3GPP TSG-RAN WG2 Meeting #113 electronic R2-2101952

Online, January 25th - February 5th, 2021

**Agenda item: 10.2**

**Source: Vice Chairman (ZTE Corporation)**

**Title: Report from Break-out session on R16 eMIMO, CLI, PRN, RACS and R17 NTN and REDCAP**

**Document for: Approval**

General

Recording of voice or video at meetings is not used in 3GPP. This applies also to this e-Meeting. At this e-Meeting, no specific actions are taken to prevent the recording of web conferences. Companies that have concerns related to recordings, if any, may express those by email in the main meeting organizational thread [AT113-e][000]

Organizational

1. For R16 items, summary discussion papers might be used during the e-meeting (as indicated in the meeting notes). For R17 items, no summary discussion papers will be used at this meeting.
2. All organization emails and notes will be shared over the following email discussion throughout the two meeting weeks:

* [AT113-e][100] ****Organizational - eMIMO, CLI,PRN,RACS, NTN, REDCAP session (RAN2 VC)****

Scope:

* + - Share plans for the meeting and list of ongoing email discussions for the sessions related to eMIMO, CLI and other NR R1 WIs Corrections, PRN, RACS, NTN and REDCAP
    - Share meetings notes and agreements for review and endorsement

Schedule/Plan

|  |  |  |  |
| --- | --- | --- | --- |
| **Time Zone UTC** | **Web Conference R2 - Main** | **Web Conference R2 - BO1** | **Web Conference R2 - BO2** |
| **Monday** |  |  |  |
| 12:45 – 13:55 | NR15 NR16 NR17 Main session (Johan)  Q&A  [8.17] R17 handling (no tdoc)  [6.1.1][6.1.2] Initial discussions  [6.15] DC location reporting  [6.16] Overheating stop, RRC processing time w segm (if time) | NR16 SONMDT (HuNan)  -only 6.10.3 | LTE17 IoT (Brian)  Initial treatment of summary documents an d scoping of email discussions.  9.1.1 Organizational  9.1.2 measurements + RLF  9.1.3 carrier selection |
| 13:55 – 15:05 | NR17 Multicast (Johan)  [8.1.1] Stage-2 CR  [8.1.2.1] email disc UP reliability  [8.1.3] email disc Deliv. mode 2 | NR16 DCCA (Tero)  - 6.8.1: LSs from RAN1/4, miscellaneous corrections  - 6.8.3: Email discussion [255] outcome  - 6.8.2: TCI state for direct SCell activation  - Other corrections in 6.8.2 (if time allows) | NR17 NTN (Sergio)  - 8.10.1: LSs and report from  [Post112-e][150]  - reports from [Post112-e][151][152][153] |
| 15:05 – 16:15 | NR16 V2X (Kyeongin)  6.4.1, 6.4.2  6.4.4 (if we still have time) | NRLTE16 MOB (Tero)  - 6.7.2: Email discussion [254] outcome  - 6.7.1/7.4.2: LS on SUL during DAPS  - Other 7.4.2 topics (if time allows) | NR17 IoT NTN  [9.2.1], [9.2.2], [9.2.3] as far as time allows. |
| **Tuesday** |  |  |  |
| 12:45 – 13:55 | NR17 RAN Slicing SI (Tero)  - 8.8.1: Outcomes of [252] and [253]  - 8.8.3: Slice-specific RA support, MO vs. MT  - 8.8.2: Broadcasting of slice information | NR17 RedCap SI (Sergio)  - 8.12.1  - reports from [Post112-e][154][155]  - 8.12.2 (if time allows) | NR17 Sl enh (Kyeongin)  8.15.1, 8.15.2.1 |
| 13:55 – 15:05 | NR17 Multi-SIM (Tero)  - 8.3.1: RAN3 LS on multi-SIM  - 8.3.2: Solution alternatives, NAS vs. RRC  - 8.3.3: Outcome of [256], Busy indication | NR17 Small Data Enh (Diana)  - 8.6.1: Outcome of [POST112-e][550] and [551]  - 8.6.3: Control plane aspects | NR17 SL Relay SI (Nathan)  - 8.7.1 Organizational  - 8.7.2.1 L2  - 8.7.2.2 L3 |
| 15:05 – 16:15 | NR17 QoE SI (Johan) | NR17 IIOTURLLC (Diana)  - 8.5.2: Summary in [507] (30min)  - 8.5.4: Summary in [506] (30 min)  - 8.5.3: Summary in [506] (10min) | NR17 Pos SI (Nathan)  - 8.11.1 Organizational  - 8.11.2.1 Latency  - 8.11.2.2 Accuracy/efficiency |
| **Wednesd** |  |  |  |
| 04:45 – 06:15 | NR17 ePowSav (Johan) | LTE16e (Tero) - 4.5: Rel-8 S1 handover issue, topics postponed in RAN2#112e  - 7.1.1: DRX cycle correction  - 7.5: Fallback definition, UDC correction  - 9.3: SCell tracking attack (GSMA LS)  - Other topics in 4.5 or 7.5 (if time allows) | NR16 CP items (Sergio) - 6.12  NR16 R1 items and eMIMO (Sergio) - 6.14 |
| **Thursday** |  |  |  |
| 04:45 – 06:15 | NR16 V2X (Kyeongin)  6.4.3, 6.4.4  Comebacks (if needed) | NR17 DCCA (Tero)  - 8.2.2: Random access and TAT, MAC vs. RRC signalling, impacts to RAN1/4, MN/SN control of (de)activation  - 8.2.3: Leftovers from RAN2#112e, impacts to RAN3 signalling, CPAC execution | LTE16e IoT (/Brian)  4.1  7.3 |
| **Friday** |  |  |  |
| 04:45 – 06:15 | NR17 eIAB (Johan)  [8.4.1],  [8.4.3],  [8.4.2], | NR17 SONMDT (HuNan)  8.13.2  8.13.3  8.13.4: Only email discussion and summary | LTE16e IoT (Emre)  4.2  7.2 |

|  |  |  |  |
| --- | --- | --- | --- |
| **Time Zone UTC** | **Web Conference R2 - Main** | **Web Conference R2 - BO1** | **Web Conference R2 - BO2** |
| **Monday** |  |  |  |
| 12:45 – 13:55 | NR16 IIOT (Johan)  Email CB [024], general | NRLTE16 MOB (Tero)  - Outcome of [210]  - Outcome of [211]  - Outcome of [212]  - Other topics as needed and time allows | LTE17 IoT (Brian)  Email discussion outcomes.  9.1.2 measurements + RLF  9.1.3 carrier selection |
| 13:15 – 16.15: NR17 Multicast (Johan)  [8.1.3] + RRC state disc, [8.1.2.4], [8.1.2.3], UP Arch |
| 13:55 – 15:05 | NR16 DCCA (Tero)  - Outcome of [220]  - Outcome of [221]  - Outcome of [222] (if needed)  - Other topics as needed and time allows | NR16 Pos (Nathan)  - Email checkpoint for issues with 4.4 and 5.5  - 6.6 Rel-16 positioning |
| 15:05 – 16:15 | NR16 (Diana), Possibly delayed start if required by previous session. | NR16 SONMDT (HuNan) |
| **Tuesday** |  |  |  |
| 12:45 – 13:55 | NR17 RAN Slicing SI and NR17 Multi-SIM (Tero)  - Outcome of [240] (if assigned)  - 8.8.2: Broadcasting of slice information  - 8.3.2: Paging collision handling (if time allows) | NR17 RedCap SI (Sergio)  - Outcome of [AT113-e] [107][108][109][110] | NR17 SL Relay SI (Nathan)  - Checkpoint for email discussions  - 8.7.3 Discovery  - 8.7.4 Other |
| 13:55 – 15:05 | NR17 NTN (Sergio)  - Outcome of [AT113-e][102]  - Outcome of [AT113-e][103]  - 8.10.2.1/2/3 UP aspects cont (if time allows) | NR17 Pos SI (Nathan)  - Any overflow from first week session  - Checkpoint for email discussions  - 8.11.3 Integrity |
| 14:30 – 16:15 NR15 NR16 Main Session (Johan)  General, Email CB [015], [018], [005], [026], [028], more? |
| 15:05 – 16:15 | NR17 NTN (Sergio)  - Outcome of [AT113-e][104][105][106]  - 8.10.2.4 LCS aspects cont  - 8.10.2.1/3 CP aspects cont (if time allows) | NR17 TBD (Nathan)  - Rel-17 positioning overflow  - Rel-17 relay overflow (if needed) |
| **Wednesd** |  |  |  |
| 12:45 – 13:55 | NR17 eNPN (Johan) | NR17 Small Data Enh (Diana)  - 8.6.3 – CP aspect cont  - 8.6.2 | NR17 SL Enh (Kyeongin)  8.15.2.1 (including email disc [707] and [[708]), 8.15.2.2 |
| 13:55 – 15:05 | NR17 QoE SI (Johan) | NR17 Small Data  - 8.6.4/5  @14:30 NR17 IIOTURLLC (Diana)  - 8.5.3 – Outcome of offline | NR17 SL Enh (Kyeongin)  8.15.2.2, 8.15.2.3  8.15.3 (if time allows) |
| 15:05 – 16:15 | NR17 IoT NTN (Johan) | NR17 IIOTURLLC (Diana)  8.5.4 – CBs and outcome of offline if applicable | CB Sergio  - R16 comebacks from AI 6.12, AI 6.14: Outcome of [101][111][112][113][114]  - R17 comebacks from RedCap (if time allows): Outcome of [107] and [110] |
| **Thursday** |  |  |  |
| 04:45 – 06:15 | CB Johan | CB Sergio  - RedCap: Outcome of [107],[108] and [109]  - NTN: Outcome of [102][103][104][106][115], discussion on running CRs | CB Nathan  - Comebacks from SL relay and positioning (order TBD) |
| **Friday** |  |  |  |
| 04:30 – 05:30 | CB Tero  - Comebacks from all sessions (at least RAN slicing, R17 DCCA, Multi-SIM, LTE (if needed)) | CB HuNan  - Focus on R16 SON/MDT. Target is to conclude all the corrections so far on the table | CB |
| 05:30 – 06:30 | CB | CB Kyeongin  - Comebacks from Rel-16 NR SL and Rel-17 NR SL enhancements. Remaining CRs and issues (if time allows). | CB Brian, Emre |

List and status of offline email discussions

NOTE: No offline email discussions will be kicked off before Monday January 25th, 07:00 UTC

* [AT113-e][101][PRN] Corrections (Nokia)

Scope: Discuss the PRN corrections in 6.12

Initial intended outcome: summary of the offline discussion with e.g.:

* + - List of CRs that can be agreed as is
    - List of CRs that can be agreed with some changes / merges with other CRs (with an indication of the needed changes)
    - List of CRs that require online discussion
    - List of CRs that should not be pursued

Initial deadline (for companies' feedback): Tuesday 2021-01-26 15:00 UTC

Initial deadline (for rapporteur's summary in [R2-2102011](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102011.zip)): Tuesday 2021-01-26 16:00 UTC

Updated scope: Discuss revisions of [R2-2101557](file:///C:\Data\3GPP\Extracts\R2-2101557.docx) and [R2-2101852](file:///C:\Data\3GPP\RAN2\Docs\R2-2101852.zip) and draft a CR based on [R2-2101704](file:///C:\Data\3GPP\Extracts\R2-2101704%20Discussion%20on%20intra-frequency%20reselection.docx)

Updated intended outcome: rapporteur's summary in R2-2102021 and agreeable CRs in R2-2102022, R2-2102023 and R2-2102024

Updated deadline (for companies' feedback): Tuesday 2021-02-02 17:00 UTC

Updated deadline (for summary CRs): Tuesday 2021-02-02 23:00 UTC

CRs listed as "can be agreed as is" in R2-2102021 and not challenged until Wednesday 2021-02-03 11:00 UTC will be declared as agreed by the session chair. For the other ones, the discussion will continue online.

Status: Closed

* [AT113-e][102][NTN] Reply LSs to SA2 and RAN3 (Qualcomm)

Scope: Discuss reply LSs for [R2-2100067](file:///C:\Data\3GPP\Extracts\R2-2100067_S2-2009225.doc) (AN-PDB and PER targets for satellite access) and [R2-2011041](file:///C:\Data\3GPP\archive\RAN2\RAN2%23112\Tdocs\R2-2011041.zip) (SA WG2 assumptions from conclusion of study on architecture aspects for using satellite access in 5G). Note: Soft/hard TAC update will be discussed separately

Initial intended outcome: rapporteur summary and, if possible, draft reply LSs

Initial deadline (for companies' feedback): Friday 2021-01-29 10:00 UTC

Initial deadline (for rapporteur's summary in R2-2102012): Monday 2021-02-01 23:00 UTC

Updated scope: Draft reply LSs for [R2-2100067](file:///C:\Data\3GPP\Extracts\R2-2100067_S2-2009225.doc) (AN-PDB and PER targets for satellite access) and [R2-2011041](file:///C:\Data\3GPP\archive\RAN2\RAN2%23112\Tdocs\R2-2011041.zip) (SA WG2 assumptions from conclusion of study on architecture aspects for using satellite access in 5G).

Updated intended outcome: agreeable reply LSs in R2-2102041 and R2-2102042

Deadline (for companies' feedback): Wednesday 2021-02-03 18:00 UTC

Deadline (for rapporteur's draft LSs): Wednesday 2021-02-03 22:00 UTC

Status: Ongoing

* [AT113-e][103][NTN] HARQ aspects (Interdigital)

Scope: Discuss HARQ timer aspects from [R2-2101573](file:///C:\Data\3GPP\Extracts\R2-2101573%20(R17%20NTN%20WI%20AI%208.10.2.2)%20HARQ%20RTT%20Timers.docx) as well as disabling UL HARQ aspects

Initial intended outcome: Summary of the offline discussion with e.g.:

* + - List of proposals for agreement (if any)
    - List of proposals that require online discussions
    - List of proposals that should not be pursued (if any)

Initial deadline (for companies' feedback): Monday 2021-02-01 17:00 UTC

Initial deadline (for rapporteur's summary in R2-2102013): Monday 2021-02-01 23:00 UTC

Updated scope: Continue the discussion on p5, p7, p8 and discuss p4a, p4b and p4c from [R2-2102013](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102013.zip)

Updated intended outcome: Summary of the offline discussion with e.g.:

* + - List of proposals for agreement

Deadline (for companies' feedback): Wednesday 2021-02-03 18:00 UTC

Deadline (for rapporteur's summary in R2-2102043): Wednesday 2021-02-03 22:00 UTC

Status: Ongoing

* [AT113-e][104][NTN] TAC update (CMCC)

Scope: Discuss TAC update procedure, based on [R2-2101607](file:///C:\Data\3GPP\Extracts\R2-2101607%20Considerations%20on%20Soft%20TAI%20Update.docx), [R2-2100259](file:///C:\Data\3GPP\Extracts\R2-2100259_TAU_NR-NTN_v2.0.docx), [R2-2100742](file:///C:\Data\3GPP\Extracts\R2-2100742.doc), [R2-2100820](file:///C:\Data\3GPP\Extracts\R2-2100820%20Fixed%20Tracking%20Area%20and%20the%20Tracking%20Area%20Code%20in%20NTN.docx), [R2-2101406](file:///C:\Data\3GPP\RAN2\Docs\R2-2101406.zip)

Initial intended outcome: Summary of the offline discussion with e.g.:

* + - List of proposals for agreement (if any)
    - List of proposals that require online discussions

Initial deadline (for companies' feedback): Monday 2021-02-01 11:00 UTC

Initial deadline (for rapporteur's summary in [R2-2102014](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102014.zip)): Monday 2021-02-01 17:00 UTC

Updated scope: Discuss how to capture the proposal introducing soft TAU approach in a way that it's still possible to broadcast one TAC only, when this is sufficient

Updated intended outcome: Summary of the offline discussion with e.g.:

* + - List of proposals for agreement

Deadline (for companies' feedback): Wednesday 2021-02-03 18:00 UTC

Deadline (for rapporteur's summary in R2-2102044): Thursday 2021-02-04 02:00 UTC

Status: Ongoing

* [AT113-e][105][NTN] Idle mode aspects (Nokia)

Scope: Discuss:

1. Continue the discussion on P1 and P2 from [R2-2100527](file:///C:\Data\3GPP\Extracts\R2-2100527_Report%20from%20%5bPost112-e%5d%5b153%5d%5bNTN%5d%20Idle%20mode%20aspects%20(Nokia).docx)
2. Usage and provision of the cell expire time and upcoming cell info
3. ephemeris assisted cell (re)selection

based on the corresponding proposals in [R2-2100347](file:///C:\Data\3GPP\Extracts\R2-2100347%20NTN%20Idle%20mode.docx) (P1~P4), [R2-2101196](file:///C:\Data\3GPP\Extracts\R2-2101196_Discussion%20on%20cell%20selection%20and%20reselection%20in%20NTN.docx), [R2-2100382](file:///C:\Data\3GPP\Extracts\R2-2100382.docx) (P1) and [R2-2100163](file:///C:\Data\3GPP\Extracts\R2-2100163%20NTN%20Idle%20inactive%20mode%20procedures.doc) (P1 and P2)

Initial intended outcome: Summary of the offline discussion with e.g.:

* + - List of proposals for agreement (if any)
    - List of proposals that require online discussions
    - List of proposals that should not be pursued (if any)

Initial deadline (for companies' feedback): Monday 2021-02-01 17:00 UTC

Initial deadline (for rapporteur's summary in [R2-2102015](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102015.zip)): Monday 2021-02-01 23:00 UTC

Proposals marked "for agreement" in [R2-2102015](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102015.zip) not challenged until Tuesday 2020-02-02 11:00 UTC will be declared as agreed by the session chair. For the rest the discussion will continue online.

