110050](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110050.zip) Additional issues related to MUSIM Apple discussion Rel-17 LTE\_NR\_MUSIM-Core

Email discussions (TBD, [231])

* [AT116-e][231][MUSIM] UE capabilities (NN)

Scope:

* + - Discuss remaining RAN2 UE capability aspects and create UE capability descriptions. Can handle summary document in this thread if not handled online

Intended outcome:

* + - Discussion summary in [R2-2111310](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111310.zip) (by email rapporteur).

Deadline for providing comments, for rapporteur inputs, conclusions and CR finalization:

* + - Initial deadline (for company feedback): 2nd week Mon, UTC 1200
    - Initial deadline (for rapporteur summary): 2nd week Tue, UTC 1000

[R2-2111310](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111310.zip) Summary of [AT116-e][231][MUSIM] UE capabilities (NN) NN discussion Rel-17 LTE\_NR\_MUSIM-Core Late

## 8.8 RAN slicing

(NR\_Slice -Core; leading WG: RAN2; REL-17; WID: RP-211289)

Time budget: 0.5 TU

Tdoc Limitation: 3 tdocs (note that email discussion outcome documents or rapporteur inputs do not count against Tdoc limitations)

Email max expectation: 2 threads

Contributions should illustrate the Stage-3 details of the proposals (e.g. in an Annex containing TP against the running CRs).

### 8.8.1 Organizational

Including LSs, any rapporteur inputs and results of running CR email discussions [245]-[248]

[R2-2109349](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109349.zip) Response to LS on Cell reselection with band-specific network slices (R3-214472; contact: ZTE) RAN3 LS in Rel-17 FS\_NR\_slice To:SA2 Cc:RAN2

* Noted (RAN2 in CC)

Web Conf (1st week Tuesday) (1+1+1+2)

[R2-2111235](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111235.zip) Reply LS on Slice list and priority information for cell reselection (S2-2107861; contact: CMCC) SA2 LS in Rel-17 NR\_slice-Core To:RAN2, RAN3 Cc:CT1

*SA2 question to RAN2 and RAN3:*

*1. SA2 would like to understand from RAN2 perspective, whether it is possible that a network slice can be associated to none, one or more slice groups?*

*2. Does RAN2 intend to use the slice groups only for cell reselection or also for slice based RACH and if for both would RAN2 require different type of slice groups or is one type of slice group enough?*

*3. What are the granularities of the slice groups for cell reselection, i.e. per TA or PLMN?*

*4. With regards to the logic of network slice priority for cell reselection; SA2 wonder if the UE NAS prioritization should consider network slice registration status (i.e. selecting among registered network slices from the Allowed NSSAI or also not yet registered network slices?*

- Huawei wonders do we need to reply to the LS from this meeting. MTK indicated that SA2 was confused that RAN2 defined slice group.

- QC wonders if Q4 is related to RAN2? CMCC explains this is about whether UE can prioritize slices in network registration. Not sure RAN2 can reach consensus but should try.

* RAN2 replies requested, discussed via contributions under 8.8.2
* Noted

[R2-2109817](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109817.zip) LS on Slice list and priority information for cell reselection (C1-216256; contact: Ericsson) CT1 LS in Rel-17 NR\_slice-Core To:RAN2, SA2

*1. Can UE NAS provide to UE AS a list of slices (or slice group(s)), each with its corresponding priority for cell reselection evaluation in RRC\_IDLE/RRC\_INACTIVE?*

*Answer 1: CT1 assumes SA2 to agree a stage 2 solution on how a list of slices (or slice group(s)) with priorities is provided to UE NAS. Once such solution is agreed in SA2, CT1 can work on clarifying the related interaction between the NAS and AS layers.*

*2. Can the concept of Slice group and its signalling (Slice Group and its identifier) be supported using NAS signalling?*

*Answer 2: CT1 sees no issues to introduce support in NAS to convey information on Slice groups from the network to the UE. A solution would depend on requirements outside CT1 area of responsibility to configure Slice group information in the network, but once stage 2 requirements are available, CT1 can proceed with stage 3 NAS details.*

* Noted (no reply needed specifically to this LS, handled aas part of the SA2 LS)

Web Conf (1st week Tuesday) (1+1+1+1)

Running CRs from email discussions [245]-[248]:

Outcome of [246]:

[R2-2110239](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110239.zip) Running 38.304 CR for RAN slicing CMCC draftCR Rel-17 38.304 16.6.0 B NR\_slice-Core

* Endorsed as running CR (to be updated after the meeting, see discussion under 8.8.2 on CR structure)

Outcome of [247]:

[R2-2110374](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110374.zip) Draft stage 2 CR: Enhancements in RAN slicing Nokia, Nokia Shanghai Bell draftCR Rel-17 38.300 16.7.0 NR\_slice-Core

* Endorsed as running CR

Outcome of [248]

[R2-2110593](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110593.zip) 38.321 running CR for RAN Slicing OPPO draftCR Rel-17 38.321 16.6.0 B NR\_slice-Core

* Endorsed as running CR

Outcome of [245]

[R2-2110646](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110646.zip) Running CR of introduction of RAN slicing enhancements for NR Huawei, HiSilicon draftCR Rel-17 38.331 16.6.0 B NR\_slice-Core Late

* Endorsed as running CR

Web Conf (2nd week Tuesday) (1)

Outcome of [245]: Do we need new "T320" timer? Is the slice priority per serving frequency or how is it signalled? Do we need new SIB for slice (group) priorities? How are RACH prioritization parameters configured?

[R2-2110645](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110645.zip) [Post115-e][245][Slicing] Running NR RRC CR for RAN slicing (Huawei) Huawei discussion Rel-17 NR\_slice-Core Late

Do we need new "T320" timer?

*Summary proposal 1: For slice based cell reselection priorities in dedicated signalling, a T320-like timer is needed, and there are two options:*

*Option 1: introduce a new T320-like timer which is independent from the current T320 timer*

*Option 2: re-use the current T320 timer*

How is the slice-specific information configured in SI?

*Summary proposal 2: Slice specific priority for the serving frequency is allowed.*

*Summary proposal 3: Regarding where to put the slice relevant parameters in SIBs, there are two options:*

*Option a: put all parameters in SIB2 and SIB4 separately, e.g. SIB2 carries parameters related to the serving frequency, and SIB4 carries others*

*Option b: put all parameters in a new SIB*

*Summary proposal 5: The structure of slice based reselection information is aligned with the current structure of SIB2 and SIB4 where information are provided per frequency band.*

RACH prioritization (slicing-specific aspects)

*Summary proposal 4: RACH prioritization parameters (i.e. scalingFactorBI and powerRampingStepHighPriority) are configured per slice/slice group. The same allocation (to the slice group) can be assumed for both: RACH resources configuration & RACH prioritization.*

Post-meeting email discussions (TBD, running CRs)

* [Post115-e][24x][Slicing] Running NR RRC CR for RAN slicing (Huawei)

Scope: Update running NR RRC CR for RAN slicing based on agreements

Intended outcome: Running CR

Deadline: Short

* [Post115-e][24x][Slicing] Running 38.304 CR for RAN slicing (CMCC)

Scope: Update running 38.304 CR for RAN slicing based on agreements

Intended outcome: Running CR

Deadline: Short

* [Post115-e][24x][Slicing] Running Stage-2 CRs for RAN slicing (Nokia)

Scope: Update running Stage-2 CR (for 38.300) for RAN slicing based on agreements

Intended outcome: Running CR

Deadline: Short

* [Post115-e][24x][Slicing] Running MAC CR for RAN slicing (OPPO)

Scope: Update running 38.321 CR for RAN slicing based on agreements (avoid overlap with general RACH partiotioning)

Intended outcome: Running CR

Deadline: Short

### 8.8.2 Cell reselection

Including discussion on how definition of "slice group" and how that can be defined and indicated to UE, e.g. do we adopt the same "slice group" definition for cell reselection and RACH?

Including discussion on whether additional mechanisms beyond solution 4 are needed

Including outcome of [Post115-e][244][Slicing] Resolving FFSs for solution 4 (Lenovo)

Web Conf (1st week Tuesday) (1+1)

Outcome of [Post115-e][244][Slicing] Resolving FFSs for solution 4 (Lenovo)

[R2-2109725](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109725.zip) [Post115-e][244][Slicing] Resolving FFSs for solution 4 (Lenovo) Lenovo, Motorola Mobility (Rapporteur) discussion Rel-17 NR\_slice-Core

Slice support of neighbour cells

*Proposal 1: A serving cell provides slice support of neighbour cells.*

- Ericsson thinks this relates to P3 and intra-frequency should not be needed.

- Xiaomi agrees but thinks some other information is also needed.

- QC is fine but thinks the wording makes it mandatory for network. Should make it optional.

- ZTE agrees with the principle and slice info should be per frequency. Can discuss details later. LGE and CMCC agree. Samsung agrees with the updated version with "can".

* 1: A serving cell can provide slice support of neighbour cells.

*Proposal 3: Use SIB3 for broadcasting slice info of intra-frequency neighbor cells.*

- Lenovo thinks that two cells can have different slice information in the same frequency if they belong to different TAs. That's why P3 is still needed. LGE agrees.

- QC has concern to use legacy SIBs. Should use new SIB e.g. to avoid SIB segmentation. LGE agrees.

- Apple is fine with P3/4 and thinks frequency ranking process considers intra-frequency and UE needs the slice info there. Best cell principle is still upheld.

- Huawei thinks the same discussion was done in the running CR discussion. Could consider alternatives first and then decide.

- Ericsson asks if UE should prioritize intra-frequency reselection based on slice info? Or should UE just use the best cell principle? Lenovo indicates this was discussed earlier and we didn't want to change the trigger conditions for reselection. So intra-/inter-frequency reselections would be triggered as in legacy. No new measurements are needed. Ericsson thinks why do we need it then if it's not used? Lenovo explains we need to take the different slice support into account.

- QC, Intel support best cell concept (as in legacy).

* Best cell principle for intra-frequency cell reselection should be maintained i.e. UE camps on the strongest cell according to existing cell reselection rules.
* Network broadcasts slice info for the purpose of inter-frequency reselection. This will also need slicing priority for the serving frequency. FFS in which SIB.

*Proposal 3: Use SIB3 for broadcasting slice info of intra-frequency neighbor cells.*

*Proposal 4: Use SIB4 for broadcasting slice info of inter-frequency neighbor cells.*

*Proposal 2: RAN2 further discuss how the slice support of neighbour cells can be optimally provided.*

LS to RAN4?

*Proposal 5: RAN2 send LS to RAN4 explaining the scenario and checking if measurements can be reused between different iterations (due to Step 7).*

* RAN4 is not in the scope of the WI

[R2-2109726](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109726.zip) [draft] LS on Measurement validity for cell reselection based on Network Slicing Lenovo, Motorola Mobility (Rapporteur) LS out Rel-17 NR\_slice-Core To:RAN4

[R2-2110274](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110274.zip) A couple of FFS for Cell Reselection Kyocera discussion

[R2-2110586](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110586.zip) FFS issues on Solution option 4 LG Electronics UK discussion Rel-17

[R2-2110901](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110901.zip) Remaining Issues on Slice Info and Option 4 Samsung R&D Institute UK discussion

Web Conf (1st week Tuesday) (1)

Alternative way to handle cell reselection with slicing (compared to the 38.304 running CR)?

[R2-2110699](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110699.zip) Slice-based cell re-selection algorithm Ericsson discussion Rel-17 NR\_slice-Core

*Observation 1 The cell re-selection procedure as currently described in draft running CR to TS38.304 does not correctly cover the fallback from slice-based cell re-selection to legacy cell re-selection.*

*Observation 2 RAN2 should select the algorithm for deriving the SliceBasedReselectionPriority based on the wanted cell re-selection behaviour. There is no need to take algorithm complexity into account, since re-selection performance is not impacted.*

*Proposal 1 We ask RAN2 to agree that Slice Based Cell re-selection, just as in legacy, shall be based on reselection priorities for all frequencies that the UE may use. The priorities used may be called ‘SliceBasedReselectionPriorities’.*

*Proposal 2 We ask RAN2 to accept the TP in Appendix A.*

*Proposal 3 We ask RAN2 to discuss what behaviour is preferred for Slice Based Cell re-selection and agree on the algorithm for calculating the SliceBasedReselectionPriorities.*

*Proposal 4 We ask RAN2 to accept the TP in Appendix C.*

*Proposal 5 A new section is used to describe the calculation of a temporary reselection priority. The content of that section depends on what algorithm is selected for calculating the frequency SliceBasedReselectionPriorities.*

- Ericsson explains this tries to align with existing procedure and doesn't introduce new measurements.

- Nokia supports the proposal in principle: The outcome will be the same as in the procedure in current running CR, and this way the UE procedures are clearer. Some small clarifications can be discussed.

- Intel also promoted similar concept earlier and supports this. Thinks the current running CR is not exactly the same, determining frequency priorities is different.

- CMCC also supports the intention of the approach. Shuld also consider other slices than highest priority slice.

- QC thinks this is technically better than existing running CR but thinks this is late change and it looks complex. Don't need multiple algorithms.

* There is suppport to go with this approach.
* Offline discussion [241] (Ericsson) to sort out the details of this solution. If no problems are found, we adopt this approach in the running CR. We try to decide in 2nd week CB session.

Web Conf (1st week Tuesday) (1)

Slice list and priority information (for reply to SA2 LS)

[R2-2111118](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111118.zip) Understanding on the slice list and priority information ZTE corporation, Sanechips discussion Rel-17 NR\_slice-Core

*(moved from 8.8.1)*

*Proposal 1: N to 1 (N>=1) mapping between slice and slice group should be supported. One or more slices can be categorized into one slice group but one slice can only belong to one slice group.*

*Proposal 2a: The slice groups would be used for both slice based cell reselection and slice based RACH.*

*Proposal 2b: The mapping between slice and slice group should be common for both slice based cell reselection and slice based RACH configuration.*

*Proposal 2c: NW should be allowed to configure slice based cell reselection and slice based RACH for different slice groups.*

*Proposal 3: The slice group and the association with slices should be defined or configured per PLMN.*

*Proposal 4: It is up to NAS whether to consider the registration status or not or it can be simply left to UE implementation.*

[R2-2111268](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111268.zip) [draft] Reply LS on Slice list and priority information for cell reselection CMCC LS out 8.8.1 Rel-17 NR\_Slice-Core SA2 SA2, RAN3 CT1 Late

*(moved from 8.8.1)*

*1. SA2 would like to understand from RAN2 perspective, whether it is possible that a network slice can be associated to none, one or more slice groups?*

*RAN2 Answer: A slice can be associated to none or only one slice group. That means, it is allowed to not associate a slice to any of the slice group, and it is allowed to associate a slice to only one of the slice groups. But a slice should not be associated to more than one slice group.*

*2. Does RAN2 intend to use the slice groups only for cell reselection or also for slice based RACH and if for both would RAN2 require different type of slice groups or is one type of slice group enough?*

*RAN2 answer: RAN2 aims to use one type of slice groups for both cell reselection and slice based RACH.*

*3. What are the granularities of the slice groups for cell reselection, i.e. per TA or PLMN?*

*RAN2 answer: RAN2 understand the granularities of the slice groups are per TA.*

*4. With regards to the logic of network slice priority for cell reselection; SA2 wonder if the UE NAS prioritization should consider network slice registration status (i.e. selecting among registered network slices from the Allowed NSSAI or also not yet registered network slices?*

*RAN2 answer: RAN2 understand the slice priority for cell reselection can be configured by AMF through NAS message to UE. While configuring slice priority, both registered slices and not yet registered slices can be considered.*

* Offline discussion [240] (CMCC) to discuss reply to SA2. Should try to identify open points and find consensus (if possible). Discuss in two phases: 1st week for views, 2nd week for LS details.