Status: Closed

* [AT113-e][106][NTN] CHO aspects (Ericsson)

Scope: Discuss CHO aspects based on the proposals in [R2-2100346](file:///C:\Data\3GPP\Extracts\R2-2100346%20NTN%20connected%20mode.docx) (P1~P10), [R2-2101197](file:///C:\Data\3GPP\Extracts\R2-2101197_Discussion%20on%20time(r)%20and%20location%20CHO%20triggering%20event%20configuration%20in%20NTN.docx), [R2-2101708](file:///C:\Data\3GPP\Extracts\R2-2101708%20Discussion%20on%20CHO%20in%20NTN%20.DOC), [R2-2100383](file:///C:\Data\3GPP\Extracts\R2-2100383.docx), [R2-2100744](file:///C:\Data\3GPP\Extracts\R2-2100744.doc) and [R2-2101129](file:///C:\Data\3GPP\Extracts\R2-2101129%20Conditional%20handover%20in%20NTN%20system%20v1.0.doc)

Initial intended outcome: Summary of the offline discussion with e.g.:

* + - List of proposals for agreement (if any)
    - List of proposals that require online discussions
    - List of proposals that should not be pursued (if any)

Initial deadline (for companies' feedback): Monday 2021-02-01 17:00 UTC

Initial deadline (for rapporteur's summary in [R2-2102016](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102016.zip)): Monday 2021-02-01 23:00 UTC

Updated scope: Continue the discussion on proposals from [R2-2102016](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102016.zip)

Updated intended outcome: Summary of the offline discussion with e.g.:

* + - List of proposals for agreement
    - List of proposals to be postponed

Deadline (for companies' feedback): Wednesday 2021-02-03 18:00 UTC

Deadline (for rapporteur's summary in R2-2102045): Wednesday 2021-02-03 22:00 UTC

Status: Ongoing

* [AT113-e][107][REDCAP] L2 capabilities and UE types (Huawei)

Scope: based on the proposals in [R2-2101255](file:///C:\Data\3GPP\Extracts\R2-2101255%20Higher%20layer%20capabilities%20and%20procedural%20impacts%20of%20RedCap%20UE.doc), [R2-2100310](file:///C:\Data\3GPP\Extracts\R2-2100310_Definition%20of%20RedCap%20UEs.docx) and [R2-2100460](file:///C:\Data\3GPP\Extracts\R2-2100460_UE%20type%20definition%20and%20constraining%20for%20RedCap%20UEs.doc), discuss:

1. which "reduced L2 capabilities" can be listed as possible enhancements in the TR
2. which impacts on procedures for RedCap UEs can be described in the TR
3. which pros and cons to have only one vs multiple RedCap UE types can be listed in the TR

For all the aspects (and namely for 3), the intention of this offline is to describe options and implications in the TR, not to down-select any alternatives

Initial intended outcome: Summary of the offline discussion with:

* + - List of proposals for agreement
    - List of proposals that require online discussions
    - Corresponding TP for the TR

Initial deadline (for companies' feedback): Monday 2021-02-01 11:00 UTC

Initial deadline (for rapporteur's summary in [R2-2102017](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102017.zip)): Monday 2021-02-01 17:00 UTC

Updated scope: continue the discussion on p5 and p6 from [R2-2102017](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102017.zip), also attempt to draft a recommendation from RAN2 perspective that a single RedCap UE type is preferred

Updated intended outcome: Summary of the offline discussion with:

* + - List of proposals for agreement
    - Corresponding TP for the TR

Deadline (for companies' feedback): Wednesday 2021-02-03 11:00 UTC

Deadline (for rapporteur's summary in R2-2102037): Wednesday 2021-02-03 13:00 UTC

Status: Ongoing

* [AT113-e][108][REDCAP] UE identification and access restriction (Ericsson)

Scope: Continue the discussion on UE identification and access restriction based on the proposals in [R2-2100985](file:///C:\Data\3GPP\Extracts\R2-2100985%20-%20%20TP%20for%20UE%20identification%20and%20access%20restriction.docx)

The intention of this offline is to describe options in the TR and, whenever applicable/possible, also down-select some alternatives / provide some recommendations.

Initial intended outcome: Summary of the offline discussion with e.g.:

* + - List of proposals for agreement
    - List of proposals that require online discussions
    - Corresponding TP for the TR

Initial deadline (for companies' feedback): Monday 2021-02-01 16:00 UTC

Initial deadline (for rapporteur's summary in R2-2102018): Monday 2021-02-01 22:00 UTC

Updated Scope: Continue the discussion on p13, p18 and detailed TP for p16 and p17 from [R2-2102018](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102018.zip).

Updated intended outcome: Summary of the offline discussion with e.g.:

* + - List of proposals for agreement
    - Corresponding TP for the TR

Deadline (for companies' feedback): Wednesday 2021-02-03 18:00 UTC

Deadline (for rapporteur's summary in R2-2102039): Wednesday 2021-02-03 22:00 UTC

Status: Ongoing

* [AT113-e][109][REDCAP] eDRX cycles (CATT)

Scope: Continue the discussion on eDRX cycles based on the proposals in [R2-2101242](file:///C:\Data\3GPP\Extracts\R2-2101242%20Summary%20of%20email%20discussion%20154%20-%20eDRX%20cycles.docx) marked as "continue in offline 109". Also discuss the 2.56s DRX operation in [R2-2101460](file:///C:\Data\3GPP\RAN2\Docs\R2-2101460.zip).

The intention of this offline is to describe options in the TR (possibly with pros and cons) and, whenever applicable/possible, also provide some recommendations (i.e. p4, p6 and p10 in [R2-2101242](file:///C:\Data\3GPP\Extracts\R2-2101242%20Summary%20of%20email%20discussion%20154%20-%20eDRX%20cycles.docx))

Initial intended outcome: Summary of the offline discussion with e.g.:

* + - List of proposals for agreement
    - List of proposals that require online discussions
    - Corresponding TP for the TR

Initial deadline (for companies' feedback): Monday 2021-02-01 16:00 UTC

Initial deadline (for rapporteur's summary in [R2-2102019](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102019.zip)): Monday 2021-02-01 22:00 UTC

Updated scope: Continue the discussion on p2 from [R2-2102019](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102019.zip)

Updated intended outcome: Summary of the offline discussion with e.g.:

* + - List of proposals for agreement
    - Corresponding TP for the TR

Deadline (for companies' feedback): Wednesday 2021-02-03 18:00 UTC

Deadline (for rapporteur's summary in R2-2102040): Wednesday 2021-02-03 22:00 UTC

Status: Ongoing

* [AT113-e][110][REDCAP] RRM relaxations (ZTE)

Scope: Continue the discussion on RRM relaxations based on the proposals in [R2-2100569](file:///C:\Data\3GPP\Extracts\R2-2100569%20Report%20of%20Email%20discussion%5b155%5d%5bREDCAP%5d%20RRM%20relaxations.docx) marked as "continue in offline 110". Also discuss possible evaluations to be added in the Annex.

The intention of this offline is to describe options in the TR and, whenever applicable/possible, also provide some recommendations (i.e. p7 and p10 in [R2-2100569](file:///C:\Data\3GPP\Extracts\R2-2100569%20Report%20of%20Email%20discussion%5b155%5d%5bREDCAP%5d%20RRM%20relaxations.docx))

Initial intended outcome: Summary of the offline discussion with e.g.:

* + - List of proposals for agreement
    - List of proposals that require online discussions
    - Corresponding TP for the TR

Initial deadline (for companies' feedback): Monday 2021-02-01 11:00 UTC

Initial deadline (for rapporteur's summary in [R2-2102020](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102020.zip)): Monday 2021-02-01 17:00 UTC

Updated scope: Continue the discussion on p8 and the TP in p12 from [R2-2102020](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102020.zip). Also discuss p3 from [R2-2102019](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102019.zip) (report of offline [109])

Updated intended outcome: Summary of the offline discussion with e.g.:

* + - List of proposals for agreement
    - Corresponding TP for the TR

Deadline (for companies' feedback): Wednesday 2021-02-03 11:00 UTC

Deadline (for rapporteur's summary in R2-2102038): Wednesday 2021-02-03 13:00 UTC

Final scope: Finalize a TP covering all the RRM relaxation agreements

Final intended outcome: TP in R2-2102048

Deadline (for companies' feedback): Thursday 2021-02-05 22:00 UTC

Deadline (for TP in in R2-2102048): Friday 2021-02-05 08:00 UTC

Status: Ongoing

* [AT113-e][111][eMIMO] Corrections (Apple)

Scope:

- Discuss revisions of [R2-2101365](file:///C:\Data\3GPP\RAN2\Docs\R2-2101365.zip), [R2-2101366](file:///C:\Data\3GPP\RAN2\Docs\R2-2101366.zip), [R2-2101367](file:///C:\Data\3GPP\RAN2\Docs\R2-2101367.zip) and reply LS to RAN1

- Discuss revision of [R2-2101485](file:///C:\Data\3GPP\Extracts\R2-2101485.doc)

Intended outcome: rapporteur's summary in R2-2102025 and agreeable CRs in R2-2102026, R2-2102027, R2-2102028 and R2-2102030; draft reply LS in R2-2102029

Deadline (for companies' feedback): Tuesday 2021-02-02 11:00 UTC

Deadline (for summary, CRs and LS): Tuesday 2021-02-02 17:00 UTC

CRs listed as "can be agreed as is" in R2-2102025 and not challenged until Wednesday 2021-02-03 11:00 UTC will be declared as agreed by the session chair. For the other ones, the discussion will continue online.

Status: Closed

* [AT113-e][112][L1enh\_URLLC] Corrections (ZTE)

Scope: Discuss a revision of CRs in [R2-2102241](file:///C:\Data\3GPP\Extracts\R2-2102241_38331_R16_Extension%20of%20the%20timeDomainAllocation%20for%20CG%20type%201%20with%20typeB%20repetition.docx) in [R2-2101527](file:///C:\Data\3GPP\Extracts\R2-2101527_38.306_Correction%20on%20the%20UE%20capability%20of%20extension%20of%20TDRA%20indication%20for%20Configured%20UL%20Grant%20type%201.docx)

Intended outcome: rapporteur's summary in R2-2102031 and corresponding CRs (if agreeable)

Deadline (for companies' feedback): Tuesday 2021-02-02 11:00 UTC

Deadline (for summary and CRs): Tuesday 2021-02-02 17:00 UTC

CRs (if any) listed as "can be agreed as is" in R2-2102031 and not challenged until Wednesday 2021-02-03 11:00 UTC will be declared as agreed by the session chair. For the other ones, the discussion will continue online.

Status: Closed

* [AT113-e][113][RACS] Corrections (Nokia)

Scope: Discuss a revision of CRs in [R2-2101029](file:///C:\Data\3GPP\Extracts\R2-2101029%20TS%2036.300%20Clarification%20on%20manufacturer%20based%20UE%20capability%20ID.docx), [R2-2101030](file:///C:\Data\3GPP\Extracts\R2-2101030%20TS%2038.300%20Clarification%20on%20manufacturer%20based%20UE%20capability%20ID.docx) and [R2-2101031](file:///C:\Data\3GPP\Extracts\R2-2101031%20CR%20TS%2038.331%20Clarification%20on%20manufacturer%20based%20UE%20capability%20ID.docx)

Intended outcome: rapporteur's summary in R2-2102032 and corresponding CRs (if agreeable)

Deadline (for companies' feedback): Tuesday 2021-02-02 17:00 UTC

Deadline (for summary and CRs): Tuesday 2021-02-02 23:00 UTC

CRs (if any) listed as "can be agreed as is" in R2-2102032 and not challenged until Wednesday 2021-02-03 11:00 UTC will be declared as agreed by the session chair. For the other ones, the discussion will continue online.

Status: Closed

* [AT113-e][114][SRVCC] Corrections (Google)

Scope: Discuss a revision of CRs in [R2-2101891](file:///C:\Data\3GPP\Extracts\R2-2101891_Avoid%20UTRA%20capabilities%20forwarding%20in%20handover%20preparation_38.331_R16.docx)

Intended outcome: rapporteur's summary in R2-2102033 and corresponding CR (if agreeable)

Deadline (for companies' feedback): Tuesday 2021-02-02 11:00 UTC

Deadline (for summary and CRs): Tuesday 2021-02-02 17:00 UTC

Updated scope: Discuss a revision of the CR according to online agreements

Updated intended outcome: Agreeable CR in R2-2102046

Deadline (for companies' feedback): Friday 2021-02-05 06:00 UTC

Deadline (for CR): Friday 2021-02-05 08:00 UTC

Status: Ongoing

* [AT113-e][115][NTN] LSs to SA2 and SA3-LI (Thales)

Scope: Draft an LS to SA2, SA3, SA3-LI (cc: RAN3) asking the following questions (exact wording can be discussed offline. Also target groups can be further fixed)

1. whether a finer granularity (than the typical size of an NTN cell) is needed about the information of UE location in a NTN (to SA2)
2. if so, whether a A-GNSS based UE location information can be reliable, e.g. for lawful interception (to SA3-LI)

Intended outcome: agreeable draft LS

Deadline (for companies' feedback): Wednesday 2021-02-03 18:00 UTC

Deadline (for rapporteur's summary in R2-2102036): Wednesday 2021-02-03 22:00 UTC

Status: Ongoing

## 6.12 NR Other Control Plane WIs

(SRVCC\_NR\_to\_UMTS-Core; leading WG: RAN2; REL-16; started: Dec 18; Completed; Mar 20; WID: [RP-190713](file:///C:\Data\3GPP\archive\RAN\RAN%2383\Tdocs\RP-190713.zip))

(RACS-RAN-Core, leading WG: RAN2; REL-16; started: Mar 19; completed: Jun 20; WID: [RP-191088](file:///C:\Data\3GPP\archive\RAN\RAN%2384\Tdocs\RP-191088.zip))

(NG\_RAN\_PRN-Core; leading WG: RAN3; REL-16; started: Mar 19; completed: June 20; WID: [RP-200122](file:///C:\Data\3GPP\archive\RAN\RAN%2387\Tdocs\RP-200122.zip))

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

Tdoc Limitation: See tdoc limitation for Agenda Item 6

PRN

UAC parameter selection

[R2-2100485](file:///C:\Data\3GPP\Extracts\R2-2100485%20-%20UAC%20parameter%20selection%20for%20NPN.docx) UAC parameter selection for NPN Ericsson discussion Rel-16 NG\_RAN\_PRN-Core

* Discussed in offline 101
* Noted

[R2-2101557](file:///C:\Data\3GPP\Extracts\R2-2101557.docx) CR on the Parameters Selection ZTE Corporation, Sanechips CR Rel-16 38.331 16.3.0 2420 - F NG\_RAN\_PRN-Core

* Initially discussed in offline 101
* Revised in R2-2102022

R2-2102022 CR on the Parameters Selection ZTE Corporation, Sanechips CR Rel-16 38.331 16.3.0 2420 1 F NG\_RAN\_PRN-Core

* Continue in [Post113-e][101]
* [POST113-e][101][PRN] UAC parameters selection (Nokia)

Scope: Continue the discussion on a revision of [R2-2101557](file:///C:\Data\3GPP\Extracts\R2-2101557.docx)

Intended outcome: Agreeable CR in R2-2102022

Deadline: Short

[R2-2101715](file:///C:\Data\3GPP\Extracts\R2-2101715_38331_Rel-16_CR2432_Rev0_UAC_ParameterSelection_NPN.docx) UAC parameter selection in case of UE allowed both on PLMN and CAG Qualcomm Incorporated CR Rel-16 38.331 16.3.1 2432 - F NG\_RAN\_PRN-Core

* Initially discussed in offline 101
* Not pursued

SIB validity check

[R2-2101654](file:///C:\Data\3GPP\Extracts\R2-2101654_Correction%20on%20SIB%20validity%20check.docx) Correction on SIB validity check Google Inc. CR Rel-16 38.331 16.3.1 2425 - F NR\_newRAT-Core, NG\_RAN\_PRN-Core

* Initially discussed in offline 101
* Not pursued

Intra-frequency reselection

[R2-2101704](file:///C:\Data\3GPP\Extracts\R2-2101704%20Discussion%20on%20intra-frequency%20reselection.docx) Discussion on intra-frequency reselection Huawei, HiSilicon discussion Rel-16 NG\_RAN\_PRN-Core

* Initially discussed in offline 101
* Draft a corresponding CR in R2-2102023
* Noted

[R2-2102023](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102023.zip) Correction to 38.331 on intra-frequency reselection Huawei, HiSilicon CR Rel-16 38.331 16.3.0 2458 - F NG\_RAN\_PRN-Core, NR\_unlic-Core

* Agreed

[R2-2102275](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102275.zip) Correction to 38.304 on intra-frequency reselection Huawei, HiSilicon CR Rel-16 38.304 16.3.0 0203 - F NG\_RAN\_PRN-Core, NR\_unlic-Core

* Agreed

Inter-RAT cell selection triggered by SNPN selection

[R2-2101854](file:///C:\Data\3GPP\Extracts\._R2-2101854%20Inter-RAT%20cell%20selection%20triggered%20by%20SNPN%20selection.docx) Inter-RAT cell selection triggered by SNPN selection Asia Pacific Telecom, FGI discussion Rel-16