Slice list and priority information (for reply to SA2 LS)

[R2-2110257](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110257.zip) Open issues for slice based cell reselection CMCC discussion Rel-17 FS\_NR\_slice

*Proposal 7: Option 5 can be supported, especially when slice group priority or frequency priority for each slice group is not provided or different slice groups share the same priority.*

*Proposal 1: The same slice grouping mechanism is applied for both cell reselection and RACH configuration to address security and SIB payload size issues.*

*Proposal 2: 8bits/16bits for slice group identity size and 16/32 slice groups broadcasted per cell could be feasible as a starting point for further discussion.*

*Proposal 3: RAN2 confirm that reuse the maximum number of intra-Freq cells listed in SIB3 and the maximum number of inter-Freq cells listed in SIB4.*

*Proposal 4: The slice info of serving frequency could be involved in SIB2, the slice info of intra-frequency neighbour cells can be involved in SIB3, and the slice info of inter-frequency neighbour cells can be involved in SIB4.*

*Proposal 5: Step 7 of option 4 can be removed.*

*Proposal 6: In the procedure for slice-based cell reselection, if the highest ranked cell is not suitable or does not support the selected slice, the UE shall not consider this cell and other cells on the same frequency as candidates for cell reselection up to 300 seconds.*

*Proposal 8: RAN2 confirm the following common understanding:*

*4) The cell should support all of the slices in the same slice group;*

*5) All of the slices in a slice group should be deployed in the same frequency;*

*6) The cells in the same TA should support the same slice groups due to TA homogenous deployment.*

[R2-2110372](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110372.zip) Slice information provisioning for cell reselection Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_slice-Core

*Observation 1: If UEs are configured with slice support of neighbour TAs and UEs are configured with TAs of the neighbouring cells, UEs have the slice information of the neighbour cells.*

*Observation 2: From radio signalling overhead perspective Option 2 (TAC based slice information provisioning) has an advantage as a single identifier is used per cell to describe the slice information of a cell.*

*Proposal 1: Radio signalling overhead should be prioritized to determine how neighbour cell slice information is provided to the UE.*

*Proposal 2: No broadcast of the supported slices of the cell is needed for cell reselection.*

[R2-2109403](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109403.zip) Considerations on slice based cell reselection Beijing Xiaomi Software Tech discussion Rel-17

[R2-2109434](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109434.zip) Remaining issues on slice specific cell reselection Qualcomm Incorporated discussion NR\_slice-Core

[R2-2109616](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109616.zip) Further considerations of slice based cell reselection Intel Corporation discussion Rel-17 NR\_slice-Core

[R2-2109727](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109727.zip) Triggers for initiating RAN slicing based cell reselections Lenovo, Motorola Mobility discussion NR\_slice-Core

[R2-2109728](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109728.zip) Optimizations for signalling Slice Information Lenovo, Motorola Mobility discussion NR\_slice-Core

[R2-2109781](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109781.zip) On optimizing the broadcast of slice support of neighbor cells Samsung discussion

[R2-2109787](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109787.zip) Discussion on slice-based cell reselection prioritization BT plc discussion Rel-17

[R2-2110083](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110083.zip) Slice based cell reselection under NW control Apple discussion Rel-17 NR\_slice-Core

[R2-2110124](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110124.zip) Discussion on slice based cell reselection Spreadtrum Communications discussion Rel-17

[R2-2110437](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110437.zip) Slice based cell reselection CATT discussion Rel-17 NR\_slice-Core

[R2-2110522](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110522.zip) Remaining issues on slice priority for cell reselection Samsung R&D Institute UK discussion

[R2-2110583](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110583.zip) Discussion on slice based cell reselection LG Electronics UK discussion Rel-17

[R2-2110590](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110590.zip) Consideration on slice-specific cell reselection OPPO discussion Rel-17 NR\_slice-Core

[R2-2110647](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110647.zip) Discussion on slice based cell reselection under network control Huawei, HiSilicon discussion Rel-17 NR\_slice-Core

[R2-2110698](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110698.zip) Slice support in a serving cell and NAS interaction Ericsson discussion Rel-17 NR\_slice-Core

[R2-2110912](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110912.zip) Slice information provided by RRCRelease Sharp discussion Rel-17 [R2-2108433](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2108433.zip)

[R2-2111010](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111010.zip) Further consideration on slice specific cell reselection ZTE corporation, Sanechips discussion Rel-17 NR\_slice-Core

Email discussions ([240],[241])

* [AT116-e][240][Slicing] LS reply on slice list and priority information (CMCC)

Scope:

* + - Continue discussion on reply LS to [R2-2111235](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111235.zip) and provide draft LS reply.

Intended outcome:

* + - Discussion summary in [R2-2111308](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111308.zip) and draft LS in [R2-2111309](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111309.zip) (by email rapporteur).

Deadline for providing comments, for rapporteur inputs, conclusions and CR finalization:

* + - Initial deadline (for company feedback): 2nd week Thu, UTC 0700
    - Initial deadline (for rapporteur summary and draft LS): 2nd week Thu, UTC 1700
* [AT116-e][241][Slicing] Slice-based cell re-selection algorithm (Ericsson)

Scope:

* + - Continue discussion on approach from [R2-2110699](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110699.zip) and sort out the details of this solution. Should try to have a draft CR and identify if/how the approach can be simplified.

Intended outcome:

* + - Discussion summary (including TP) in [R2-2111306](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111306.zip) (by email rapporteur).

Deadline for providing comments, for rapporteur inputs, conclusions and CR finalization:

* + - Initial deadline (for comments): 2nd week Wed, UTC 1000
    - Initial deadline (for rapporteur summary): 2nd week Thu, UTC 1000

Comeback (2nd week) (2+1)

[R2-2111308](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111308.zip) Summary of [AT116-e][240][Slicing] LS reply on slice list and priority information (CMCC) CMCC discussion Rel-17 NR\_Slice-Core Late

[R2-2111309](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111309.zip) [Draft] Reply LS on Slice list and priority information for cell reselection CMCC LS out Rel-17 NR\_slice-Core To:SA2, RAN3 Cc:CT1

[R2-2111306](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111306.zip) Summary of [AT116-e][241][Slicing] Slice-based cell re-selection algorithm (Ericsson) Ericsson discussion Rel-17 NR\_Slice-Core Late

### 8.8.3 RACH

Including discussion on RAN slicing-specific RACH prioritization impacts that are not discussed as part of the common RACH prioritization agenda (if any)

Including outcome of [Post115-e][242][Slicing] Cell- vs. UE specific slice group signalling (Ericsson)

Web Conf (2nd week Tuesday) (1)

Outcome of [Post115-e][242][Slicing] Cell- vs. UE specific slice group signalling (Ericsson)

[R2-2110702](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110702.zip) [Post115-e][242][Slicing] Cell- vs. UE specific slice group signalling (Ericsson) Ericsson discussion Rel-17 NR\_slice-Core Late

*Proposal 1 RAN2 agrees there are no issues to be solved w.r.t. “Cell- vs. UE specific slice group signalling” in standards,*

*Proposal 2 The solution for how the nw operator configures the following (CN and/or RAN OAM) and potential NGAP impact is left for SA2/RAN3 to discuss:*

*- mapping of slices to slice groups, sent from CN to UE in NAS signalling*

*- broadcast of slice group and its slice specific RACH configuration in SIB (and dedicated from RAN to UE in RRCRelease).*

*Proposal 3 RAN2 to discuss send LS to SA2/RAN3.*

*Proposal 4 RAN2 will use the following assumptions on slice groups and slice-specific RACH configuration in the work on Stage 3 details:*

*1. For slice-specific cell re-selection, one or multiple slice group identities are indicated in SIB of the serving cell. They refer to the slices supported by the serving frequency.*

*2. The same slice groups as used for slice-specific cell re-selection are also used for slice-specific RACH configuration. Slice groups can be configured differently for reselection and RACH.*

*3. In a cell, there may be multiple slice-specific RACH configurations.*

*4. One or more of the slice groups are linked to a slice-specific RACH configuration.*

*5. There may be slice groups that are not linked to a slice-specific RACH configuration (they use the common RACH configuration).*

*6. All slices of a slice group use the slice-specific RACH configuration of the slice group.*

Web Conf (2nd week Tuesday) (TBD)

RAN slicing-specific RACH prioritization impacts that are not discussed as part of the common RACH prioritization agenda:

[R2-2110373](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110373.zip) Slice grouping considerations Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_slice-Core

[R2-2110700](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110700.zip) RACH for RAN slicing enhancement Ericsson discussion Rel-17 NR\_slice-Core

[R2-2110258](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110258.zip) Open issues for slice based RACH configuration CMCC discussion Rel-17 FS\_NR\_slice

[R2-2109435](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109435.zip) Remaining issues on slice specific RACH Qualcomm Incorporated discussion NR\_slice-Core

[R2-2109747](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109747.zip) Considerations on slice based RACH configuration Beijing Xiaomi Software Tech discussion Rel-17

[R2-2110084](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110084.zip) Slice based RACH configuration Apple discussion Rel-17 NR\_slice-Core

[R2-2110438](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110438.zip) Analysis on slice based RACH configuration CATT discussion Rel-17 NR\_slice-Core

[R2-2110591](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110591.zip) Consideration on slice-specific RACH OPPO discussion Rel-17 NR\_slice-Core

[R2-2110648](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110648.zip) Discussion on slice based RACH configuration Huawei, HiSilicon discussion Rel-17 NR\_slice-Core

[R2-2110712](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110712.zip) Remaining issues for slice-specific RACH configurations Nokia, Nokia Shanghai Bell discussion Rel-17 FS\_NR\_slice [R2-2107506](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2107506.zip)

[R2-2111011](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111011.zip) Further consideration on slice specific RACH ZTE corporation, Sanechips discussion Rel-17 NR\_slice-Core

[R2-2111165](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111165.zip) Remaining issues on slice specific RACH prioritization LG Electronics Inc. discussion NR\_slice-Core

### 8.8.4 UE capabilities

This agenda item may use a summary document.

Including discussion on UE capabilities related to RAN2-defined features for RAN slicing.

Web Conf (2nd week) (1)

[R2-2111304](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111304.zip) [204] Summary of agenda 8.8.4: UE capabilities (RAN slicing) Qualcomm discussion Rel-17 NR\_Slice-Core Late

*Proposal 1: Slice based cell reselection and slice based RACH are optional UE features. FFS whether to split slice based RACH into 2 sub-features (slice based RACH resource partitioning and slice based RACH parameters prioritization)*

*Proposal 2: For slice specific cell reselection with slice specific frequency priority provided in SIB, it is specified as optional UE feature without UE radio access capability parameters in Clause 5 of TS 38.306*

*Proposal 3: For slice specific cell reselection with slice specific frequency priority provided in RRC release, RAN2 down-select between the following 2 alternatives:*

*• Alt-1: Introduce a new optional UE capability parameter for it*

*• Alt-2: Include it in the same optional UE feature introduced for SIB*

*Proposal 4: For Slice specific RACH with configuration provided by SIB, it is specified as optional UE feature without UE radio access capability parameters in Clause 5 of TS 38.306*

* ?? Post-meeting email discussion to handle capability details (as per main session agreement, RAN2 should determine the RAN2 feature groups and the capability CRs will be done jointly for all WIs)

[R2-2109627](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109627.zip) UE capability for Slicing enhancement Intel Corporation discussion Rel-17 NR\_slice-Core

[R2-2109436](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109436.zip) Consideration on capability of RAN slicing enhancement Qualcomm Incorporated discussion NR\_slice-Core

[R2-2110259](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110259.zip) Discussion on UE capability for RAN slicing enhancement CMCC discussion Rel-17 FS\_NR\_slice

[R2-2110592](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110592.zip) Consideration on UE capability for Slicing OPPO discussion Rel-17 NR\_slice-Core

[R2-2110649](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110649.zip) Discussion on slice related UE capabilities Huawei, HiSilicon discussion Rel-17 NR\_slice-Core

## 8.20 Extending NR operation to 71GHz

(NR\_ext\_to\_71GHz-Core; leading WG: RAN1; REL-17; WID: RP-211584)

Time budget: 0.5

Tdoc Limitation: 2 tdocs (note that email discussion outcome documents or rapporteur inputs do not count against Tdoc limitations)

Note: RAN2 is to prioritize protocol support of RAN1 design and not on optimizations on items not discussed in RAN1

### 8.20.1 Organizational

Rapporteur input, incoming LS etc.

Email discussions (TBD)

* ?? Is an offline discussion needed to handle the RAN1 RRC parameters during the meeting, do we go for post-meeting email discussion or do we expect input from companies to next meeting?

Post-meeting email discussions (running CRs, TBD if we can start these)

* [Post116-e][21x][71 GHz] Running RRC CR for 71 GHz (Ericsson)

Scope: Create running NR RRC CR for 71 GHz (excluding UE capabilities)

Intended outcome: Running CR

Deadline: Long (should take RAN1#107 input into account if possible)

* [Post116-e][21x][71 GHz] Running MAC CR for 71 GHz (Qualcomm)

Scope: Create running NR MAC CR for 71 GHz

Intended outcome: Running CR

Deadline: Long

* [Post116-e][21x][71 GHz] Running Stage-2 CR for 71 GHz (Nokia)

Scope: Create running NR RRC CR for 71 GHz

Intended outcome: Running CR

Deadline: Long

* [Post116-e][21x][71 GHz] Running UE capability CRs for 71 GHz (Intel)

Scope: Create running UE capability CRs for 71 GHz (RLC RTT value, UE capabilities)

Intended outcome: Running CR

Deadline: Long

### 8.20.2 Protocol impacts of NR operation up to 71 GHz

Including discussion on UP aspects based on RAN1 progress (e.g. RLC RTT, RACH, L2 buffer sizes)

Including discussion on UE capabilities (based on information from RAN1/4, and e.g. field description changes for capabilities that differ between FR2-1 and FR2-2, text to use to to express FR2-x differentiation in the FR1/FR2-diff column of 38.306)

Including discussion on whether any existing features require modifications due to FR2-2 (e.g. IDC, LBT)

Web Conf (2nd week Monday) (1)

UE capabilities:

[R2-2109883](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109883.zip) Further consideration of Capability differentiation between FR2-1 and FR2-2 Intel Corporation discussion Rel-17 NR\_ext\_to\_71GHz-Core

* #1: The below Rel-15 and Rel-16 UE capabilities will be differentiated for FR2-1 and FR2-2:

Rel-16 Power saving: maxBW-Preference-r16, maxMIMO-LayerPreference-r16

Rel-16 DCCA: directMCG-SCellActivation-r16, directMCG-SCellActivationResume-r16, directSCG-SCellActivation-r16, directSCG-SCellActivationResume-r16, idleInactiveNR-MeasReport-r16

Rel-15 IMS voice: voiceOverNR, handoverLTE-5GC, handoverInterF, handoverLTE-EPC

* FFS if any other UE capabilities will be needed

- Apple is fine with P1 but wonders scenarios where UE does FR2-1 to FR2-2 handovers. Do we need to differentiate those? Intel clarifies this is P3.

- Ericsson wonders if we need to differentiate DCCA for FR2-x? Intel explains that these are differentiated between FR1 and FR2, so adopted the same principle. Apple thinks the differentiation is needed.