* Discussed in offline 101
* Noted

[R2-2101849](file:///C:\Data\3GPP\Extracts\._R2-2101849%20Corrections%20for%20inter-RAT%20cell%20selection%20triggered%20by%20SNPN%20selection.docx) Corrections for inter-RAT cell selection triggered by SNPN selection Asia Pacific Telecom, FGI CR Rel-16 36.304 16.3.0 0824 - F NG\_RAN\_PRN-Core

* Initially discussed in offline 101
* Not pursued

[R2-2101850](file:///C:\Data\3GPP\Extracts\._R2-2101850%20Stop%20conditions%20of%20T320%20&%20T325%20in%20E-UTRA%20protocols.docx) Stop conditions of T320 & T325 in E-UTRA protocols Asia Pacific Telecom, FGI CR Rel-16 36.331 16.3.0 4594 - F NG\_RAN\_PRN-Core

* Initially discussed in offline 101
* Not pursued

[R2-2101852](file:///C:\Data\3GPP\RAN2\Docs\R2-2101852.zip) Stop conditions of T320 & T325 in NR protocols Asia Pacific Telecom, FGI CR Rel-16 38.331 16.3.1 2445 - F NG\_RAN\_PRN-Core

* Initially discussed in offline 101
* Revised in R2-2102024

R2-2102024 Stop conditions of T320 in NR protocols Asia Pacific Telecom, FGI, ZTE corporation, Sanechips CR Rel-16 38.331 16.3.1 2445 1 F NG\_RAN\_PRN-Core

* Agreed unseen

[R2-2101193](file://D://__会议\2021\202101\TSGR2_113-e\Docs\R2-2101193.zip) Correction on stop condition of T320 and T325 ZTE corporation, Sanechips CR Rel-16 38.331 16.3.0 2390 - F NG\_RAN\_PRN-Core

moved here from 6.1.2

* [AT113-e][101][PRN] Corrections (Nokia)

Scope: Discuss the PRN corrections in 6.12

Initial intended outcome: summary of the offline discussion with e.g.:

* + - List of CRs that can be agreed as is
    - List of CRs that can be agreed with some changes / merges with other CRs (with an indication of the needed changes)
    - List of CRs that require online discussion
    - List of CRs that should not be pursued

Initial deadline (for companies' feedback): Tuesday 2021-01-26 15:00 UTC

Initial deadline (for rapporteur's summary in [R2-2102011](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102011.zip)): Tuesday 2021-01-26 16:00 UTC

Updated scope: Discuss revisions of [R2-2101557](file:///C:\Data\3GPP\Extracts\R2-2101557.docx) and [R2-2101852](file:///C:\Data\3GPP\RAN2\Docs\R2-2101852.zip) and draft a CR based on [R2-2101704](file:///C:\Data\3GPP\Extracts\R2-2101704%20Discussion%20on%20intra-frequency%20reselection.docx)

Updated intended outcome: rapporteur's summary in R2-2102021 and agreeable CRs in R2-2102022, R2-2102023 and R2-2102024

Updated deadline (for companies' feedback): Tuesday 2021-02-02 17:00 UTC

Updated deadline (for summary and CRs): Tuesday 2021-02-02 23:00 UTC

CRs listed as "can be agreed as is" in R2-2102021 and not challenged until Wednesday 2021-02-03 11:00 UTC will be declared as agreed by the session chair. For the other ones, the discussion will continue online.

[R2-2102011](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102011.zip) Summary of offline 101 - PRN corrections Nokia discussion Rel-16 NG\_RAN\_PRN-Core

CRs that require online discussion

Proposal 1.1: Continue the discussion whether R2-2100485 with the proposed enhancement (making the "more favourable" condition more specific) or R2-2101557 should be used as a baseline to resolve this issue.

* QC wonders about the proposal to have a clearly specified UE behaviour according to option A, as there are many parameters to deal view. Also HW thinks that "favourable" is not clear. Ericsson thinks we can fix the proposal referring to the UE barring factor
* QC thinks that there are also multiple classes with different barring factors and it might not be easy to specify this
* Attempt to define a well-defined UE behaviour by referring to the most favourable UAC barring factor
* Use R2-2101557 as a baseline and try to include the well-defined UE behaviour as above

Proposal 3: Discuss online how to progress with R2-2101704 including whether it should be discussed in NR-U session.

* HW thinks this is trying to fix a misalignment between agreements and the way this is captured in the specs
* Discuss offline a proper CR, also adding NR-U WI code

Proposal 4.1: Move the discussion of R2-2101852 to the main Rel-16 NR agenda item.

* Most companies think that the first change (on T320) is needed, while the second is questionable/not only PRN related. There is also a similar CR in the main session.
* Lenovo thinks we can discuss the issue here. Regarding T325, deleting the timer is different than stopping the timer.
* Nokia thinks we can keep the CRs here, as the changes are not complex
* The change on T320 is agreed in principle
* Continue the discussion on the change to T325 (and possibly the coversheet) in offline 101, also considering the CR in R2-2101193 (initially discussed in the main session).

CRs that should not be pursued

Proposal 1.2: Not to pursue the CR in R2-2101715.

* Not pursued

Proposal 2: Not pursue R2-2101654.

* Not pursued

Proposal 4.2: Not the pursue the LTE CRs (R2-2101849, R2-2101850).

* Not pursued

VC reminder about the statement minuted at RAN2#112-e (related to P1.1 above): For the case when the UE is allowed to access both the legacy PLMN and the NPN (PLMN+CAG), the UE shall be able to pick either the PLMN or the NPN, at least in case of different UAC configuration on the PLMN and NPN. CR for this to be developed at RAN2-113 (to specify a well-defined UE behaviour and avoiding double attempts)

[R2-2102021](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102021.zip) Summary of offline 101 - PRN corrections - second round Nokia discussion Rel-16 NG\_RAN\_PRN-Core

Proposal 1: Further discuss (e.g. in an email discussion) the CR on UAC parameter selection.

* Ericsson would like to check if the agreement to have a well-defined UE behaviour still holds
* Continue with a 1-week email discussion after the meeting trying to follow prior meeting agreements

Proposal 2.1: RAN2 should discuss if R2-2101852 (with a minor editorial change) can be approved or merged into the Rapporteur's CR of 38.331.

* Lenovo still has some concerns to capture anything in the specs. Intel thinks 38.304 has a statement about deletion which is a bit ambiguous and wonders whether we need to capture anything in 331.
* Not pursue the change related to T325
* Revise the CR to reflect the change on T320 only

Proposal 2.2: If R2-2101852 is agreed then consider R2-2101193 to be merged in the agreed CR.

Proposal 3: Approve the CRs on intra-frequency reselection

* Agreed

1. Further discuss in an email discussion the CR on UAC parameter selection.
2. Revise the CR in [R2-2101852](file:///C:\Data\3GPP\RAN2\Docs\R2-2101852.zip) to reflect the change on T320 only
3. Approve the CRs on intra-frequency reselection

RACS

[R2-2101029](file:///C:\Data\3GPP\Extracts\R2-2101029%20TS%2036.300%20Clarification%20on%20manufacturer%20based%20UE%20capability%20ID.docx) Clarification on manufacturer based UE capability ID Nokia, Nokia Shanghai Bell CR Rel-16 36.300 16.4.0 1334 - F RACS-RAN-Core

* Mediatek is confused about this. This is network implementation
* CATT wonders if this addition intends to preclude the case where the NW fetches the cap and send to the UCMF
* Continue in offline 113
* Not pursued

[R2-2101030](file:///C:\Data\3GPP\Extracts\R2-2101030%20TS%2038.300%20Clarification%20on%20manufacturer%20based%20UE%20capability%20ID.docx) Clarification on manufacturer based UE capability ID Nokia, Nokia Shanghai Bell CR Rel-16 38.300 16.4.0 0336 - F RACS-RAN-Core

* Continue in offline 113
* Not pursued

[R2-2101031](file:///C:\Data\3GPP\Extracts\R2-2101031%20CR%20TS%2038.331%20Clarification%20on%20manufacturer%20based%20UE%20capability%20ID.docx) Clarification on manufacturer based UE capability ID Nokia, Nokia Shanghai Bell CR Rel-16 38.331 16.3.1 2380 - F RACS-RAN-Core

* Ericsson and Intel wonder whether this is needed/correct
* continue in offline 113
* Not pursued
* [AT113-e][113][RACS] Corrections (Nokia)

Scope: Discuss a revision of CRs in [R2-2101029](file:///C:\Data\3GPP\Extracts\R2-2101029%20TS%2036.300%20Clarification%20on%20manufacturer%20based%20UE%20capability%20ID.docx), [R2-2101030](file:///C:\Data\3GPP\Extracts\R2-2101030%20TS%2038.300%20Clarification%20on%20manufacturer%20based%20UE%20capability%20ID.docx) and [R2-2101031](file:///C:\Data\3GPP\Extracts\R2-2101031%20CR%20TS%2038.331%20Clarification%20on%20manufacturer%20based%20UE%20capability%20ID.docx)

Intended outcome: rapporteur's summary in R2-2102032 and corresponding CRs (if agreeable)

Deadline (for companies' feedback): Tuesday 2021-02-02 17:00 UTC

Deadline (for summary and CRs): Tuesday 2021-02-02 23:00 UTC

CRs (if any) listed as "can be agreed as is" in R2-2102032 and not challenged until Wednesday 2021-02-03 11:00 UTC will be declared as agreed by the session chair. For the other ones, the discussion will continue online.

[R2-2102032](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102032.zip) Summary of offline 113 - RACS corrections Nokia discussion Rel-16 RACS-RAN-Core

Proposal 1: Suggested wording for the CR “The manufacturer-assigned ID(s) corresponds to a pre-provisioned set of capabilities stored in the UCMF which can be retrieved directly by the RAN from the core network.”

* Samsung/CATT are fine but it's sufficient to cover this in the minutes
* RAN confirms that the manufacturer-assigned ID(s) corresponds to a pre-provisioned set of capabilities stored in the UCMF which can be retrieved directly by the RAN from the core network

Summary 2: General consensus is that Rel-15 principle is maintained that the SN is not required to comprehend the MN part of the UE capability received as part of the UE capability ID. It should be clear to any implementation from existing specification that the UE capabilities associated with the capability ID could contain other capabilities not relevant for it and if received can be ignored.

Proposal 2: Note Summary 2 in chair notes and CR in R2-2101031 is not pursued.

* RAN2 understands that Rel-15 principle is maintained that the SN is not required to comprehend the MN part of the UE capability received as part of the UE capability ID. It should be clear to any implementation from existing specification that the UE capabilities associated with the capability ID could contain other capabilities not relevant for it and if received can be ignored.

SRVCC

[R2-2101891](file:///C:\Data\3GPP\Extracts\R2-2101891_Avoid%20UTRA%20capabilities%20forwarding%20in%20handover%20preparation_38.331_R16.docx) Avoid UTRA capabilities forwarding in handover preparation Google Inc. CR Rel-16 38.331 16.3.1 2448 - F SRVCC\_NR\_to\_UMTS-Core

* Lenovo thinks the current table already implies that the UTRA capabilities are not sent
* HW thinks the wording can be changed to say the information may be included and the target can skip this. Qualcomm/Ericsson has the same view. Lenovo thinks this is strange.
* Intel/Samsung wonder if the source is allowed to include only if it knows this is the latest.
* continue in offline 114
* Revised in R2-2102046 according the online agreements

R2-2102046 Avoid UTRA capabilities forwarding in handover preparation Google Inc. CR Rel-16 38.331 16.3.1 2448 1 F SRVCC\_NR\_to\_UMTS-Core

* continue in offline 114
* [AT113-e][114][SRVCC] Corrections (Google)

Scope: Discuss a revision of CRs in [R2-2101891](file:///C:\Data\3GPP\Extracts\R2-2101891_Avoid%20UTRA%20capabilities%20forwarding%20in%20handover%20preparation_38.331_R16.docx)

Intended outcome: rapporteur's summary in R2-2102033 and corresponding CR (if agreeable)

Deadline (for companies' feedback): Tuesday 2021-02-02 11:00 UTC

Deadline (for summary and CRs): Tuesday 2021-02-02 17:00 UTC

Updated scope: Discuss a revision of the CR according to online agreements

Updated intended outcome: Agreeable CR in R2-2102046

Deadline (for companies' feedback): Friday 2021-02-05 06:00 UTC

Deadline (for CR): Friday 2021-02-05 08:00 UTC

[R2-2102033](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102033.zip) Summary of offline 114 - SRVCC corrections Google Inc. discussion Rel-16 SRVCC\_NR\_to\_UMTS-Core

(1) May be included, ignored by the target gNB if received

(2) May be included

(3) Excluded

Proposal 1: To agree to either option (1) or option (3) for handover preparation and UE context retrieval within NR.

Proposal 2: To agree to either option (1) or option (3) for handover to NR from E-UTRA.

* Huawei prefer option 1 for both
* Intel also prefers option 1 as it's more flexible and contains 3 as well
* Samsung thinks it's strange that we are more restrictive than in LTE but no strong view
* Lenovo thinks that for p2, option 1 is different than for LTE. Do we need to change LTE? Huawei thinks this is not needed. Samsung thinks this CR only affects the direction to NR.
* Agree option 1 for both cases. Revise the CR accordingly
* If companies think we should align the behaviour for LTE, CRs can be submitted in the future for this.

## 6.14 NR Other R1 WIs

(NR\_eMIMO-Core, leading WG: RAN1; REL-16; started: Jun 18; target; Aug 20; WID: [RP-200474](file:///C:\Data\3GPP\archive\RAN\RAN%2387\Tdocs\RP-200474.zip);)

(NR\_CLI\_RIM; leading WG: RAN1; REL-16; started: Dec 18; Completed: Jun 20; WID: [RP-191997](file:///C:\Data\3GPP\archive\RAN\RAN%2385\Tdocs\RP-191997.zip);)

(NR\_L1enh\_URLLC-Core, leading WG: RAN1; REL-16; Completed: June 20; WID: [RP-191584](file:///C:\Data\3GPP\archive\RAN\RAN%2384\Tdocs\RP-191584.zip))

(R1 Led NR TEI16, Other R1 led items)

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

Tdoc Limitation: See tdoc limitation for Agenda Item 6

[R2-2100014](file:///C:\Data\3GPP\Extracts\R2-2100014_R1-2009505.docx) Reply LS on full slot formats support in TDD UL-DL (R1-2009505; contact: Qualcomm) RAN1 LS in Rel-16 NR\_CLI\_RIM To:RAN3 Cc:RAN2

* Noted

[R2-2100015](file:///C:\Data\3GPP\Extracts\R2-2100015_R1-2009519.docx) LS on CBRA based Beam Failure Recovery (R1-2009519; contact: Apple) RAN1 LS in Rel-16 NR\_eMIMO-Core To:RAN2

* Noted

[R2-2101856](file:///C:\Data\3GPP\RAN2\Docs\R2-2101856.zip) DRAFT LS Reply to RAN1 on CBRA based Beam Failure Recovery Apple LS out Rel-16 NR\_eMIMO-Core To:RAN1

* Revised in R2-2102029
* Continue in offline 111

[R2-2102029](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102029.zip) DRAFT LS Reply to RAN1 on CBRA based Beam Failure Recovery Apple LS out Rel-16 NR\_eMIMO-Core To:RAN1

* revised in R2-2102047 to remove Draft and put RAN2 as source

[R2-2102047](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102029.zip) LS Reply to RAN1 on CBRA based Beam Failure Recovery Apple LS out Rel-16 NR\_eMIMO-Core To:RAN1

* Agreed unseen

[R2-2100008](file:///C:\Data\3GPP\Extracts\R2-2100008_R1-2009449.doc) LS on TPMI grouping capability (R1-2009449; contact: vivo) RAN1 LS in Rel-16 NR\_eMIMO-Core To:RAN2

* moved to 6.1.2 and then to offline 018

### 6.14.1 User plane corrections

eMIMO - SpCell BFR

[R2-2101364](file:///C:\Data\3GPP\RAN2\Docs\R2-2101364.zip) Capability and Configuration for SpCell BFR Apple discussion Rel-16 NR\_eMIMO-Core

Proposal 1: Introduce the dedicated UE capability for the R16 SpCell BFR enhancement.

* Samsung, LG and ZTE thinks we don't need a new capability as this is mandatory for R16. ZTE thinks there is no difference with respect to SCell BFR so there is no need for a capability
* HW thinks p3 is needed in any case, even if we don't introduce a capability. Nokia agrees with HW and also think a new capability is beneficial. Xiaomi think the capability is needed. QC agrees. Also Ericsson agrees. CATT also.
* Intel thinks this a NBC change however it's preferable to have a capability
* HW and Ericsson think we need to solve the problem primarily for R15 networks
* Intel think this is an isolated change so provided we clarify this in the coversheet this is ok. Also Nokia agrees there is no real issue for this. CATT agrees
* Agreed

Proposal 2: The capability of R16 enhanced SpCell BFR is UE specific capability.

* Agreed

Proposal 3: New configuration should be introduced to enable/disable the enhanced SpCell BFR procedure.

* ZTE thinks that if we have a new capability we don’t need a configuration from the network. Nokia thinks this would not work for a Rel-15 network. Xiaomi and Nokia agree. Samsung thinks a configuration is needed for the network but not the capability: for Scell BFR the UE still needs to implement the BFR MAC CE. HW thinks this is needed at least for testing and in any case we need to fix something as the current capability does not refer to SpCell BFR.
* Agreed

Agreements:

1. Introduce the dedicated UE capability for the R16 SpCell BFR enhancement.
2. The capability of R16 enhanced SpCell BFR is UE specific capability.
3. New configuration should be introduced to enable/disable the enhanced SpCell BFR procedure.