- Ericsson wonders if we can reuse existing UAI information for power saving for FR2-2?

- Samsung thinks we don't need to differentiate most of these. For BW preference, FR2-2 might not be sufficient but could be fine.

- vivo wonders if we should differentiate secondary DRX? Intel thinks this was not differentiated before so not sure it's needed. If it's differentiated then it could done now. QC thinks we shuld consider it for FR1 and FR2-1. Then we can define new capability for FR2-2. Intel indicates uit's not differentiated now.

- Huawei would like to discuss first whether we differentiate. QC thinks we should differentiate and not continue discussing.

*Proposal#2: For an existing or new Rel-17 UE capability (yyyy-r17) that required further FR2-1 and FR2-2 differentiation, a new IE specifically for FR2-2 (xxParametersFR2-2) is included in the existing per UE IE (XXParameters) as shown below, where xx/XX can be mac-/MAC-, phy-/PHY-, measAndMob/MeasAndMob, ims-/IMS- and powSav-/PowSav- associated with per UE capabilities:*

* #2: For an existing capabiltiy that required further FR2-1 and FR2-2 differentiation, a new IE specifically for FR2-2 (xxParametersFR2-2) is included in the existing per UE IE (XXParameters) as shown in [R2-2109883](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109883.zip), where xx/XX can be mac-/MAC-, phy-/PHY-, measAndMob/MeasAndMob, ims-/IMS- and powSav-/PowSav- associated with per UE capabilities.
* For a new Rel-17 capability, align with the general decision for Rel-17 capabilities (see main session discussion)

- Ericsson thinks this is similar to the general UE capability discussion (using per-band UE capability for extending signalling). Intel clarifies this is discussed but not decided yet.

* #3: For inter-frequency handover between FR1 and FR2-2 and between FR2-1 and FR2-2, additional per UE capabilities (mandatory with UE capability) below may need to be introduced if handoverInterF requires further FR2-1 and FR2-2 differentiation: handoverFR1-FR2-2-r17, handoverFR2-1-FR2-2-r17

- Apple supports P3.

* #4: If a new UE capability introduced for FR2-2 is also applicable to FR2-1 and/or FR1 and the UE capability is per band, this can be expressed in the field description of the UE capability as “This capability is also applicable to FR1 and FR2-1”.
* #5: For UE capability that has to be per UE, “FR1-FR2 Diff” column can be used to express the need of the FR2-1 and FR2-2 differentiation by adding ‘(include FR2-2)’ on top of ‘Yes’ or ‘FR2 only’
* Can revisit these if practical problems are found

P4

- Nokia wonders if there could be new capability for FR2-2 that would require separate capability for FR1. Intel clarifies this is similar as we did for NR-U.

- Ericsson wonders if this needs to be linked to FR2-2 if it's per-band?

P5

- Ericsson thinks we could use "FR2-2-Diff" instead of "include FR2-2". Huawei thinks whether we need a rule in P5 or just use a NOTE? Intel clarifies this is not a new column and is similar to a NOTE. vivo supports P5.

*Proposal#6: For RAN2 determined UE capabilities from other Rel-17 WI which may also need FR2-1 and FR2-2 differentiation:*

*A) Who will do it: Each Rel-17 WI will have to discuss the capabilities that need FR2-1 and FR2-2 differentiation this during their WI UE capability discussion on top of FR1/FR2 differentiation.*

*B) How to do it: In the same way as proposed in Proposal#2*

*Proposal#7: Communicate the Proposal#6 to RAN2 Main session*

[R2-2109605](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109605.zip) Discussion about capability issues of Ext 52-71GHz Huawei, HiSilicon discussion Rel-17 NR\_ext\_to\_71GHz-Core

Web Conf (2nd week Monday) (2)

UP aspects and L2 buffer:

[R2-2109884](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109884.zip) UP impact on NR operation for upto 71GHz Intel Corporation discussion Rel-17 NR\_ext\_to\_71GHz-Core

*Observation#1: RAN1 is discussing both the RO configuration and RA-RNTI/MsgB-RNTI together for 480kHz and 960KHz SCS.*

*Proposal#1: Introduce the RLC RTT vales for SCS480kHz and 960kHz as 20ms and captured in the table:*

*Proposal#2: Keep the L2 buffer size definition as it reflects the upper bound of the L2 buffer size requirement.*

*Proposal#3: RAN2 discuss whether UE capability is needed to address concern on too high L2 buffer size requirement.*

*Proposal#4: RA-RNTI/MsgB-RNTI issue for 480kHz SCS and 960kHz SCS can wait further for RAN1 conclusion.*

[R2-2110339](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110339.zip) Impact of higher SCS on DRX parameters Samsung discussion Rel-17 NR\_ext\_to\_71GHz-Core

*Proposal 1: RAN2 to keep the current DRX timer values for now, but it can be revisited for performance optimization after high priority issues are resolved.*

Above 2 discussed jointly

RLC impacts

*Proposal#1: Introduce the RLC RTT vales for SCS480kHz and 960kHz as 20ms and captured in the table:*

- Ericsson thinks this is not yet concluded in RAN1. Suggest to use "baseline". Lenovo supports.

- LGE thinks RAN1 thinks 120 kHz is the baseline and prefers Intel proposal. vivo thinks P1 but ould need RLC running CR.- Samsung and Huawei agree.

* #1: Introduce the RLC RTT vales for SCS480kHz and 960kHz as 20ms as baseline. This will be part of TS38.306. Can include this in the running CR for 38.306.

MAC impacts

* #4: RA-RNTI/MsgB-RNTI issue for 480kHz SCS and 960kHz SCS can wait further for RAN1 conclusion.
* 1: RAN2 to keep the current DRX timer values for now, but it can be revisited for performance optimization after high priority issues are resolved.

L2 buffer size

* #2: Keep the L2 buffer size definition as it reflects the upper bound of the L2 buffer size requirement.

*Proposal#3: RAN2 discuss whether UE capability is needed to address concern on too high L2 buffer size requirement.*

- QC thinks we need to discuss these together. Would like scaling for L2 buffer. LGE agrees with QC and thinks scaling is needed. Apple thinks P2 is needed but P3 may not be needed. Samsung supports P2 and UE capability for L2 buffer size. But thinks we should keep current definition. Noticed the value could be up to 40 Gbytes so capability is needed.

- Nokia is fine with P2 but thinks P3 may not be so clear. How much would it impact the data transfer speed? Do we have capability of scaling factor? Ericsson agrees. Huawei thinks we could just use two categories for UEs.

*Proposal#3: Introduce UE capability to address concern on too high L2 buffer size requirement.*

* #3: FFS whether UE capability is needed to address concern on too high L2 buffer size requirement. Companies should bring analysis on this to next meeting.

[R2-2110362](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110362.zip) RA-RNTI and MsgB-RNTI calculations for FR2-2 Sony discussion Rel-17 NR\_ext\_to\_71GHz-Core

[R2-2110581](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110581.zip) Discussion on UP impacts ZTE Corporation, Sanechips discussion Rel-17

[R2-2110338](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110338.zip) Discussion on L2 buffer size Samsung discussion Rel-17 NR\_ext\_to\_71GHz-Core

[R2-2111158](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111158.zip) Consideration on L2 buffer size LG Electronics Inc. discussion Rel-17 NR\_ext\_to\_71GHz-Core

Web Conf (2nd week Monday) (3)

RRC and MAC impacts (including LBT):

[R2-2109909](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109909.zip) Aspects of CA operation and protocol impact Ericsson discussion Rel-17 NR\_ext\_to\_71GHz-Core

*Observation 1 Up to Rel-16, CA operation supports the scenarios including intra-band CA, inter-band CA and inter band CA between FR1 and FR2.*

*Observation 2 Up to Rel-16, CA operation supports any combination of the SCS in CCs.*

*Observation 3 It is straightforward to assume the same operation scenarios as in the current releases for CA operation in 71 GHz, i.e.,*

*a. Intra-band CA*

*b. Inter-band CA*

*c. Inter-band CA between FR1 and FR2.*

*Observation 4 Same as in the current releases, CA operation in 71 GHz supports any combination of the SCS in CCs.*

*Observation 5 For CA operation in 71 GHz, the potential spec changes would be only required for application of the new SCS (i.e., 480 kHz and 960 kHz).*

*Observation 6 Determination of RLC RTT is largely depending on RAN1 discussions.*

*Observation 7 The RLC configuration is per logical channel (LCH), which is already able to give sufficient configuration granularity for RLC.*

*Observation 8 The existing LCP procedure at UE is already feasible to map uplink services/LCHs to different serving cells.*

*Observation 9 It is up to gNB’s implementation to map different downlink LCHs towards the same UE to different serving cells.*

*Observation 10 The parameters and timers in the RLC configuration of each logical channel can be chosen by the gNB to fit the properties of its underlying serving cell.*

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

*Proposal 1 For CA operation in 71 GHz, the potential spec changes would be only required for adoption of the new SCS (i.e., 480 kHz and 960 kHz).*

*Proposal 2 The existing PDCP SN space is sufficient to cope with the extreme cases in 71 GHz, therefore no spec changes are foreseen for the existing PDCP SN space.*

*Proposal 3 RAN2 to adopt the RLC RTT of 120 kHz as a baseline for 480 and 960 kHz SCS.*

*Proposal 4 RAN2 to assume the existing formulas of L2 buffer size to be reused for NR operation with 480 and 960 kHz SCS.*

*Proposal 5 For CA operation in 71 GHz using higher SCS (i.e., 480 kHz and 960 kHz), no spec impact is foreseen for handling RLC feedback.*

*Proposal 6 For 480/960 kHz PRACH, reuse the RA-RNTI expressions from Rel-15/16, with the additional statement that for 480/960 kHz PRACH, t\_id should be determined based on a subcarrier spacing of 120 kHz.*

*Proposal 7 RAN2 to down-prioritize optimization of consistent LBT failure handling for NR operation with 71 GHz in Rel-17.*

[R2-2109604](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109604.zip) Discussion about RAN2 impacts of Ext 52-71GHz Huawei, HiSilicon discussion Rel-17 NR\_ext\_to\_71GHz-Core

*Observation 1: RAN1 discussion on RO density and gap between consecutive ROs may have impacts on the calculation of RA-RNTI/MSGB-RNTI. Further progress depends on RAN1.*

*Proposal 1: New SCS values, i.e. 480 KHz and 960 KHz, are added to the IE SubcarrierSpacing.*

*Proposal 2: For one field uses the IE SubcarrierSpacing, and restrictions applicable for different frequency ranges exist, the legacy restrictions applicable to FR2 shall be modified as applicable to FR2-1 and new restrictions applicable to FR2-2 shall be added.*

*Proposal 3: RAN2 discuss whether new values shall be added to maxPUSCH-Duration, e.g. 0.0313ms, 0.0156ms, 0.01ms, etc.*

*Proposal 4: RAN2 discuss whether new values for DRX parameters shall be introduced, for example, up to 224 can be defined for drx-HARQ-RTT-TimerDL and drx-HARQ-RTT-TimerUL.*

*Proposal 5: RLC RTT values for SCS 480 KHz and 960 KHz can be defined as the same value with that for SCS 120 KHz, i.e. 20ms.*

*Proposal 6: The SCSs are divided into two groups and one specific SCS group includes SCS 480 KHz and 960 KHz. If the SCS(s) supported by a given band combination contains any SCS within this specific SCS group, the RLC RTT corresponds to the supported smallest SCS within the group.*

*Proposal 7: The IE subCarrierSpacingCommon in MIB for FR2-2 will be repurposed, and the detailed purpose depends on RAN1’s input.*

*Proposal 8: RAN2 discuss whether consistent LBT failure procedure shall involve directional LBT result.*

[R2-2109910](C:\\Users\\terhentt\\Documents\\Tdocs\\RAN2\\RAN2_116-e\\R2-2109910.zip) RRC impact due to FR2-1 and FR2-2 distinction Ericsson discussion Rel-17 NR\_ext\_to\_71GHz-Core

*Observation 1 As the carrier bandwidth for SCS-SpecificCarrier is defined in number of PRBs which scales with the SCS, no changes are expected to support the extended channel bandwidths.*

*Observation 2 Changes regarding inter-node RRC messages depend on the modifications that are specified for RRC messages exchanged between the gNB and the UE and can thus be discussed when stage-3 work has further progressed.*

*Proposal 1 For the common subcarrier spacing in MIB, clarify that subcarrier spacing is the same as that for the corresponding SSB.*

*Proposal 2 Use the spare values in the SubcarrierSpacing IE to introduce the new SCS values {480 kHz, 960 kHz}.*

*Proposal 3 For SCS field descriptions, clarify that 60 kHz and 120 kHz are applicable for FR2-1 (instead of FR2) and 120 kHz, 480 kHz, and 960 kHz are applicable for FR2-2.*

*Proposal 4 As new maximum bandwidths depending on the SCS configuration are introduced for FR2-2, corresponding fields (e.g. ReducedAggregatedBandwidth and SupportedBandwidth) that are defined in the unit of MHz need to be extended for FR2-2 to support bandwidths beyond 400 MHz. Details are left for Stage-3.*

*Proposal 5 Several FR2 related configurations, e.g. measurement reports/gaps, uplink (power) configurations, and UE capability information for CA, IAB, and SL, may be specific to FR2-2 and can wait for further RAN1/RAN4 progress.*

Discussion

Above 3 contributions discussed jointly

PDCP impacts (Ericsson)

* 2 The existing PDCP SN space is sufficient to cope with the extreme cases in 71 GHz, therefore no spec changes are foreseen for the existing PDCP SN space.

- Ericsson explains that maximum data rate is already ~450 GBps with current 18-bit PDCP SN.

RLC impacts (Ericsson, Huawei)

*Proposal 3 RAN2 to adopt the RLC RTT of 120 kHz as a baseline for 480 and 960 kHz SCS.*

*Proposal 5: RLC RTT values for SCS 480 KHz and 960 KHz can be defined as the same value with that for SCS 120 KHz, i.e. 20ms.*

*Proposal 6: The SCSs are divided into two groups and one specific SCS group includes SCS 480 KHz and 960 KHz. If the SCS(s) supported by a given band combination contains any SCS within this specific SCS group, the RLC RTT corresponds to the supported smallest SCS within the group.*

*Proposal 5 For CA operation in 71 GHz using higher SCS (i.e., 480 kHz and 960 kHz), no spec impact is foreseen for handling RLC feedback.*

RRC impacts: New SCS values (Ericsson, Huawei)

*Proposal 7: The IE subCarrierSpacingCommon in MIB for FR2-2 will be repurposed, and the detailed purpose depends on RAN1’s input.*

*Proposal 1 For the common subcarrier spacing in MIB, clarify that subcarrier spacing is the same as that for the corresponding SSB.*

*Proposal 1: New SCS values, i.e. 480 KHz and 960 KHz, are added to the IE SubcarrierSpacing.*

*Proposal 2 Use the spare values in the SubcarrierSpacing IE to introduce the new SCS values {480 kHz, 960 kHz}.*

*Proposal 3 For SCS field descriptions, clarify that 60 kHz and 120 kHz are applicable for FR2-1 (instead of FR2) and 120 kHz, 480 kHz, and 960 kHz are applicable for FR2-2.*

*Proposal 2: For one field uses the IE SubcarrierSpacing, and restrictions applicable for different frequency ranges exist, the legacy restrictions applicable to FR2 shall be modified as applicable to FR2-1 and new restrictions applicable to FR2-2 shall be added.*