[R2-2101365](file:///C:\Data\3GPP\RAN2\Docs\R2-2101365.zip) 38.306 CR on SpCell BFR Apple CR Rel-16 38.306 16.3.0 0506 - F NR\_eMIMO-Core

* Ericsson supports the CR but has some comments on the ASN.1 aspect, e.g. for the naming convention. Same view from Xiaomi
* Revised in R2-2102026
* Continue in offline 111

[R2-2102026](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102026.zip) 38.306 CR on SpCell BFR Apple CR Rel-16 38.306 16.3.0 0506 1 F NR\_eMIMO-Core

* Agreed

[R2-2101366](file:///C:\Data\3GPP\RAN2\Docs\R2-2101366.zip) RRC CR on SpCell BFR Apple CR Rel-16 38.331 16.3.1 2407 - F NR\_eMIMO-Core

* Revised in R2-2102027
* Continue in offline 111

[R2-2102027](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102027.zip) RRC CR on SpCell BFR Apple CR Rel-16 38.331 16.3.1 2407 1 F NR\_eMIMO-Core

* Agreed

[R2-2101367](file:///C:\Data\3GPP\RAN2\Docs\R2-2101367.zip) MAC CR on SpCell BFR Apple CR Rel-16 38.321 16.3.0 1030 - F NR\_eMIMO-Core

* Revised in R2-2102028
* Continue in offline 111

[R2-2102028](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102028.zip) MAC CR on SpCell BFR Apple CR Rel-16 38.321 16.3.0 1030 1 F NR\_eMIMO-Core

* Agreed
* [AT113-e][111][eMIMO] Corrections (Apple)

Scope:

- Discuss revisions of [R2-2101365](file:///C:\Data\3GPP\RAN2\Docs\R2-2101365.zip), [R2-2101366](file:///C:\Data\3GPP\RAN2\Docs\R2-2101366.zip), [R2-2101367](file:///C:\Data\3GPP\RAN2\Docs\R2-2101367.zip) and reply LS to RAN1

- Discuss revision of [R2-2101485](file:///C:\Data\3GPP\Extracts\R2-2101485.doc)

Intended outcome: rapporteur's summary in R2-2102025 and agreeable CRs in R2-2102026, R2-2102027, R2-2102028 and R2-2102030; draft reply LS in R2-2102029

Deadline (for companies' feedback): Tuesday 2021-02-02 11:00 UTC

Deadline (for summary, CRs and LS): Tuesday 2021-02-02 17:00 UTC

CRs listed as "can be agreed as is" in R2-2102025 and not challenged until Wednesday 2021-02-03 11:00 UTC will be declared as agreed by the session chair. For the other ones, the discussion will continue online.

[R2-2102025](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102025.zip) Summary of offline 111 - eMIMO corrections Apple discussion Rel-16 NR\_eMIMO-Core

Topic 1: SpCell BFR

Proposal 1: Agree the 38.306 CR (R2-2101365) with the following changes:

1> Update the text according to Nokia’ suggestion (Alt 1) with Samsung’s suggestion;

2> Update the CR title to “Introduction of the UE Capability for SpCell BFR Enhancement”;

3> In coversheet, move the “Impact analysis” to “Summary of Change”.

* Agreed

Proposal 2: Agree the 38.331 CR (R2-2101366) with the following changes:

1> Update the text according to Nokia’s suggestion and Samsung’s comment;

2> Update the CR title to “Introduction of UE Capability and Configuration for SpCell BFR Enhancement”;

3> In coversheet, move the “Impact analysis” to “Summary of Change”.

* Agreed

Proposal 3: Agree the 38.321 CR (R2-2101367) with the following changes:

1> Update the text as that “spCell-BFR-CBRA with value true is configured”;

2> Update the CR title to “Introduction of the Configuration for SpCell BFR Enhancement”;

3> In coversheet, move the “Impact analysis” to “Summary of Change”.

* Agreed

Proposal 4: Agree to send LS reply to RAN1 with the text suggested by Nokia.

* Agreed

Topic 2: Correction on PUCCH group for enhanced PUCCH Spatial Relation

Proposal 5: Agree the 38.321 CR (R2-2101485) with the changes suggested by Nokia.

* Agreed

eMIMO - other

[R2-2101485](file:///C:\Data\3GPP\Extracts\R2-2101485.doc) Correction on PUCCH group for enhanced PUCCH Spatial Relation Huawei, HiSilicon CR Rel-16 38.321 16.3.0 1034 - F NR\_eMIMO-Core

- Nokia thinks we could refer to actual IE in RRC. Huawei is fine

- Intel thinks we also need to check the coversheet

* Revised in R2-2102030
* Continue in offline 111

[R2-2102030](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102030.zip) Correction on PUCCH group for enhanced PUCCH Spatial Relation Huawei, HiSilicon CR Rel-16 38.321 16.3.0 1034 1 F NR\_eMIMO-Core

* Agreed

### 6.14.2 Control plane corrections

L1enh\_URLLC

[R2-2101526](file:///C:\Data\3GPP\Extracts\R2-2101526_38331_R16_Extension%20of%20the%20timeDomainAllocation%20for%20CG%20type%201%20with%20typeB%20repetition.docx) Extension of the time domain allocation indicator for CG type 1 with typeB repetition ZTE Corporation, Sanechips CR Rel-16 38.331 16.3.0 2416 - F NR\_L1enh\_URLLC-Core

* revised in [R2-2102241](file:///C:\Data\3GPP\Extracts\R2-2102241_38331_R16_Extension%20of%20the%20timeDomainAllocation%20for%20CG%20type%201%20with%20typeB%20repetition.docx)

[R2-2102241](file:///C:\Data\3GPP\Extracts\R2-2102241_38331_R16_Extension%20of%20the%20timeDomainAllocation%20for%20CG%20type%201%20with%20typeB%20repetition.docx) Extension of the time domain allocation indicator for CG type 1 with typeB repetition ZTE Corporation, Sanechips, Huawei, HiSilicon CR Rel-16 38.331 16.3.0 2416 1 F NR\_L1enh\_URLLC-Core

* Ericsson does not see this in the R1 parameter list and the feature is anyway not broken
* Intel thinks that RAN1 is also discussing this and we could wait for them to decide which way to go. CATT thinks the change is useful but the FD needs to be discussed. Vivo thinks the signalling design can be discussed in RAN2.
* Continue in offline 112
* Not pursued

[R2-2101527](file:///C:\Data\3GPP\Extracts\R2-2101527_38.306_Correction%20on%20the%20UE%20capability%20of%20extension%20of%20TDRA%20indication%20for%20Configured%20UL%20Grant%20type%201.docx) Correction on the UE capability of extension of TDRA indication for Configured UL Grant type 1 ZTE Corporation, Sanechips CR Rel-16 38.306 16.3.0 0514 - F NR\_L1enh\_URLLC-Core

* Continue in offline 112
* Not pursued
* [AT113-e][112][L1enh\_URLLC] Corrections (ZTE)

Scope: Discuss a revision of CRs in [R2-2102241](file:///C:\Data\3GPP\Extracts\R2-2102241_38331_R16_Extension%20of%20the%20timeDomainAllocation%20for%20CG%20type%201%20with%20typeB%20repetition.docx) in [R2-2101527](file:///C:\Data\3GPP\Extracts\R2-2101527_38.306_Correction%20on%20the%20UE%20capability%20of%20extension%20of%20TDRA%20indication%20for%20Configured%20UL%20Grant%20type%201.docx)

Intended outcome: rapporteur's summary in R2-2102031 and corresponding CRs (if agreeable)

Deadline (for companies' feedback): Tuesday 2021-02-02 11:00 UTC

Deadline (for summary and CRs): Tuesday 2021-02-02 17:00 UTC

CRs (if any) listed as "can be agreed as is" in R2-2102031 and not challenged until Wednesday 2021-02-03 11:00 UTC will be declared as agreed by the session chair. For the other ones, the discussion will continue online.

[R2-2102031](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102031.zip) Summary of offline 112 - L1enh\_URLLC corrections ZTE Corporation discussion Rel-16 NR\_L1enh\_URLLC-Core

Proposal 1: Regrading the issue that the timeDomainAllocation in configuredGrantConfig only has a value range from 0 to 15 which can not cover the whole range of TDRA table (i.e pusch-TimeDomainAllocationListDCI-0-2-r16 or pusch-TimeDomainAllocationListDCI-0-1-r16) , RAN2 understands the issue can be handled by gNB implementation, no new RRC signaling and capability is needed in Rel-16.

* HW is not happy with this as feature rapporteur and NW vendors but can accept this. Hope that this can be reconsidered/fixed in a future release.
* Agreed. RAN2 understands the issue can be handled by gNB implementation, no new RRC signaling and capability is needed in Rel-16.

Proposal 2: RAN2 is kindly asked whether to add a sentence ‘In this release, only the first 16 entries of pusch-TimeDomainAllocationListDCI-0-2-r16 or pusch-TimeDomainAllocationListDCI-0-1-r16 can be applied to the configured grant type 1 with type B repetition in the same BWP’ into the field description of pusch-TimeDomainAllocationList.

* HW sees the benefit to describe the restriction in the field description and think this is similar to other descriptions
* Nokia and Ericsson think this can be solved by implementation
* Intel would like to have time to check.
* CATT is fine to have this either in the minutes or in the spec, as the NW has no much choice and there is no restriction. HW/QC agree and are fine to capture this in the meeting minutes. Ericsson/Nokia can accept this
* RAN2 understands that p1 implies that only the first 16 entries of pusch-TimeDomainAllocationListDCI-0-2-r16 or pusch-TimeDomainAllocationListDCI-0-1-r16 can be applied to the configured grant type 1 with type B repetition in the same BWP’ into the field description of pusch-TimeDomainAllocationList

eMIMO

[R2-2101486](file:///C:\Data\3GPP\Extracts\R2-2101486.docx) Correction on UE capabilities for enhanced MIMO Huawei, HiSilicon CR Rel-16 38.306 16.3.0 0513 - F NR\_eMIMO-Core

* moved to 6.1.2 and then to offline 018

## 8.10 NR Non-Terrestrial Networks (NTN)

(NR\_NTN\_solutions-Core; leading WG: RAN2; REL-17; WID: RP-202908)

Time budget: 2 TU

Tdoc Limitation: 6 tdocs

Email max expectation: 4-5 threads

### 8.10.1 Organizational

LSs, rapporteur inputs and other organizational documents. Rapporteur inputs and other pre-assigned documents in this AI do not count towards the tdoc limitation.

Including the outcome of [Post112-e][150][NTN] Stage 2 running CR (Thales)

Incoming LSs

[R2-2100033](file:///C:\Data\3GPP\Extracts\R2-2100033_R3-207060.docx) Reply LS on LS on signalling of satellite backhaul connection (R3-207060; contact: Huawei) RAN3 LS in Rel-17 5GSAT\_ARCH To:SA2 Cc:RAN2, RAN1

* Noted

[R2-2100067](file:///C:\Data\3GPP\Extracts\R2-2100067_S2-2009225.doc) AN-PDB and PER targets for satellite access (S2-2009225; contact: Quacomm) SA2 LS in Rel-17 5GSAT\_ARCH To:RAN1, RAN2 Cc:RAN3

* QC thinks we can basically focus on the first question. The other is more for RAN1
* Ericsson thinks the questions are related and it's difficult to come up with numbers but we could state some facts. Samsung agrees these are inter-related. Also GEOs and LEOs can be affected in different ways.
* Huawei thinks these are also requirements, so SA1 should also be involved
* Nokia thinks we are asked about max values and we could provide those numbers as least
* Further discussed in offline 102

[R2-2100747](file:///C:\Data\3GPP\Extracts\R2-2100747.docx) [Draft] Reply LS on AN-PDB and PER targets for satellite access Qualcomm Incorporated LS out Rel-17 NR\_NTN\_solutions-Core To:SA2, RAN1

* Discussed in offline 102

[R2-2101200](file:///C:\Data\3GPP\Extracts\R2-2101200_Draft%20reply%20LS%20on%20the%20AN-PDB%20and%20PER%20targets%20for%20satellite%20access.docx) Draft reply LS on the AN-PDB and PER targets for satellite access ZTE corporation, Sanechips LS out Rel-17 NR\_NTN\_solutions-Core To:SA2 Cc:RAN1, RAN3

* Discussed in offline 102

[R2-2101277](file:///C:\Data\3GPP\Extracts\R2-2101277%20LS%20reply%20to%20SA2%20about%20AN-PDB%20and%20PER%20for%20satellite%20RAT.docx) [DRAFT] Reply LS on SA WG2 assumptions AN-PDB and PER targets for satellite access THALES LS out Rel-17 NR\_NTN\_solutions To:SA2 Cc:RAN1

* Discussed in offline 102

Documents on reply LS to RAN3 on Cell ID handling

[R2-2100330](file:///C:\Data\3GPP\Extracts\R2-2100330%20Discussion%20on%20geographical%20fixed%20CGI.docx) Discussion on geographical fixed CGI CATT discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2100529](file:///C:\Data\3GPP\Extracts\R2-2100529%20On%20Cell%20Identifier%20for%20NTN.docx) On Cell Identifier for NTN Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_NTN\_solutions-Core

* moved here from 8.10.3.3

[R2-2100582](file:///C:\Data\3GPP\Extracts\R2-2100582_NR-NTN_Cell_ID_Handling.docx) NR-NTN: Cell ID Handling Fraunhofer IIS, Fraunhofer HHI discussion

[R2-2100746](file:///C:\Data\3GPP\Extracts\R2-2100746.docx) [Draft] Reply LS on SA WG2 assumptions from conclusion of study on architecture aspects for using satellite access in 5G Qualcomm Incorporated LS out Rel-17 NR\_NTN\_solutions-Core To:RAN3, SA2 Cc:SA3-LI, SA5

[R2-2101608](file:///C:\Data\3GPP\Extracts\R2-2101608%20Discussion%20on%20RAN3%20LS%20%20about%20%20architecture%20aspects%20for%20using%20satellite%20access%20in%205G.docx) Discussion on RAN3 LS about architecture aspects for using satellite access in 5G CMCC discussion Rel-17 NR\_NTN\_solutions-Core

* [AT113-e][102][NTN] Reply LSs to SA2 and RAN3 (Qualcomm)

Scope: Discuss reply LSs for [R2-2100067](file:///C:\Data\3GPP\Extracts\R2-2100067_S2-2009225.doc) (AN-PDB and PER targets for satellite access) and [R2-2011041](file:///C:\Data\3GPP\archive\RAN2\RAN2%23112\Tdocs\R2-2011041.zip) (SA WG2 assumptions from conclusion of study on architecture aspects for using satellite access in 5G). Note: Soft/hard TAC update will be discussed separately

Initial intended outcome: rapporteur summary and, if possible, draft reply LSs

Initial deadline (for companies' feedback): Friday 2021-01-29 10:00 UTC

Initial deadline (for rapporteur's summary in R2-2102012): Monday 2021-02-01 23:00 UTC

Updated scope: Draft reply LSs for [R2-2100067](file:///C:\Data\3GPP\Extracts\R2-2100067_S2-2009225.doc) (AN-PDB and PER targets for satellite access) and [R2-2011041](file:///C:\Data\3GPP\archive\RAN2\RAN2%23112\Tdocs\R2-2011041.zip) (SA WG2 assumptions from conclusion of study on architecture aspects for using satellite access in 5G).

Updated intended outcome: agreeable reply LSs in R2-2102041 and R2-2102042

Deadline (for companies' feedback): Wednesday 2021-02-03 18:00 UTC

Deadline (for rapporteur's draft LSs): Wednesday 2021-02-03 22:00 UTC

[R2-2102012](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102012.zip) Summary of offline 102 - [NTN] Reply LSs to SA2 and RAN3 Qualcomm discussion NR\_NTN\_solutions-Core

For LS reply to R2-2100067

Proposal 1 Indicate maximum RTD value for LEO and GEO in the reply LS to SA2.

* Agreed

Proposal 2 Provide additional information that the RTD can be used to determine PDB based on assumed number of retransmissions and value of PER. But for HAPS, PDB is expected to be similar to that of TN.

* Oppo wonders if we need to refer to the RLC layer retransmissions
* QC thinks we can refer to both RLC and MAC retransmissions.
* Nokia/IDC is fine and we think we can just refer to the maximum number of retransmissions
* Ericsson/ZTRE agree with p1 and p2
* Agreed

Proposal 3 Value of PER should be provided by RAN1.

* ZTE and Thales think that PER could be the same as in TN
* Draft a reply LS based on the above in a follow-up of offline 102 until Thursday

For LS reply to R2-2011041

Proposal 4 Indicate in RAN3 reply LS that from RAN2’s perspective approach (a) is challenging to work in moving cell scenario and approach (b) is feasible.

* Huawei thinks this a weak description

Proposal 5 For approach (b), indicate in RAN3 LS reply that RAN2 observes large NTN cell size may lead to issue of cell coverage spill over multiple countries. If RAN3 requires finer UE location than what could be known from TAC, cell ID and any available satellite beam information, RAN2 will work on this issue.

* Ericsson thinks we should not say anything about finer UE location
* Samsung/Apple think we don't need proposal 5

New proposal: Indicate that RAN2 thinks approach a is not feasible and will continue working assuming approach b

* Samsung/QC agree
* Eutelsat thinks approach a could be feasible.
* VC suggests to revise as: "Indicate that RAN2 prefers approach b and will continue working assuming approach b".
* Indicate that RAN2 prefers approach b and will continue working assuming approach b
* Draft a reply LS based on the VC proposal above in a follow-up of offline 102 until Thursday
* Come back to the UE location issue after the discussion in the LCS session
* (after the discussion in the LCS session): don't include considerations/questions on the finer granularity issue for UE location in this reply LS and indicate that a separate LS on this will be sent

Stage 2 Running CRs

[R2-2102252](file:///C:\Data\3GPP\Extracts\R2-2102252_NTN%20TP%20for%20TS%2038%20300_v12_Thales.docx) Support Non-Terrestrial Networks Thales (Moderator) discussion Rel-17 38.300 NR\_NTN\_solutions-Core

[R2-2100229](file:///C:\Data\3GPP\Extracts\R2-2100229_Stg%202%20Running%20CR_38.300_NR-NTN-solutions.docx) Stage 2 Running CR 38.300 NR-NTN THALES draftCR Rel-17 38.300 16.4.0 NR\_NTN\_solutions

* Thales informs that also RAN3 is working on this and specifically on the architectural aspects
* Ericsson thinks the part in 4.x could be moved to 16.x. VC/Thales indicate that the current split was also suggested by the TS rapporteur
* Mediatek is fine to endorse it
* VC/Ericsson wonder about the NTN payload definition. Ericsson also wonders about the definition of HAPS
* Ericsson/Nokia are ok not endorse it right now.
* Thales informs that RAN3 is also discussing the definition of NTN and NTN payload
* Come back in the next GTW session and decide how to progress

Stage 3 Running CRs

[R2-2100540](file:///C:\Data\3GPP\Extracts\38331_draftCR_R2-2100540_Running%20Stage-3%20NTN.docx) Stage-3 running RRC CR for NTN Rel-17 Ericsson draftCR Rel-16 38.331 16.3.1 NR\_NTN\_solutions-Core

[R2-2101198](file:///C:\Data\3GPP\Extracts\R2-2101198_Running%20CR%20to%2038.304%20for%20NTN.docx) Running CR to 38.304 for NTN ZTE corporation, Sanechips draftCR Rel-17 38.304 16.3.0 NR\_NTN\_solutions-Core

[R2-2101577](file:///C:\Data\3GPP\Extracts\R2-2101577%20(R17%20NTN%20WI%20AI%208.10.2)%20NTN%20MAC%20running%20CR.docx) Stage 3 running CR 38.321 InterDigital discussion Rel-17 NR\_NTN\_solutions-Core Late

* moved here from 8.10.2.1

Withdrawn

[R2-2100331](file:///C:\Data\3GPP\Extracts\R2-2100331%20%5bDRAFT%5dReply%20LS%20on%20geographical%20fixed%20Cell%20ID.docx) [Draft] Reply LS on SA WG2 assumptions from conclusion of study on architecture aspects for using satellite access in 5G CATT LS out Rel-17 NR\_NTN\_solutions-Core, 5GSAT\_ARCH To:RAN3, SA2 Cc:SA3-LI, SA5

* Withdrawn

[R2-2101199](file:///C:\Data\3GPP\Extracts\R2-2101199_Understanding%20on%20the%20AN-PDB%20and%20PER%20targets%20for%20satellite%20access.docx) Understanding on the AN-PDB and PER targets for satellite access ZTE corporation, Sanechips discussion Rel-17 NR\_NTN\_solutions-Core

* Withdrawn

### 8.10.2 User Plane

[R2-2101576](file:///C:\Data\3GPP\Extracts\R2-2101576%20(R17%20NTN%20WI%20AI%208.10.2)%20MAC%20Open%20Issues.docx) MAC open issues InterDigital discussion Rel-17 NR\_NTN\_solutions-Core Late

#### 8.10.2.1 RACH aspects

RA type selection

[R2-2101125](file:///C:\Data\3GPP\Extracts\R2-2101125%20Considerations%20on%20RA%20type%20selection%20and%20switching%20in%20NTN.docx) Considerations on RA type selection and switching in NTN Lenovo, Motorola Mobility discussion Rel-17

Proposal 1: New RA type selection criterion/criteria other than RSRP (msgA-RSRP-Threshold) should be supported in NTN.

Proposal 2: New RA type switch condition other than the maximum number of MSGA transmissions (msgA-TransMax) should be considered.

[R2-2100158](file:///C:\Data\3GPP\Extracts\R2-2100158%20-%20Discussion%20on%20RACH%20in%20NTN.doc) Discussion on RACH in NTN OPPO discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2101048](file:///C:\Data\3GPP\Extracts\R2-2101048%20Discussion%20on%202-step%20RACH%20adaptation%20in%20NTN.docx) Discussion on 2-Step RACH adaptation in NTN Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_NTN\_solutions-Core [R2-2009981](file:///C:\Data\3GPP\Extracts\R2-2009981%20Discussion%20on%202-step%20RACH%20adaptation%20in%20NTN.docx)

[R2-2101582](file:///C:\Data\3GPP\Extracts\R2-2101582_Discussion%20on%20random%20access%20aspects_r1.docx) Discussion on random access aspects LG Electronics Inc. discussion NR\_NTN\_solutions-Core

[R2-2101584](file:///C:\Data\3GPP\Extracts\R2-2101584%20Considerations%20on%20Random%20Access%20in%20NTN.doc) Considerations on Random Access in NTN ZTE Corporation, Sanechips discussion Rel-17

[R2-2101790](file:///C:\Data\3GPP\Extracts\R2-2101790_NTN%202-step%20RACH%20selection%20enhancements.docx) NTN 2-step RACH selection enhancements Convida Wireless discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2101833](file:///C:\Data\3GPP\Extracts\._R2-2101833%20Enhancements%20on%20RACH%20in%20NTN_final.docx) Enhancements on RACH in NTN Asia Pacific Telecom, FGI discussion

Other

[R2-2100178](file:///C:\Data\3GPP\Extracts\R2-2100178%20TA%20related%20issues.doc) TA related issues Beijing Xiaomi Mobile Software discussion Rel-17

[R2-2100251](file:///C:\Data\3GPP\Extracts\R2-2100251_For8.10.2.1_RACH_Aspects_ObservationsProposals_Samsung.doc) RACH Aspects for an NTN- Observations and Proposals Samsung Research America discussion Rel-17

[R2-2100379](file:///C:\Data\3GPP\Extracts\R2-2100379.docx) Pre-compensation for NTN Intel Corporation discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2100415](file:///C:\Data\3GPP\Extracts\R2-2100415.docx) Considerations on RACH procedure enhancements in NTN CAICT discussion

[R2-2100663](file:///C:\Data\3GPP\Extracts\R2-2100663.doc) Discussion on Random Access in NTN Spreadtrum Communications discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2100740](file:///C:\Data\3GPP\Extracts\R2-2100740.doc) Details of the start offset in Random Access procedure Qualcomm Incorporated discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2100828](file:///C:\Data\3GPP\Extracts\R2-2100828_NTN_common_TA.doc) Discussion on NTN TA pre-compensation ITRI discussion NR\_NTN\_solutions-Core

[R2-2100884](file:///C:\Data\3GPP\Extracts\._R2-2100884%20On%20Preamble%20Ambiguity%20in%20NTN%20networks.docx) On Preamble Ambiguity in Non Terrestrial Networks Apple discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2100998](file:///C:\Data\3GPP\Extracts\R2-2100998%20Remaining%20issues%20on%20RACH%20in%20NTN.DOC) Remaining issues on RACH in NTN Huawei, HiSilicon discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2101126](file:///C:\Data\3GPP\Extracts\R2-2101126%20Preamble%20ambiguity%20for%20UE%20without%20TA%20pre-compensation%20capability%20(Revision%20of%20R2-2009861).docx) Preamble ambiguity for UE without TA pre-compensation capability Lenovo, Motorola Mobility discussion Rel-17

[R2-2101404](file:///C:\Data\3GPP\Extracts\R2-2101404_Support%20UE%20with%20different%20pre-compensation%20capabilities.docx) Support of UEs with different pre-compensation capabilities NEC Telecom MODUS Ltd. discussion

[R2-2101494](file:///C:\Data\3GPP\Extracts\R2-2101494%20-%20On%20Random%20Access%20in%20NTNs.docx) On Random Access in NTNs Ericsson discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2101575](file:///C:\Data\3GPP\Extracts\R2-2101575%20(R17%20NTN%20WI%20AI%208.10.2.1)%20RACH%20aspects.docx) RACH aspects InterDigital discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2101823](file:///C:\Data\3GPP\Extracts\._R2-2101823%20UE%20calculated%20TA%20report_final.docx) UE calculated TA report Asia Pacific Telecom, FGI discussion

* moved here from 8.10.2.2

Withdrawn

[R2-2100333](file:///C:\Data\3GPP\Extracts\R2-2100333%20Discussion%20on%20left%20issues%20of%20RACH%20in%20NR%20NTN.docx) Discussion on left issues of RACH in NR NTN CATT discussion Rel-17 NR\_NTN\_solutions-Core Withdrawn

R2-2101814 UE calculated TA report Asia Pacific Telecom co. Ltd discussion Withdrawn

#### 8.10.2.2 Other MAC aspects

Including the outcome of [Post112-e][152][NTN] UL scheduling enhancements (Oppo)

UL scheduling

[R2-2100161](file:///C:\Data\3GPP\Extracts\R2-2100161_Report%20of%20%5bPost112-e%5d%5b152%5d%5bNTN%5d%20UL%20scheduling%20enhancements_Rapporteur.doc) Report of [Post112-e][152][NTN] UL scheduling enhancements OPPO report Rel-17 NR\_NTN\_solutions-Core

Proposals with full consensus during the email discussion

Proposal 1 Both Type 1 and Type 2 configured grant are feasible in NTN.

* Agreed

Proposal 3 From RAN2’s perspective, no need to modify parameter periodicity of IE ConfiguredGrantConfig to support NTN.

* Agreed

Proposal 4 No need to modify maxNrofConfiguredGrantConfig-r16 and maxNrofConfiguredGrantConfigMAC-r16 to support NTN.

* Agreed

Proposal 5 RAN2 support configured grant in NTN for UL scheduling.

* Samsung thinks this might consume a lot of resources

Proposal 8 RAN2 support BSR over 2-step RACH in NTN for UL scheduling.

* LG thinks this is the same as in legacy

Proposal 9 UE in NTN can have both 2-step RACH and configured grant configurations at the same time.

* Agreed

Other proposals

Proposal 2 From RAN2’s perspective, no need for enhancement to reduce the signaling overhead on configuration as well as activation/deactivation of configured grant.

Proposal 6 Baseline is that BSR can be sent over 2-step RACH which is triggered by existing events, i.e. no spec impact. Whether to introduce a new trigger (e.g. BSR) for 2-step RACH can be futher studied.

Proposal 7 limiting the use of 2-step RACH for BSR transmission can be up to network implementation. RAN2 can come back to this if new trigger for 2-step RACH is introduced.

Proposal 10 For a UE configured with both CG and 2-step RACH, how the UE sends BSR can be further studied.

* Ericsson thinks this is already supported in legacy.
* Nokia thinks in NTN the delays are different, this cannot be left to UE implementation.
* QC thinks this depends on whether this is CBRA or CFRA 2-step RACH.
* Ericsson thinks that in R16 we can configure that SR can be sent for certain LCHs when CG resource is considered as available
* QC thinks we are talking about BSR not data.

Agreements:

1. Both Type 1 and Type 2 configured grant are feasible in NTN.
2. From RAN2’s perspective, no need to modify parameter periodicity of IE ConfiguredGrantConfig to support NTN.
3. No need to modify maxNrofConfiguredGrantConfig-r16 and maxNrofConfiguredGrantConfigMAC-r16 to support NTN.
4. UE in NTN can have both 2-step RACH and configured grant configurations at the same time.

[R2-2100334](file:///C:\Data\3GPP\Extracts\R2-2100334%20Discussion%20on%20UL%20Scheduling%20Enhancements%20in%20NR%20NTN.docx) Discussion on UL Scheduling Enhancements in NR NTN CATT discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2100914](file:///C:\Data\3GPP\Extracts\R2-2100914.doc) Other MAC enhancements in NTN Sony discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2101063](file:///C:\Data\3GPP\Extracts\R2-2101063%20On%20UL%20scheduling%20enhancements%20and%20UE-calculated%20TA%20report%20in%20NTN.docx) On UL scheduling enhancements and UE-calculated TA report in NTN Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2101254](file:///C:\Data\3GPP\Extracts\R2-2101254.docx) Enhancements on UL scheduling for NTN THALES discussion Rel-17 [R2-2009064](file:///C:\Data\3GPP\Extracts\R2-2009064_NTN_MAC_UL_scheduling.docx)

[R2-2101580](file:///C:\Data\3GPP\Extracts\R2-2101580_Discussion%20on%20scheduling%20enhancement_r1.DOCX) Discussion on scheduling enhancement LG Electronics Inc. discussion NR\_NTN\_solutions-Core

HARQ aspects

[R2-2101573](file:///C:\Data\3GPP\Extracts\R2-2101573%20(R17%20NTN%20WI%20AI%208.10.2.2)%20HARQ%20RTT%20Timers.docx) HARQ timer aspects InterDigital discussion Rel-17 NR\_NTN\_solutions-Core

* Discussed in offline 103
* [AT113-e][103][NTN] HARQ aspects (Interdigital)

Scope: Discuss HARQ timer aspects from [R2-2101573](file:///C:\Data\3GPP\Extracts\R2-2101573%20(R17%20NTN%20WI%20AI%208.10.2.2)%20HARQ%20RTT%20Timers.docx) as well as disabling UL HARQ aspects

Initial intended outcome: Summary of the offline discussion with e.g.:

* + - List of proposals for agreement (if any)
    - List of proposals that require online discussions
    - List of proposals that should not be pursued (if any)

Initial deadline (for companies' feedback): Monday 2021-02-01 17:00 UTC

Initial deadline (for rapporteur's summary in R2-2102013): Monday 2021-02-01 23:00 UTC

Updated scope: Continue the discussion on p5, p7, p8 and discuss p4a, p4b and p4c from [R2-2102013](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102013.zip)

Updated intended outcome: Summary of the offline discussion with e.g.:

* + - List of proposals for agreement

Deadline (for companies' feedback): Wednesday 2021-02-03 18:00 UTC

Deadline (for rapporteur's summary in R2-2102043): Wednesday 2021-02-03 22:00 UTC

[R2-2102013](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102013.zip) Summary of offline 103 - [NTN] HARQ aspects Interdigital discussion NR\_NTN\_solutions-Core

Strong Majority - for email agreement:

Proposal 2: For HARQ processes with DL HARQ feedback disabled, drx-HARQ-RTT-TimerDL is not started. (21/24)

* Agreed

Proposal 3: FFS: method(s) to support blind retransmission for HARQ processes with HARQ feedback disabled. (23/24)

* Agreed

Proposal 6: For HARQ processes where gNB sends grant without waiting for decoding result of previous PUSCH transmission, no new network scheduling restrictions are introduced (i.e. up to network implementation). (22/24)

* QC has some comments. Suggestion to reword as "From RAN2 perspective, for HARQ processes where gNB can sends UL grant without waiting for decoding result of previous PUSCH transmission, no new network scheduling restrictions are introduced to schedule subsequent grants (i.e. up to network implementation)'"
* Continue online
* Agreed with the suggested rewording. Can come back if we don't find an agreement on p8

Proposal 8: Whether gNB will send UL retransmission grant before or after decoding result of previous PUSCH transmission is explicitly indicated to UE per HARQ process. FFS details of indication (21/24)

* QC has some comments. . Suggestion to reword as "Whether gNB will send UL retransmission grant before or after without waiting for decoding result of previous PUSCH transmission is explicitly indicated to UE per HARQ process. FFS details of indication"
* Ericsson and ZTE also have some concerns
* Continue online
* ZTE still cannot agree on this at this stage and would like to postpone this
* Nokia supports p8 but the wording might be improved.
* Ericsson thinks there are many issues with this and this is not even part for the WID. Further this would have a lot of impacts
* Continue offline

Agreements via email - from offline [103]:

1. For HARQ processes with DL HARQ feedback disabled, drx-HARQ-RTT-TimerDL is not started.
2. FFS: method(s) to support blind retransmission for HARQ processes with HARQ feedback disabled.

Agreements online:

1. From RAN2 perspective, for HARQ processes where gNB can sends UL grant without waiting for decoding result of previous PUSCH transmission, no new network scheduling restrictions are introduced to schedule subsequent grants (i.e. up to network implementation. (Can come back if we don't find an agreement on p8)
2. For HARQ processes with DL HARQ feedback enabled, drx-HARQ-RTT-TimerDL length is increased by offset (i.e. existing values within value range increased by offset). RAN2 working assumption: offset is equal to UE-gNB RTT (if RAN1 decides something that requires to change this we can revisit it)

Likely Agreeable - for online discussion:

Proposal 1: For HARQ processes with DL HARQ feedback enabled, drx-HARQ-RTT-TimerDL length is increased by offset (i.e. existing values within value range increased by offset). RAN2 working assumption: offset is equal to UE-gNB RTT. (19/24)

* LG/Oppo/Samsung would like to have same behaviour as for Contention Resolution timer and would like to have a unified solution, without adding new parameters
* QC don't think the behaviour needs to be same. We just need to choose one.
* Ericsson we can base it on the DL timing instead and think there is a behavioural difference. IDC thinks we already agreed to have an offset and we are trying to remove the FFS
* IDC thinks the proposal from LG/Oppo/Samsung leads to the same behaviour so we can go for the option with more support.
* Samsung is fine as long as we use the same approach. Oppo can accept this hoping that companies can compromise in the same way on other aspects
* Nokia thinks we sould have a unified approach.
* Agreed (if RAN1 decides something that requires to change this we can revisit it)

Proposal 5: For HARQ processes where gNB sends grant based on decoding result of previous PUSCH transmission, drx-HARQ-RTT-TimerUL length is increased by offset (i.e. existing values within value range increased by offset). RAN2 working assumption: offset is equal to UE-gNB RTT. (19/24)

* Continue offline

Proposal 7: For HARQ processes where gNB sends grant without waiting for decoding result of previous PUSCH transmission, it is FFS if drx-HARQ-RTT-TimerUL is 1) not started or; 2) set to ‘0’. (22/24 between both options)

* Discuss offline together with p8.