*Proposal 4 As new maximum bandwidths depending on the SCS configuration are introduced for FR2-2, corresponding fields (e.g. ReducedAggregatedBandwidth and SupportedBandwidth) that are defined in the unit of MHz need to be extended for FR2-2 to support bandwidths beyond 400 MHz. Details are left for Stage-3.*

RRC impacts: Other (Huawei, Ericsson)

*Proposal 3: RAN2 discuss whether new values shall be added to maxPUSCH-Duration, e.g. 0.0313ms, 0.0156ms, 0.01ms, etc.*

*Proposal 5 Several FR2 related configurations, e.g. measurement reports/gaps, uplink (power) configurations, and UE capability information for CA, IAB, and SL, may be specific to FR2-2 and can wait for further RAN1/RAN4 progress.*

*Proposal 1 For CA operation in 71 GHz, the potential spec changes would be only required for adoption of the new SCS (i.e., 480 kHz and 960 kHz).*

MAC impacts (Ericsson, Huawei)

*Proposal 6 For 480/960 kHz PRACH, reuse the RA-RNTI expressions from Rel-15/16, with the additional statement that for 480/960 kHz PRACH, t\_id should be determined based on a subcarrier spacing of 120 kHz.*

*Proposal 4: RAN2 discuss whether new values for DRX parameters shall be introduced, for example, up to 224 can be defined for drx-HARQ-RTT-TimerDL and drx-HARQ-RTT-TimerUL.*

L2 buffer size (Ericsson)

*Proposal 4 RAN2 to assume the existing formulas of L2 buffer size to be reused for NR operation with 480 and 960 kHz SCS.*

Consistent LBT failure (Ericsson, Huawei)

*Proposal 7 RAN2 to down-prioritize optimization of consistent LBT failure handling for NR operation with 71 GHz in Rel-17.*

*Proposal 8: RAN2 discuss whether consistent LBT failure procedure shall involve directional LBT result.*

[R2-2110016](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110016.zip) High layer impacts of beyond 52.6GHz OPPO discussion [R2-2107255](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2107255.zip)

[R2-2110557](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110557.zip) FR2-2 considerations Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_ext\_to\_71GHz-Core

[R2-2109444](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109444.zip) Discussion on Consistent LBT Failure Detection for Ext 71GHz vivo discussion Rel-17 NR\_ext\_to\_71GHz-Core [R2-2107061](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2107061.zip)

[R2-2111159](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111159.zip) Consideration on potential LBT impact LG Electronics Inc. discussion Rel-17 NR\_ext\_to\_71GHz-Core

[R2-2110226](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110226.zip) Considerations on potential LBT impacts Lenovo, Motorola Mobility discussion Rel-17 NR\_ext\_to\_71GHz-Core

[R2-2111101](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111101.zip) Impact analysis of FR-2 on MAC and RRC Qualcomm Incorporated discussion Late

RSSI impacts:

[R2-2110582](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110582.zip) Higher SCS and RSSI impact on RRC ZTE Corporation, Sanechips discussion Rel-17

*Proposal 1: Spare values in SubcarrierSpacing are used to define new introduced 480kHz and 960kHz SCS.*

*Proposal 2: For FR2-2, new SCSs should be added as reference SCS for RSSI measurement.*

*Proposal 3: For the QCL Type-D of L3-RSSI measurement, if gNB configures the beams, RSSI measurement result per beam should be reported.*

*Proposal 4: RSSI measurement result per beam should be linear average of sample values from the physical layer.*

*Proposal 5: Event triggered reporting may be considered to use for L3-RSSI measurement in FR2-2, such as I1 event.*

# 9 Rel-17 EUTRA Work Items

## 9.3 EUTRA R17 Other

Time budget: 0 TU

Tdoc Limitation: No limitation but documents that are only sourced by one company may be deprioritized.

Email max expectation: 2 threads

LTE-specific TEI17 documents can be submitted under this agenda but new TEI17 proposals that are not source by at least two companies and two operators may be deprioritized.

Including outcome of [Post115-e][203][TEI17] Event triggered logged MDT for LTE (Qualcomm)

UPIP LSs (note that no Rel-17 WI on UPIP was agreed in RAN#93e so RAN2 work is on hold)

[R2-2109377](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109377.zip) LS Reply on Supporting UP Integrity Protection Policy Handling for Interworking from 5GS to EPS (S2-2106974; contact: Huawei) SA2 LS in Rel-17 FS\_UP\_IP\_Sec To:SA3 Cc:RAN, CT, RAN2, RAN3, CT1, CT4

* Noted (RAN2 only in cc)

[R2-2109379](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109379.zip) LS on User Plane Integrity Protection for eUTRA connected to EPC (S3-213272; contact: Qualcomm) SA3 LS in Rel-17 To:RAN3 Cc:RAN2, CT1, CT4, SA2

* Noted (RAN2 only in cc)

Web Conf (1st week Friday) (1+4)

Outcome of [Post115-e][203][TEI17] Event triggered logged MDT for LTE (Qualcomm)

[R2-2109924](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109924.zip) [Post115-e][203][TEI] Discussion on details of event-triggered logged MDT for LTE Qualcomm Incorporated report Rel-17 TEI17

*Observation 1: No objections to introducing event-triggered logged MDT for LTE taking event L1 and OutOfService from NR as baseline, with additional changes as identified further below.*

*Observation 2: LTE CRs should include the NR change (first change in 5.5a.3.2) agreed in CR#2802,* [*R2-2108968*](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2108968.zip)*.*

*Observation 3: Since the two features may have different implementations and availability of testing opportunities, it seems reasonable to have two separate optional capabilities with signalling to indicate support of event L1 and OutOfService.*

*Observation 4: If there are further enhancements related to event-triggered logged MDT in NR in upcoming meetings, those could be ported-back/adopted to LTE based on further case-by-case discussion.*

*Observation 5: Preferable to have no more than one CR per impacted spec. So, some CR merging is needed.*

*Observation 6: One FFS needs to be resolved in 36.331 CR. Other CRs (for 36.304, 36.306, 37.320) should be stable.*

* 1: Introduce event-triggered logged MDT for LTE taking event L1 and OutOfService from NR as baseline.
* 2: Introduce two separate optional capabilities with signalling to indicate support of event L1 and OutOfService.
* 3: Further enhancements related to event-triggered logged MDT in NR in upcoming meetings may be ported-back/adopted to LTE based on further case-by-case discussion.

*Proposal 4: RAN2 to discuss and decide whether all zeros in servCellIdentity and measResultServCell can implicitly indicate unavailability of the servCellIdentity and measResultServCell or to introduce an explicit flag.*

- QC explains that in out of coverage, serving cell results may not be available. So we need to decide what UE puts in those. Could put all zeros.

- Ericsson explains both solutions work but prefers explicit flag.

- Huawei thinks that TCE can solve the issue. Ericsson has concern that UE should not log other PLMN information and report it to another PLMN. Shouldn't change that principle.

- Huawei prefers TCE but can accept the all zeros-approach.

* 4: Use all zeros in servCellIdentity and measResultServCell to implicitly indicate unavailability of the servCellIdentity and measResultServCell.

*Proposal 4: Introduce an explicit flag to indicate unavailability of the servCellIdentity and measResultServCell (and do not specify what UE puts to the fields).*

*Proposal 4: Do nothing (assume TCE handles this)*

* 5: Agree the CRs in principle in [R2-2110643](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110643.zip) (36.304), [R2-2110644](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110644.zip) (36.306), [R2-2109717](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109717.zip) (37.320)
* Revise CR in [R2-2109715](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109715.zip) (36.331) based on conclusion of proposal 4 (delete square brackets but leave the content inside them and remove editor's note) in [R2-2111321](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111321.zip) under [205] and agree to it in principle.