Needs Discussion

Proposal 4a: RAN2 to confirm intention of previous agreement on ‘enabling/disabled HARQ UL retransmission’ is not to ‘disable’ HARQ UL retransmission, but to allow gNB to send grant less than one RTT regardless of NDI state (e.g. with NDI not toggled/toggled).

Proposal 4b: RAN2 to confirm there are two possibilities to receive an UL retransmission grant:

1) Based on decoding result of previous PUSCH transmission (> 1 UE-gNB RTT)

2) NOT relying on decoding result of previous PUSCH transmission (< 1 UE-gNB RTT)

Proposal 4c: RAN2 to discuss alternate naming for ‘enabled’ and ‘disabled’ HARQ UL retransmission (e.g. ‘HARQ UL retransmission’ and ‘sub-RTT HARQ UL retransmission’).

R2-2102043 Summary of offline 103 - [NTN] HARQ aspects - second round Interdigital discussion NR\_NTN\_solutions-Core

[R2-2100160](file:///C:\Data\3GPP\Extracts\R2-2100160%20-%20HARQ%20impact%20on%20DRX%20and%20LCP%20in%20NTN.doc) HARQ impact on DRX and LCP in NTN OPPO discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2100179](file:///C:\Data\3GPP\Extracts\R2-2100179%20HARQ%20related%20issues.doc) HARQ related issues Beijing Xiaomi Mobile Software discussion Rel-17

[R2-2100261](file:///C:\Data\3GPP\Extracts\R2-2100261%20On%20disabling%20uplink%20HARQ%20retransmission%20and%20associated%20LCP%20impacts.docx) On Disabling uplink HARQ retransmission and Associated LCP Impacts MediaTek Inc. discussion

[R2-2100332](file:///C:\Data\3GPP\Extracts\R2-2100332%20Discussion%20on%20HARQ%20Aspects%20in%20NTN.docx) Discussion on HARQ Aspects in NTN CATT discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2100381](file:///C:\Data\3GPP\Extracts\R2-2100381.docx) HARQ issues for NTN Intel Corporation discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2100664](file:///C:\Data\3GPP\Extracts\R2-2100664.doc) Discussion on HARQ and related timers Spreadtrum Communications discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2100741](file:///C:\Data\3GPP\Extracts\R2-2100741.doc) Support of disabling UL HARQ retransmission Qualcomm Incorporated discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2100999](file:///C:\Data\3GPP\Extracts\R2-2100999%20Further%20consideration%20on%20HARQ%20and%20LCP%20in%20NTN.doc) Further consideration on HARQ and LCP in NTN Huawei, HiSilicon discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2101057](file:///C:\Data\3GPP\Extracts\R2-2101057%20Discussion%20on%20HARQ%20uplink%20retransmission%20signalling%20in%20NTN.docx) Discussion on HARQ uplink retransmission signalling in NTN Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2101493](file:///C:\Data\3GPP\Extracts\R2-2101493%20-%20On%20scheduling%20HARQ%20and%20DRX%20for%20NTNs.docx) On scheduling, HARQ, and DRX for NTNs Ericsson discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2101583](file:///C:\Data\3GPP\Extracts\R2-2101583_Discussion%20on%20disabling%20HARQ%20feedback%20and%20uplink%20retransmission_r3.docx) Discussion on disabling HARQ feedback and uplink retransmission LG Electronics Inc. discussion NR\_NTN\_solutions-Core

[R2-2101067](file:///C:\Data\3GPP\Extracts\R2-2101067%20Discussion%20on%20DRX%20operation%20associated%20with%20blind%20retransmission.docx) Discussion on DRX operation associated with blind retransmission PANASONIC R&D Center Germany agenda [R2-2008936](file:///C:\Data\3GPP\Extracts\R2-2008936%20Discussion%20on%20DRX%20operation%20associated%20with%20blind%20retransmission.docx)

[R2-2101118](file:///C:\Data\3GPP\Extracts\R2-2101118-NTN-DRX%20in%20NTN.doc) Discussion on DRX for NTN Lenovo, Motorola Mobility discussion Rel-17

[R2-2101585](file:///C:\Data\3GPP\Extracts\R2-2101585%20Considerations%20on%20HARQ%20in%20NTN.doc) Considerations on HARQ in NTN ZTE Corporation, Sanechips discussion Rel-17

[R2-2101716](file:///C:\Data\3GPP\Extracts\R2-2101716%20Outstanding%20Left-Issues%20for%20HARQ%20operation%20in%20NTN.docx) Outstanding Left-Issues for HARQ operation in NTN CMCC discussion Rel-17 NR\_NTN\_solutions-Core

sr-ProhibitTimer / configured grant timers

[R2-2100159](file:///C:\Data\3GPP\Extracts\R2-2100159%20-%20Discussion%20on%20MAC%20timers%20in%20NTN.doc) Discussion on MAC timers in NTN OPPO discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2100262](file:///C:\Data\3GPP\Extracts\R2-2100262%20Round%20trip%20delay%20offset%20for%20configured%20grant%20timer.docx) Round trip delay offset for configured grant timers MediaTek Inc. discussion

[R2-2100416](file:///C:\Data\3GPP\Extracts\R2-2100416.docx) Considerations on MAC timers in NTN CAICT discussion

[R2-2101297](file:///C:\Data\3GPP\Extracts\R2-2101297.docx) Enhancements for NTN on MAC Layer THALES discussion [R2-2009063](file:///C:\Data\3GPP\Extracts\R2-2009063_MAC_NTN.docx)

* moved here from 8.10.2.1

Misc

[R2-2100252](file:///C:\Data\3GPP\Extracts\R2-2100252_For8.10.2.2_OtherMACAspects_ObservationsProposals_Samsung.doc) Miscellaneous MAC Aspects for an NTN- Observations and Proposals Samsung Research America discussion Rel-17

[R2-2100881](file:///C:\Data\3GPP\Extracts\._R2-2100881%20On%20User%20Plane%20Latency%20Reduction%20Mechanisms%20in%20Non%20Terrestrial%20Networks.docx) On User Plane Latency Reduction Mechanisms in Non Terrestrial Networks Apple discussion Rel-17 NR\_NTN\_solutions-Core

#### 8.10.2.3 RLC and PDCP aspects

[R2-2100253](file:///C:\Data\3GPP\Extracts\R2-2100253_For8.10.2.3_RLC_PDCP_Aspects_ObservationsProposals_Samsung.doc) RLC and PDCP Aspects for an NTN- Observations and Proposals Samsung Research America discussion Rel-17

Proposal 1. We suggest that RAN2 consider RLC t-Reassembly timer modification such that both the gNB and the UE have the same value. Furthermore, we suggest a following formula to update RLC t-Reassembly timer. NTN t-ReassemblyTimer= (minimum\_NTN\_delay + R16 t-ReassemblyTimer value)\*scaling factor. This formula can be applied to other timers such as PDCP discardTimer and the PDCP t-reordering.

Proposal 2. If there is a need to update the PDCP discardTimer and the PDCP t-reordering timer per SA2 requirements, we suggest that RAN2 consider the generic and simple framework of “NTN Timer Value= (minimum\_NTN\_delay + R16 timer value)\*scaling factor,” where “minimum NTN delay” is the minimum expected UE-gNB round-trip-delay and “scaling factor” is used to fine tune the overall delay relative to “minimum\_NTN\_delay.”

[R2-2100357](file:///C:\Data\3GPP\Extracts\R2-2100357_Remaining%20Issues%20in%20RLCPDCP%20Aspects%20of%20NR-NTN.docx) Remaining Issues in RLC/PDCP Aspects of NR-NTN MediaTek Inc. discussion

Proposal 1: The extension of RLC t-Reassembly timer is left on network implementation. The maximum value (or value range) of the extended timer is FFS.

Proposal 2: PDCP discardTimer needs to be at least longer than RLC t-Reassembly timer to allow RLC procedures to complete.

Proposal 4: PDCP t-Reordering timer needs to be at least longer than RLC t-Reassembly timer to allow RLC procedures to complete.

[R2-2101259](file:///C:\Data\3GPP\Extracts\R2-2101259.doc) Remaining Aspects on Enhancements for NTN on RLC and PDCP Timers THALES discussion [R2-2009070](file:///C:\Data\3GPP\Extracts\R2-2009070_RLC_PDCP_NTN.doc)

[R2-2101492](file:///C:\Data\3GPP\Extracts\R2-2101492%20-%20On%20RLC%20and%20PDCP%20for%20NTNs.docx) On RLC and PDCP for NTNs Ericsson discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2101518](file:///C:\Data\3GPP\Extracts\R2-2101518_On%20RLC%20t-Reassembly%20for%20NTN.docx) On RLC t-Reassembly for NTN Sequans Communications discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2101532](file:///C:\Data\3GPP\Extracts\R2-2101532_Additional%20PDCP%20aspects_for_NTN.docx) Additional PDCP aspects for NTN Sequans Communications discussion Rel-17 NR\_NTN\_solutions-Core [R2-2010170](file:///C:\Data\3GPP\Extracts\R2-2010170_Additional%20RLC%20and%20PDCP%20aspects_for_NTN.docx)

### 8.10.3 Control Plane

Also identify things not covered in the TR that need to be covered, if any.

#### 8.10.3.1 Earth fixed/moving beams related issues

Feeder link switch impact on mobility procedure

[R2-2100162](file:///C:\Data\3GPP\Extracts\R2-2100162%20feeder%20link%20switch.doc) Discussion on feeder link switch’s impact on mobility procedure OPPO discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2100380](file:///C:\Data\3GPP\Extracts\R2-2100380.docx) Feeder link switch over NTN Intel Corporation discussion Rel-17 NR\_NTN\_solutions-Core [R2-2008981](file:///C:\Data\3GPP\Extracts\R2-2008981.docx)

[R2-2100528](file:///C:\Data\3GPP\Extracts\R2-2100528%20On%20Feeder%20Link%20Mobility%20in%20Transparent%20Satellite%20Payload%20Scenarios.docx) On Feeder Link Mobility in Transparent Satellite Payload Scenarios Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_NTN\_solutions-Core [R2-2009773](file:///C:\Data\3GPP\Extracts\R2-2009773%20On%20Feeder%20Link%20Mobility%20in%20Transparent%20Satellite%20Payload%20Scenarios.docx)

[R2-2100811](file:///C:\Data\3GPP\Extracts\R2-2100811%20Enhancements%20on%20cell%20reselection%20for%20earth%20moving%20and%20fixed%20beams.doc) Enhancements on cell reselection for earth moving and fixed beams Xiaomi discussion

[R2-2101574](file:///C:\Data\3GPP\Extracts\R2-2101574%20(R17%20NTN%20WI%20AI%208.10.3.1)%20Feeder-link%20switch.docx) Mobility enhancements for feeder-link switch InterDigital discussion Rel-17 NR\_NTN\_solutions-Core

Other

[R2-2100578](file:///C:\Data\3GPP\Extracts\R2-2100578%20Beam%20type-related%20information%20of%20LEO%20satellites.DOC) Beam type-related information of LEO satellites LG Electronics Inc. discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2100666](file:///C:\Data\3GPP\Extracts\R2-2100666.doc) Discussion on Floor Layout Information Spreadtrum Communications discussion Rel-17 NR\_NTN\_solutions-Core

TAU

[R2-2101607](file:///C:\Data\3GPP\Extracts\R2-2101607%20Considerations%20on%20Soft%20TAI%20Update.docx) Considerations on Soft TAI Update CMCC discussion Rel-17 NR\_NTN\_solutions-Core

* Discussed in offline 104

[R2-2100259](file:///C:\Data\3GPP\Extracts\R2-2100259_TAU_NR-NTN_v2.0.docx) Improving Tracking Area Updates in NR-NTN MediaTek Inc. discussion

* moved here from 8.10.3.2
* Discussed in offline 104

[R2-2100742](file:///C:\Data\3GPP\Extracts\R2-2100742.doc) TAC update procedure Qualcomm Incorporated discussion Rel-17 NR\_NTN\_solutions-Core

* Discussed in offline 104

[R2-2100820](file:///C:\Data\3GPP\Extracts\R2-2100820%20Fixed%20Tracking%20Area%20and%20the%20Tracking%20Area%20Code%20in%20NTN.docx) Fixed Tracking Area and the Tracking Area Code in NTN PANASONIC R&D Center Germany discussion [R2-2009120](file:///C:\Data\3GPP\Extracts\R2-2009120%20Fixed%20Tracking%20Area%20and%20the%20Tracking%20Area%20Code%20in%20NTN.docx)

* moved here from 8.10.3.2
* Discussed in offline 104

[R2-2101406](file:///C:\Data\3GPP\RAN2\Docs\R2-2101406.zip) TAI update for earth moving cell NEC Telecom MODUS Ltd. discussion

* Discussed in offline 104
* [AT113-e][104][NTN] TAC update (CMCC)

Scope: Discuss TAC update procedure, based on [R2-2101607](file:///C:\Data\3GPP\Extracts\R2-2101607%20Considerations%20on%20Soft%20TAI%20Update.docx), [R2-2100259](file:///C:\Data\3GPP\Extracts\R2-2100259_TAU_NR-NTN_v2.0.docx), [R2-2100742](file:///C:\Data\3GPP\Extracts\R2-2100742.doc), [R2-2100820](file:///C:\Data\3GPP\Extracts\R2-2100820%20Fixed%20Tracking%20Area%20and%20the%20Tracking%20Area%20Code%20in%20NTN.docx), [R2-2101406](file:///C:\Data\3GPP\RAN2\Docs\R2-2101406.zip)

Initial intended outcome: Summary of the offline discussion with e.g.:

* + - List of proposals for agreement (if any)
    - List of proposals that require online discussions

Initial deadline (for companies' feedback): Monday 2021-02-01 11:00 UTC

Initial deadline (for rapporteur's summary in [R2-2102014](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102014.zip)): Monday 2021-02-01 17:00 UTC

Updated scope: Discuss how to capture the proposal introducing soft TAU approach in a way that it's still possible to broadcast one TAC only, when this is sufficient

Updated intended outcome: Summary of the offline discussion with e.g.:

* + - List of proposals for agreement

Deadline (for companies' feedback): Wednesday 2021-02-03 18:00 UTC

Deadline (for rapporteur's summary in R2-2102044): Thursday 2021-02-04 02:00 UTC

[R2-2102014](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102014.zip) Summary of offline 104 - [NTN] TAC update CMCC discussion NR\_NTN\_solutions-Core

Proposal 1: it is proposed to adopt at least soft TAU approach for moving beam. FFS that the hard TAI can be allowed as well, as special case of soft TAI.

* Samsung thinks there is also a third option of a virtual TAC update and would like to discuss this option as well
* LG wonders what does it means this is only for fixed beam. It should be for all cases
* ZTE has concerns with p1 as it is not clear how this would work, how the network would broadcast this for earth moving cells.
* Huawei/Apple/QC supports p1 and share the same comment as LG
* Nokia could be fine but wonders whether the hard TAC update should also be supported.
* CATT thinks both soft and hard TAI update should be supported
* Discuss offline how to capture the proposal introducing soft TAU approach in a way that it's still possible to broadcast one TAC only, when this is sufficient

Proposal 2: the UE determine the TA based on the broadcasted radio coverage, as UE in terrestrial network.

Proposal 3: such kind of TAC change in SI caused by satellite motion will not trigger paging for system information change.

List of proposals that require online discussions:

Proposal 4: RAN2 need discussion on whether to send LS to CT1/SA2 to check the NAS impact at this moment or later.

R2-2102044 Summary of offline 104 - [NTN] TAC update CMCC discussion NR\_NTN\_solutions-Core

#### 8.10.3.2 Idle/Inactive mode

Idle/inactive mode specific issues.

Including cell selection/reselection & system information.

Including the outcome of [Post112-e][153][NTN] Idle mode aspects (Nokia)

[R2-2100527](file:///C:\Data\3GPP\Extracts\R2-2100527_Report%20from%20%5bPost112-e%5d%5b153%5d%5bNTN%5d%20Idle%20mode%20aspects%20(Nokia).docx) Report from [Post112-e][153][NTN] Idle mode aspects (Nokia) Nokia, Nokia Shanghai Bell report Rel-17 NR\_NTN\_solutions-Core

Proposal 1: UE is made aware of the network type (TN or NTN) in an implicit way.

* ZTE is fine for the serving cell but we could have an explicit indication for the neighbour cell.
* LG still wonders whether this works.
* Continue the discussion as part of offline 105

Proposal 2: NTN scenario information (e.g. LEO/GEO) is not signalled explicitly, but inferred from the contents of the ephemeris. FFS which exact parameters are sufficient and whether this behavior needs to be specified.