[R2-2109715](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109715.zip) Introduction of event-based trigger for LTE MDT logging KDDI Corporation, CMCC, Telecom Italia, Samsung, Ericsson, China Unicom, Huawei, HiSilicon, Qualcomm Inc. CR Rel-17 36.331 16.6.0 4724 - B TEI17

* Revised in in [R2-2111321](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111321.zip) under [205]

[R2-2111321](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111321.zip) Introduction of event-based trigger for LTE MDT logging KDDI Corporation, CMCC, Telecom Italia, Samsung, Ericsson, China Unicom, Huawei, HiSilicon, Qualcomm Inc. CR Rel-17 36.331 16.6.0 4724 1 B TEI17

* [205] To be endorsed over email

[R2-2109717](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109717.zip) Introduction of event-based trigger for LTE MDT logging KDDI Corporation, CMCC, Telecom Italia, Samsung, Ericsson, China Unicom, Huawei, HiSilicon, Qualcomm Inc. CR Rel-17 37.320 16.6.0 0111 - B TEI17

* Agreed in principle (to be resubmitted to February meeting for agreement)

[R2-2110643](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110643.zip) Introduction of event-based trigger for LTE MDT logging Huawei, HiSilicon, Qulacomm Inc., KDDI Corporation CR Rel-17 36.304 16.5.0 0834 - B TEI17

* Agreed in principle (to be resubmitted to February meeting for agreement)

[R2-2110644](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110644.zip) Introduction of event-based trigger for LTE MDT logging Huawei, HiSilicon, Qualcomm Inc., KDDI Corporation CR Rel-17 36.306 16.6.0 1830 - B TEI17

* Agreed in principle (to be resubmitted to February meeting for agreement)

Web Conf (1st week Friday) (1+2)

UE Height reporting for LTE MDT (new)

[R2-2109718](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109718.zip) UE’s height location measurement for LTE MDT KDDI Corporation, Ericsson, China Unicom, Samsung, Qualcomm Inc. discussion

* Revised in [R2-2111260](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111260.zip)

[R2-2111260](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111260.zip) UE’s height location measurement for LTE MDT KDDI Corporation, Ericsson, China Unicom, Samsung, Qualcomm Inc., Telecom Italia discussion

*Proposal 1: RAN2 agree to develop a solution to indicate UE’s height to eNB for MDT purpose, at least for immediate MDT and logged MDT.*

- Nokia wonders what the intention is? Do we continue discussing how to do it in the next meeting? KDDI explains alt.2 would be the way to go, same as in NR. Would like to discuss details over email.

- QC is fine with P1, P2 is not so clear as it could make the work larger and this can be done in Rel-18. For P3, both can work. Ericsson agrees for P1/2 but thinks Alt.2 is better in P3. Huawei agrees with QC and prefers alt.2 for P3.

* There is support to do UE height indication only for immediate/logged MDT (using *uncompensatedBarometricPressure* as standardized in NR) in TEI17. Proponents should submit CRs to next meeting for final decision.

*Proposal 2: RAN2 discuss whether to introduce UE’s height to RACH Report and RLF report.*

*Proposal 3: RAN2 discuss Alt1 and Alt2 for the solution and decide which alternative to be adopted.*

*Alt1: Reuse heightUE standardized for UAV in LTE*

*Alt2: Adopt uncompensatedBarometricPressure standardized in NR*

*Proposal 4: RAN2 discuss what should be done under TEI17 and what can be postponed to Rel-18.*

NR-U-related RSSI/CO measurement (already discussed in RAN2#115e, with CRs requested to this meeting to make decision):

[R2-2110080](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110080.zip) Addition of NR-U RSSI/CO measurement UE capability Apple, xiaomi, vivo CR Rel-17 36.331 16.6.0 4729 - F NR\_unlic-Core, TEI17

* Revised in [R2-2111462](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111462.zip)

[R2-2110081](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2110081.zip) Addition of NR-U RSSI/CO measurement UE capability Apple, xiaomi, vivo CR Rel-17 36.306 16.6.0 1827 - F NR\_unlic-Core, TEI17

* Revised in [R2-2111463](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111463.zip)

[R2-2111462](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111462.zip) Addition of NR-U RSSI/CO measurement UE capability Apple, xiaomi, vivo, Lenovo, Motorola Mobility, Ericsson CR Rel-17 36.331 16.6.0 4729 - F NR\_unlic-Core, TEI17

*NR-U RSSI/CO measurement UE capability is only carried in UE-CapabilityRAT-ContainerList, which is not required for eNB to decode. However, in TS36.331, NR-U RSSI measurement configuration is enabled. The problem then is eNB cannot make such configuration to UE without knowing UE capability.*

*It was agreed in RAN2 #113 meeting to introduce a new UE capability in TEI17 on this matter.*

- QC indicates not all comments have been considered and CR still has some issues (BOOLEAN with optional, "each supported band" on per-band specific field description). Apple is fine to discuss the comments offline.

- Nokia is fine to agree even if this is not the most important issue. Corrects omission we did before. Should also take comments into account.

* Discuss over offline [206] (Apple). Should try to come up with endorsable CR.
* Revised in [R2-2111319](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111319.zip)

[R2-2111319](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111319.zip) Addition of NR-U RSSI/CO measurement UE capability Apple, xiaomi, vivo, Lenovo, Motorola Mobility, Ericsson CR Rel-17 36.331 16.6.0 4729 1 F NR\_unlic-Core, TEI17

* [206] To be agreed in principle (to be resubmitted to February meeting for agreement)

[R2-2111463](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111463.zip) Addition of NR-U RSSI/CO measurement UE capability Apple, xiaomi, vivo, Lenovo, Motorola Mobility, Ericsson CR Rel-17 36.306 16.6.0 1827 - F NR\_unlic-Core, TEI17

* Revised in [R2-2111320](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111320.zip)

[R2-2111320](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111320.zip) Addition of NR-U RSSI/CO measurement UE capability Apple, xiaomi, vivo, Lenovo, Motorola Mobility, Ericsson CR Rel-17 36.306 16.6.0 1827 1 F NR\_unlic-Core, TEI17

* [206] To be agreed in principle (to be resubmitted to February meeting for agreement)

Email discussions ([206])

* [AT116-e][206][LTE] Addition of NR-U RSSI/CO measurement UE capability (Apple)

Scope:

* + - Discuss comments to [R2-2111462](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111462.zip) and [R2-2111463](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111463.zip) to come up with endorsable CRs.

Intended outcome:

* + - Endorsed CRs in [R2-2111319](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111319.zip) (revision of [R2-2111462](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111462.zip)) and [R2-2111320](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111320.zip) (revision of [R2-2111463](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2111463.zip))

Deadline for providing comments and CR finalization:

* + - Initial deadline (for company feedback): 2nd week Thu, UTC 0900
    - Initial deadline (for final CRs): 2nd week Thu, UTC 1600

## 9.4 NR and EUTRA Inclusive language

Time budget: N/A

RAN coordinator for inclusive language is Gino Masini (Ericsson).

CRs were endorsed/agreed-in-principle at R2#112-e. Final approval is expected when R17 TSes are to be created and at that point CRs need to be updated towards latest TS version and submitted again.

Including any updates to the RAN2-endorsed inclusive language CRs

Inclusive language LS from RAN4:

[R2-2109357](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109357.zip) LS on Inclusive Language Review Status and Consistency Check (R4-2115067; contact: Ericsson) RAN4 LS in Rel-17 TEI17 To:RAN Cc:RAN2, RAN3

* Noted (RAN2 only in cc)

Inclusive language LS from RAN3 - aligned with RAN2 terminology

[R2-2109338](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_116-e\R2-2109338.zip) Reply LS on Inclusive Language for ANR (R3-214289; contact: Ericsson) RAN3 LS in Rel-17 TEI17 To:SA5, RAN2 Cc:RAN, SA, CT

* Noted (aligned with RAN2 teminology)

- Lenovo wonders when do we submit the final CRs on inclusive language? In February?

* Final CRs on inclusive language to be submitted to February meeting (by specifcation rapporteurs)