* Samsung/QC prefer an explicit indication to avoid that the UE needs to derive this.
* Continue the discussion as part of offline 105

Proposal 3: Postpone any decisions how the ephemeris should be represented until RAN1 concludes their discussion on the required accuracy.

Proposal 4: The NTN ephemeris is divided into camped normally cell’s ephemeris and neighbour’s ephemeris. FFS how would they differ regarding e.g. the required accuracy or signalling impact.

* ZTE thinks we can remove "normally". Nokia is fine with that.
* Oppo thinks we should just refer to serving cell and neighbour cells
* Apple thinks we can wait for now but are ok to accept the majority view

Proposal 5: Consider pre-configuration in uSIM, NAS, SIB and RRC signalling for providing the NTN ephemeris. Further discussion depends on the agreed ephemeris contents.

Proposal 6: Discuss further if and how the additional information on when a cell is going to stop serving the area and information about new upcoming cell is the part of the cell reselection for NTN Rel-17.

Agreements:

1. The NTN ephemeris is divided into serving cell’s ephemeris and neighbour’s ephemeris. FFS how would they differ regarding e.g. the required accuracy or signalling impact.
2. Consider pre-configuration in uSIM, NAS, SIB and RRC signalling for providing the NTN ephemeris. Further discussion depends on the agreed ephemeris contents.

Usage and provision of the cell expire time and upcoming cell info & ephemeris assisted cell (re)selection

[R2-2100347](file:///C:\Data\3GPP\Extracts\R2-2100347%20NTN%20Idle%20mode.docx) Idle mode aspects for NTN Ericsson discussion

Only P1~P4:

Proposal 1 RAN2 should consider how to enhance the cell selection/reselection criteria in case RSRP measurements are not sufficient e.g. by taking into account UE location with respect to reference cell center.

Proposal 2 RAN2 should take the Tservice into account for cell selection and reselection

Proposal 3 RAN2 should consider taking the UE location into account also for the idle mode measurement rules.

Proposal 4 RAN2 should take the Tservice into account for the idle mode measurement rules.

* P1~P4 discussed in offline 105

[R2-2101196](file:///C:\Data\3GPP\Extracts\R2-2101196_Discussion%20on%20cell%20selection%20and%20reselection%20in%20NTN.docx) Discussion on cell selection and reselection in NTN ZTE corporation, Sanechips discussion Rel-17 NR\_NTN\_solutions-Core

Proposal 1: With awareness of the cell expire time of the camped cell and neighbour cells, idle mode UE may use it to drive the remaining valid time of the current cell or neighbour cells to decide whether to trigger intra-frequency/ inter-frequency measurements or to reselect a cell with longer valid time.

Proposal 2: The cell deployment information of each satellite is provisioned as part of ephemeris information and it is up to UE to derive the expire time for earth moving cells to assist cell reselection.

Proposal 3: The expire time of earth fixed cells is broadcast in system information to assist cell reselection.

Proposal 4: RAN2 to discuss what should be considered during cell (re)selection evaluation in addition to the RSRP/RSRQ and reselection priority:

(1) The distance between UE and satellite

(2) The distance between UE and cell center

(3) Both

Proposal 5: If distance between UE and the satellite is considered as the metric for cell (re)selection, the association between satellite and cells should be provided to UE.

Proposal 6: If distance between UE and the cell center is considered as the metric for cell (re)selection, the location of the cell center should be known to UE.

* Discussed in offline 105

[R2-2100382](file:///C:\Data\3GPP\Extracts\R2-2100382.docx) Idle mode operation in NTN Intel Corporation discussion Rel-17 NR\_NTN\_solutions-Core [R2-2008984](file:///C:\Data\3GPP\Extracts\R2-2008984.docx)

Only P1:

Option 1: UE performs cell selection and reselection procedure based on satellite/HAPS ephemeris information and its own location (e.g. distance between the UE and satellite).

Option 2: UE performs cell selection and reselection procedure based on measurement of satellite but the measurement requirement can be based on the distance between UE and the satellite.

Option 3: It is up to UE implementation how to use the satellite/HAPS ephemeris information for cell selection and reselection.

Proposal 1: RAN2 to discuss the options above for cell selection and reselection for NTN.

* P1 discussed in offline 105

[R2-2100163](file:///C:\Data\3GPP\Extracts\R2-2100163%20NTN%20Idle%20inactive%20mode%20procedures.doc) Discussion on idle/inactive mode procedures in NTN OPPO discussion Rel-17 NR\_NTN\_solutions-Core

Only P1 and P2:

Proposal 1 UE location and ephemeris-based cell reselection is considered by RAN2.

Proposal 2 Among the N best cells using RSRP ranking, UE selects the target cell with the shortest distance to the satellite’s cell center. Cell center information can be broadcasted for each satellite.

* P1 and P2 discussed in offline 105
* [AT113-e][105][NTN] Idle mode aspects (Nokia)

Scope: Discuss:

1. Continue the discussion on P1 and P2 from [R2-2100527](file:///C:\Data\3GPP\Extracts\R2-2100527_Report%20from%20%5bPost112-e%5d%5b153%5d%5bNTN%5d%20Idle%20mode%20aspects%20(Nokia).docx)
2. Usage and provision of the cell expire time and upcoming cell info
3. ephemeris assisted cell (re)selection

based on the corresponding proposals in [R2-2100347](file:///C:\Data\3GPP\Extracts\R2-2100347%20NTN%20Idle%20mode.docx) (P1~P4), [R2-2101196](file:///C:\Data\3GPP\Extracts\R2-2101196_Discussion%20on%20cell%20selection%20and%20reselection%20in%20NTN.docx), [R2-2100382](file:///C:\Data\3GPP\Extracts\R2-2100382.docx) (P1) and [R2-2100163](file:///C:\Data\3GPP\Extracts\R2-2100163%20NTN%20Idle%20inactive%20mode%20procedures.doc) (P1 and P2)

Initial intended outcome: Summary of the offline discussion with e.g.:

* + - List of proposals for agreement (if any)
    - List of proposals that require online discussions
    - List of proposals that should not be pursued (if any)

Initial deadline (for companies' feedback): Monday 2021-02-01 17:00 UTC

Initial deadline (for rapporteur's summary in [R2-2102015](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102015.zip)): Monday 2021-02-01 23:00 UTC

Proposals marked "for agreement" in [R2-2102015](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102015.zip) not challenged until Tuesday 2020-02-02 11:00 UTC will be declared as agreed by the session chair. For the rest the discussion will continue online.

[R2-2102015](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102015.zip) Summary of offline 105 - [NTN] Idle mode aspects Nokia discussion NR\_NTN\_solutions-Core

For e-mail agreement:

Proposal 1: RAN2 assumes explicit indication of network type (TN/NTN) for serving cell in MIB/SIB1 is not needed.

* Samsung still believes that an explicit NTN Type indication for NTN Platform Type would help with cell/network selection and help the UE prioritize one network type over another. So they would like to postpone the discussion or send a LS to RAN1 asking to define a solution to enable legacy and new UEs to distinguish between a TN and an NTN.
* Continue online
* Samsung thinks there are no good implicit ways to do this. Apple also thinks this needs to be explicit. QC thinks the earlier the better: we cannot go later than SIB1.
* Vodafone thinks we need an explicit signalling
* RAN2 thinks that a UE needs to know whether the network is a TN or NTN no later than SIB1 reception

Proposal 3: The information on NTN scenario is not signalled explicitly.

* Samsung has some comments
* Continue online

Proposal 4: The information on when a cell is going to stop serving the area and/or the timing information (e.g. timer or absolute time) about new upcoming cell is supported at least in Earth-fixed NTN scenario. FFS if both types of information are needed. FFS if this is known from system information and/or the ephemeris.

* Samsung has some comments but can be fine after the clarification on definition of timing information
* Continue online
* Agreed

Proposal 5: Companies are invited to submit papers to RAN2#114 discussing how the timing information on when a cell is going to stop/start serving the area is used (i.e. for cell (re)selection, measurement triggering or up to the UE implementation).

* Continue online

Agreements:

1. RAN2 thinks that a UE needs to know whether the network is a TN or NTN no later than SIB1 reception
2. The information on when a cell is going to stop serving the area and/or the timing information (e.g. timer or absolute time) about new upcoming cell is supported at least in Earth-fixed NTN scenario. FFS if both types of information are needed. FFS if this is known from system information and/or the ephemeris.

For online discussion:

Proposal 2: RAN2 assumes the network type (NTN or TN) for neighbour cells does not have to be explicitly indicated, as it can be inferred from the ephemeris content. The decision can be revisited at later stage of the WI (when the ephemeris content is known).

Proposal 6: UE’s geolocation is considered in IDLE mode NTN procedures.

* Mediatek thinks that this will have severe impacts on UE’s power consumption, which is of prime concern in IDLE mode. Apple and Thales agrees
* Vodafone wonders how do we do this then? Mediatek thinks this can be done using RSRP/RSRQ measurements

[R2-2100254](file:///C:\Data\3GPP\Extracts\R2-2100254_For8.10.3.2_IdleInactiveMode_ObservationsProposals_Samsung.doc) Idle and Inactive Mode Aspects for an NTN- Observations and Proposals Samsung Research America discussion Rel-17

[R2-2100260](file:///C:\Data\3GPP\Extracts\R2-2100260_Cell-Reselection_NR-NTN_v2.0.docx) On Cell Re-selection in NR-NTN MediaTek Inc. discussion

[R2-2100291](file:///C:\Data\3GPP\Extracts\R2-2100291_The%20consideration%20of%20satellite%20ephemeris%20in%20NTN.docx) The design of satellite ephemeris in NTN China Telecommunication discussion Rel-17

[R2-2100335](file:///C:\Data\3GPP\Extracts\R2-2100335%20Further%20discussion%20on%20the%20IDLE%20and%20inactive%20mode%20for%20NTN.docx) Further Discussion on the IDLE and Inactive Mode for NTN CATT discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2100579](file:///C:\Data\3GPP\Extracts\R2-2100579%20Contents%20of%20ephemeris%20information%20and%20remaining%20idle%20mode%20issues.doc) Contents of ephemeris information and remaining iissues LG Electronics Inc. discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2100809](file:///C:\Data\3GPP\Extracts\R2-2100809%20Control%20plane%20for%20idle%20mode%20UE.doc) Control plane for idle mode UE Xiaomi discussion

[R2-2100880](file:///C:\Data\3GPP\Extracts\._R2-2100880%20Cell%20Selection%20And%20Cell%20Reselection%20Solutions%20for%20Non%20Terrestrial%20Networks.docx) Cell Selection And Cell Reselection Solutions for Non Terrestrial Networks Apple, BT Plc. discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2100883](file:///C:\Data\3GPP\RAN2\Docs\R2-2100883.zip) Considerations on ephemeris database and parameter distribution to UEs in Non Terrestrial Networks Apple discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2100913](file:///C:\Data\3GPP\Extracts\R2-2100913.doc) Idle mode enhancement in NTN Sony discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2101000](file:///C:\Data\3GPP\Extracts\R2-2101000%20Discussion%20on%20cell%20reselection%20in%20NTN.doc) Discussion on cell reselection in NTN Huawei, HiSilicon discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2101127](file:///C:\Data\3GPP\Extracts\R2-2101127%20Ephemeris%20provisioning%20for%20satellite%20and%20HAP%20constellation.docx) Ephemeris provisioning for satellite and HAP constellation Lenovo, Motorola Mobility discussion Rel-17

[R2-2101201](file:///C:\Data\3GPP\Extracts\R2-2101201_Understanding%20on%20the%20newly%20introduced%20Access%20Technology%20identifier%20for%20NTN.docx) Understanding on the newly introduced Access Technology identifier for NTN ZTE corporation, Sanechips discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2101572](file:///C:\Data\3GPP\Extracts\R2-2101572%20(R17%20NTN%20WI%20AI%208.10.3.2)%20Cell%20reselection.docx) Cell reselection in NTN InterDigital discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2101609](file:///C:\Data\3GPP\Extracts\R2-2101609%20Discussion%20of%20cell%20(re)selection%20and%20ephemeris%20in%20NTN.docx) Discussion of cell selection/reselection and ephemeris in NTN CMCC discussion Rel-17 NR\_NTN\_solutions-Core

* Revised in [R2-2101924](file:///C:\Data\3GPP\Extracts\R2-2101924%20Discussion%20of%20cell%20(re)selection%20and%20ephemeris%20in%20NTN.docx)

[R2-2101924](file:///C:\Data\3GPP\Extracts\R2-2101924%20Discussion%20of%20cell%20(re)selection%20and%20ephemeris%20in%20NTN.docx) Discussion of cell selection/reselection and ephemeris in NTN CMCC discussion Rel-17 NR\_NTN\_solutions-Core [R2-2101609](file:///C:\Data\3GPP\Extracts\R2-2101609%20Discussion%20of%20cell%20(re)selection%20and%20ephemeris%20in%20NTN.docx)

[R2-2101707](file:///C:\Data\3GPP\Extracts\R2-2101707%20Considerations%20on%20satellite%20ephemeris.doc) Considerations on satellite ephemeris Huawei, HiSilicon discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2101755](file:///C:\Data\3GPP\Extracts\R2-2101755%20PLMN%20separation%20for%20NTN%20&%20TN.doc) PLMN separation for NTN & TN ASUSTeK discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2101779](file:///C:\Data\3GPP\Extracts\R2-2101779_NTN%20Indication%20and%20Idle%20mode%20enhancements.docx) NTN Indication and Idle mode enhancements Convida Wireless discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2101786](file:///C:\Data\3GPP\Extracts\R2-2101786_NTN%20cell%20selection%20and%20Idle%20mode%20enhancements.docx) NTN cell selection and Idle mode enhancements Convida Wireless discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2101787](file:///C:\Data\3GPP\Extracts\R2-2101787_NTN%20cell%20reselection%20and%20Idle%20mode%20enhancements.docx) NTN cell reselection and Idle mode enhancements Convida Wireless discussion Rel-17 NR\_NTN\_solutions-Core

#### 8.10.3.3 Connected mode

Connected mode specific issues.

CHO

[R2-2100346](file:///C:\Data\3GPP\Extracts\R2-2100346%20NTN%20connected%20mode.docx) Connected mode aspects for NTN Ericsson discussion

* P1~P10 discussed in offline 106

[R2-2101197](file:///C:\Data\3GPP\Extracts\R2-2101197_Discussion%20on%20time(r)%20and%20location%20CHO%20triggering%20event%20configuration%20in%20NTN.docx) Discussion on time(r) and location CHO triggering event configuration in NTN ZTE corporation, Sanechips discussion Rel-17 NR\_NTN\_solutions-Core

* Discussed in offline 106

[R2-2101708](file:///C:\Data\3GPP\Extracts\R2-2101708%20Discussion%20on%20CHO%20in%20NTN%20.DOC) Discussion on CHO in NTN Huawei, HiSilicon discussion Rel-17 NR\_NTN\_solutions-Core

* Discussed in offline 106

[R2-2100383](file:///C:\Data\3GPP\Extracts\R2-2100383.docx) Location based measurement event and location based CHO execution condition for NTN Intel Corporation discussion Rel-17 NR\_NTN\_solutions-Core

* Discussed in offline 106

[R2-2100744](file:///C:\Data\3GPP\Extracts\R2-2100744.doc) Configuration and execution of CHO Qualcomm Incorporated discussion Rel-17 NR\_NTN\_solutions-Core [R2-2009455](file:///C:\Data\3GPP\Extracts\R2-2009455.doc)

* Discussed in offline 106

[R2-2101129](file:///C:\Data\3GPP\Extracts\R2-2101129%20Conditional%20handover%20in%20NTN%20system%20v1.0.doc) CHO in NTN system Lenovo, Motorola Mobility discussion Rel-17

* Discussed in offline 106
* [AT113-e][106][NTN] CHO aspects (Ericsson)

Scope: Discuss CHO aspects based on the proposals in [R2-2100346](file:///C:\Data\3GPP\Extracts\R2-2100346%20NTN%20connected%20mode.docx) (P1~P10), [R2-2101197](file:///C:\Data\3GPP\Extracts\R2-2101197_Discussion%20on%20time(r)%20and%20location%20CHO%20triggering%20event%20configuration%20in%20NTN.docx), [R2-2101708](file:///C:\Data\3GPP\Extracts\R2-2101708%20Discussion%20on%20CHO%20in%20NTN%20.DOC), [R2-2100383](file:///C:\Data\3GPP\Extracts\R2-2100383.docx), [R2-2100744](file:///C:\Data\3GPP\Extracts\R2-2100744.doc) and [R2-2101129](file:///C:\Data\3GPP\Extracts\R2-2101129%20Conditional%20handover%20in%20NTN%20system%20v1.0.doc)

Initial intended outcome: Summary of the offline discussion with e.g.:

* + - List of proposals for agreement (if any)
    - List of proposals that require online discussions
    - List of proposals that should not be pursued (if any)

Initial deadline (for companies' feedback): Monday 2021-02-01 17:00 UTC

Initial deadline (for rapporteur's summary in [R2-2102016](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102016.zip)): Monday 2021-02-01 23:00 UTC

Updated scope: Continue the discussion on proposals from [R2-2102016](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102016.zip)

Updated intended outcome: Summary of the offline discussion with e.g.:

* + - List of proposals for agreement
    - List of proposals to be postponed

Deadline (for companies' feedback): Wednesday 2021-02-03 18:00 UTC

Deadline (for rapporteur's summary in R2-2102045): Wednesday 2021-02-03 22:00 UTC

[R2-2102016](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102016.zip) Summary of offline 106 - [NTN] CHO aspects Ericsson discussion NR\_NTN\_solutions-Core

List of proposals for agreement (if any)

Proposal 1: support A4 event for NTN CHO

* QC and Samsung think this is fine when combined with other
* Ericsson wonders why we want to deny the option for the NW to configure just this?

Proposal 2: Support having the option to configure the ”time” trigger per “RRCReconfig->conditionalReconfig”. FFS if allowed to be configured without RSRP/RSRQ related event.

Proposal 5: Support having the option to configure the ”time” trigger per “RRCReconfig->conditionalReconfig->CondReconfigID”. FFS if allow it to be configured without RSRP/RSRQ related event.

Proposal 8: define the location based CHO trigger with respect to a cell center, FFS whether serving or candidate target and FFS which information is given in ephemeris and which part of information is given in CHO configuration

Proposal 9: When configuring the location based CHO event together with RSRP/Q based event, support having AND functionality with location based and RSRP/RSRQ related event. FFS if additionally OR functionality is supported

List of proposals that require online discussions

Proposal 3: RAN2 to discuss which definition of the ”time” would be suitable when ”time” is configured per “RRCReconfig->conditionalReconfig”.

Proposal 4&7: RAN2 to discuss how the ”time” based trigger is definied with respect to RSRP/RSRQ event. This was similar for both when ”time” is configured per “RRCReconfig->conditionalReconfig” or when it is configured per “RRCReconfig->conditionalReconfig->CondReconfigID”. Some options mentioned

• There is starting time per candidate cell when to UE should start evaluating an event

• There is time/timer for evaluating whether event was fullfilled

• Time range within which RSRP event needs to fullfill

• It is left to the UE

Proposal 6: RAN2 to discuss which definition of the ”time” would be suitable when ”time” is configured per “RRCReconfig->conditionalReconfig->CondReconfigID”

Proposal 10: RAN2 to discuss whether location based and time based trigger should or should not be configured together

Proposal 11: RAN2 to discuss whether location based trigger can be configured without RSRP/RSRQ based event or not.

List of proposals that should not be pursued (if any)

Proposal 12: UE to keep the CHO configuration after HO

R2-2102045 Summary of offline 106 - [NTN] CHO aspects - second round Ericsson discussion NR\_NTN\_solutions-Core

Measurements

[R2-2100384](file:///C:\Data\3GPP\Extracts\R2-2100384.docx) Measurement framework to support NTN Intel Corporation discussion Rel-17 NR\_NTN\_solutions-Core

Proposal 1: RAN2 to discuss how the UE reports propagation delay information to the network to assist with network SMTC window configuration and measurement gap configuration. The options are:

• Option 1: rely on existing SFTD mechanism.

• Option 2: UE reports location information and network calculate propagation delay from neighboring cells.

• Option 3: UE reports propagation delay from neighboring cells.

Proposal 2: RAN2 to discuss if relax measurement requirement is needed and send LS to ask RAN4 to relax the UE measurement in NTN if needed.

[R2-2100530](file:///C:\Data\3GPP\Extracts\R2-2100530%20On%20SMTC%20and%20measurement%20gaps%20for%20NTN.docx) On SMTC and measurement gaps for NTN Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_NTN\_solutions-Core

Proposal 1: UE can track the relative movement of neighbor cell’s SSB within the SMTC window and update the window when the time-wise movements exceeds a threshold.

Proposal 2: For earth-fixed cell scenario, the target cell may increase the number of transmitted SSBs during the cell switch time.

[R2-2100336](file:///C:\Data\3GPP\Extracts\R2-2100336%20Consideration%20on%20measurement%20for%20NTN.docx) Consider on measurement in NTN system CATT discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2100164](file:///C:\Data\3GPP\Extracts\R2-2100164%20NTN%20connected%20mode%20mobility.doc) Discussion on mobility management for connected mode UE in NTN OPPO discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2100258](file:///C:\Data\3GPP\Extracts\R2-2100258%20Efficient%20Configuration%20of%20SMTC%20and%20Measurement%20Gaps%20in%20NR-NTN.docx) Efficient Configuration of SMTC and Measurement Gaps in NR-NTN MediaTek Inc. discussion

[R2-2100580](file:///C:\Data\3GPP\Extracts\R2-2100580%20Further%20considerations%20on%20CHO,%20location%20reporting,%20and%20measurement%20window%20in%20NTN.DOC) Further considerations on CHO, location reporting, and measurement window in NTN LG Electronics Inc. discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2100745](file:///C:\Data\3GPP\Extracts\R2-2100745.doc) SMTC and measurement gap configuration Qualcomm Incorporated discussion Rel-17 NR\_NTN\_solutions-Core [R2-2009456](file:///C:\Data\3GPP\Extracts\R2-2009456.doc)

[R2-2101128](file:///C:\Data\3GPP\Extracts\R2-2101128%20Considerations%20on%20measurements%20in%20NTN%20(Revision%20of%20R2-2009863).docx) Considerations on measurements in NTN Lenovo, Motorola Mobility discussion Rel-17

[R2-2101859](file:///C:\Data\3GPP\Extracts\R2-2101859%20SMTC%20and%20Measurment%20gaps%20in%20NTN.docx) SMTC and measurement gap configuration in NTN Rakuten Mobile, Inc discussion

Misc

[R2-2100255](file:///C:\Data\3GPP\Extracts\R2-2100255_For8.10.3.3_ConnectedMode_ObservationsProposals_Samsung.doc) Connected Mode Aspects for an NTN- Observations and Proposals Samsung Research America discussion Rel-17

[R2-2100665](file:///C:\Data\3GPP\Extracts\R2-2100665.doc) Discussion on Mobility in NTN Spreadtrum Communications discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2100806](file:///C:\Data\3GPP\Extracts\R2-2100806_Discussion%20on%20mobility%20management%20in%20NTN.docx) Discussion on mobility management in NTN Xiaomi discussion

[R2-2100822](file:///C:\Data\3GPP\Extracts\R2-2100822%20Overhead%20Reduction%20for%20the%20Handover%20Procedure%20in%20NTN.docx) Overhead Reduction for the Handover Procedure in NTN PANASONIC R&D Center Germany discussion [R2-2009121](file:///C:\Data\3GPP\Extracts\R2-2009121%20Overhead%20Reduction%20for%20the%20Handover%20Procedure%20in%20NTN.docx)

[R2-2100882](file:///C:\Data\3GPP\Extracts\._R2-2100882%20Analysis%20of%20Proposed%20Conditional%20Handover%20Solutions%20for%20Non%20Terrestrial%20Networks.docx) Analysis of Proposed Conditional Handover Solutions for Non Terrestrial Networks Apple discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2100915](file:///C:\Data\3GPP\Extracts\R2-2100915.doc) Mobility management in NTN Sony discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2101611](file:///C:\Data\3GPP\Extracts\R2-2101611%20Further%20discussion%20of%20mobility%20enhancements%20for%20NTN%20.docx) Further discussion of mobility enhancements for NTN CMCC discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2101709](file:///C:\Data\3GPP\Extracts\R2-2101709%20Discussion%20on%20location%20based%20measurement%20in%20NTN.DOC) Discussion on location based measurement in NTN Huawei, HiSilicon discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2101792](file:///C:\Data\3GPP\Extracts\R2-2101792%20_NTN%20ANR%20enhancements.docx) NTN ANR enhancements Convida Wireless discussion Rel-17 NR\_NTN\_solutions-Core

Service continuity

[R2-2101298](file:///C:\Data\3GPP\Extracts\R2-2101298%20-%20A%20resubmission%20of%20R2-2008973%20Service%20Continuity%20between%20NTN%20and%20TN.docx) Service continuity between NTN and TN HUGHES Network Systems, Thales, BT Plc, Turkcell, Vodafone, ESA discussion Rel-17 Late

[R2-2101610](file:///C:\Data\3GPP\Extracts\R2-2101610%20Discussion%20of%20service%20continuity%20between%20Non-Terrestrial%20Network%20and%20Terrestrial%20Network%20.docx) Discussion of service continuity between Non-Terrestrial Network and Terrestrial Network CMCC discussion Rel-17 NR\_NTN\_solutions-Core

Withdrawn

R2-2100992 Measurement window enhancements for NTN cell LG Electronics Inc. discussion Rel-17 Late

* Withdrawn

R2-2101110 Conditional handover in NTN system Lenovo, Motorola Mobility discussion Rel-17 Late

* Withdrawn

[R2-2101547](file:///C:\Data\3GPP\Extracts\R2-2101547%20Further%20considerations%20on%20CHO,%20location%20reporting,%20and%20measurement%20window%20in%20NTN.DOC) Further considerations on CHO, location reporting, and measurement window in NTN LG Electronics Inc. discussion Rel-17 NR\_NTN\_solutions-Core Withdrawn

#### 8.10.3.4 LCS aspects

Potential issues associated to the use of the existing Location Services (LCS) application protocols to locate UE in the context of NTN.

Including the outcome of [Post112-e][151][NTN] LCS for NTN (Fraunhofer)

[R2-2101150](file:///C:\Data\3GPP\Extracts\R2-2101150.docx) Summary of [Post112-e][151][NTN] LCS for NTN (Fraunhofer) Fraunhofer IIS, Fraunhofer HHI discussion Rel-17

Proposal 1: RAN2 shall support at least the following use cases of positioning when accessing over NTN

• regulatory services (PWS, Lawful interception and emergency services)

• determination of the country for the purpose of registration of UE (PLMN selection)

Proposal 2: Emergency call scenario shall be supported to have the similar accuracy when connected to NTN as compared to TN.

Proposal 3: RAN2 shall agree that the error in position leading to selection of a PLMN in a neighbouring country (‘B’) while being physically located in a given country (‘A’) shall be comparable to that of the terrestrial networks.

Proposal 4: RAN2 shall discuss whether the position reported by the UE can be trusted for the purpose of regulatory use cases and for PLMN selection.

Proposal 5: If RAN2 can agree that additional mechanism to cross check the position in network is needed, then the approach to cross-check the position shall be contribution driven in next meeting.

Proposal 6: RAN2 shall discuss and conclude whether we rely on A-GNSS only or if we need to evaluate RAT-dependent positioning methods in NTN.

Proposal 7: RAN2 shall discuss and come to conclusion whether or not the requirements from SA3-LI (S3i200056) and SA2 (PLMN selection) can be fulfilled with the use of A-GNSS only.

* Fraunhofer thinks we need to decide if we can trust a UE based positioning method for NTN or not.
* CATT wonders why we should not trust a A-GNSS based positioning
* Ericsson wonders why this trust issue needs RAN2 discussion.
* Ericsson also thinks that this depends on whether we need the UE location with a finer granularity than what is available via Cell ID and TAC.
* Come back in the next GTW session to see whether we can wait for SA3/SA3-LI indication before any further discussion on whether we can trust A-GNSS based positioning for NTN or not

[R2-2102034](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102034.zip) Possible questions to SA3-LI & SA3 on LCS in NTN Thales discussion Rel-17 NR\_NTN\_solutions-Core

* revised in R2-2102035

[R2-2102035](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102035.zip) Possible questions to SA3-LI & SA3 on LCS in NTN Thales discussion Rel-17 NR\_NTN\_solutions-Core

Proposal: Submit the following questions to SA3 & SA3-LI via an LS:

• Question 1: RAN2 would like to ask to SA3-LI on whether a UE position computed using A-GNSS in UE-based mode, as defined in TS 38.305 using the assistance data provided via broadcast (e.g. posSIBs), can be considered reliable from SA3-LI perspective. ?

• Question 2: RAN2 would like to ask to SA3-LI whether the position computed at network side using A-GNSS measurements provided by UE, as defined in TS 38.305 in UE-assisted, LMF-based mode, could be considered a network-verified location.?

• Question 3: RAN2 would like to ask to SA3 whether security issues (e.g. privacy, integrity) could be created with the reporting of GNSS location by the UE to the network over the radio interface in clear text (e.g. message “RRCSetupComplete”) during the initial access procedure, before the registration in the PLMN in the country where the UE is physically located. ?

* QC is fine to send an LS to SA3 / SA3-LI
* Ericsson thinks the assumption behind Q1 and Q2 is that finer granularity is needed
* Vodafone thinks that we need to trust the location is valid.
* Draft an LS to SA2, SA3, SA3-LI (cc: RAN3) asking the following questions (exact wording can be discussed offline)

1. whether a finer granularity about UE location in a NTN than what is derived from Cell ID + TAC is needed (to SA2)
2. if so, whether a A-GNSS based UE location information can be reliable e.g. for lawful interception (to SA3-LI)

* Remove any reference to finer granularity for UE location in the other reply LS to RAN3 and indicate that a separate LS on this will be sent
* [AT113-e][115][NTN] LSs to SA2 and SA3-LI (Thales)

Scope: Draft an LS to SA2, SA3, SA3-LI (cc: RAN3) asking the following questions (exact wording can be discussed offline. Also target groups can be further fixed)

1. whether a finer granularity (than the typical size of an NTN cell) is needed about the information of UE location in a NTN (to SA2)
2. if so, whether a A-GNSS based UE location information can be reliable, e.g. for lawful interception (to SA3-LI)

Intended outcome: agreeable draft LS

Deadline (for companies' feedback): Wednesday 2021-02-03 18:00 UTC

Deadline (for rapporteur's summary in R2-2102036): Wednesday 2021-02-03 22:00 UTC

R2-2102036 Draft LS on UE location information in NTN Thales draftLS Rel-17 NR\_NTN\_solutions-Core

[R2-2100256](file:///C:\Data\3GPP\Extracts\R2-2100256_For8.10.3.4_LCSAspects_ObservationsProposals_Samsung.doc) LCS Aspects for an NTN- Observations and Proposals Samsung Research America discussion Rel-17

[R2-2100337](file:///C:\Data\3GPP\Extracts\R2-2100337%20Discussion%20on%20LCS%20request%20and%20response%20enhancement%20in%20NTN.docx) Discussion on LCS request and response enhancement in NTN CATT discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2100348](file:///C:\Data\3GPP\Extracts\R2-2100348.docx) NTN location reporting and network identifiers Ericsson discussion

[R2-2100743](file:///C:\Data\3GPP\Extracts\R2-2100743.doc) Discussion on RAN3 LS on UE positioning Qualcomm Incorporated discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2100810](file:///C:\Data\3GPP\Extracts\R2-2100810%20Discussion%20on%20location%20service%20for%20NTN.doc) Discussion on location service for NTN Xiaomi discussion

[R2-2101069](file:///C:\Data\3GPP\Extracts\R2-2101069.doc) UE Positioning Methods in NR-NTN THALES discussion Rel-17

## 8.12 Reduced Capability SI

(FS\_NR\_redcap; leading WG: RAN1; REL-17; WID: RP-202704)

Time budget: 1 TU

Tdoc Limitation: 3 tdocs

Email max expectation: 3 threads

### 8.12.1 Organizational

LSs, rapporteur inputs and other organizational documents. Rapporteur inputs and other pre-assigned documents in this AI do not count towards the tdoc limitation.

[R2-2100983](file:///C:\Data\3GPP\Extracts\R2-2100983%20-%20Conclusion%20of%20RedCap%20SI%20in%20RAN2.docx) Conclusion of RedCap SI in RAN2 Ericsson discussion FS\_NR\_redcap

Proposal 1 Endorse the TR 38.875 update in [5] to be used as baseline for final RAN2 input.

* Endorsed

Proposal 2 Prioritize capturing remaining input and analysis to TR (e.g. remaining input to clauses 8.3, 8.4, 11.1, 11.2).

Proposal 3 Prioritize capturing RAN2 conclusions of the study item and recommendations in clause 13.

Proposal 4 Capture the above recommendations as baseline for the corresponding studies in clause 13 in the TR.

* Intel is fine in general but wonders about recommendations about how network can restrict access for not intended use cases
* On identification and access restriction Vivo wonders whether both options will be covered in the WI
* Recommendations in this paper are endorsed as a baseline, apart for the final one on UAC (which will be further discussed during the meeting), with the understanding that we will have a full discussion after the next GTW session and revise/add more recommendations until the end of this meeting

Proposal 5 Summary and recommendations for eDRX and RRM are discussed in the context of the corresponding email discussions.

[R2-2100984](file:///C:\Data\3GPP\Extracts\R2-2100984%20-%20RAN2%20update%20to%20TR38875.docx) RAN2 update to TR38875 Ericsson discussion FS\_NR\_redcap

* Endorsed

### 8.12.2 Framework for reduced capabilities

For potential solutions already captured in the TR, contributions should focus on suggesting conclusions and recommendations from RAN2 side. For any further input the focus should be on those topics where there is not enough content to make a meaningful conclusion.

#### 8.12.2.1 Principles for how to define and constrain reduced capabilities

L2 capabilities, impacts on procedures, number of RedCap types

[R2-2101255](file:///C:\Data\3GPP\Extracts\R2-2101255%20Higher%20layer%20capabilities%20and%20procedural%20impacts%20of%20RedCap%20UE.doc) Higher layer capabilities and procedural impacts of RedCap UE Huawei, HiSilicon discussion Rel-17

Proposal 1: Consider to reduce the number of DRBs to be mandatorily supported for RedCap UE and allow the UE to report the number of supported DRBs.

Proposal 2: Consider to reduce the length of PDCP and RLC AM SN to be mandatorily supported for RedCap UE (e.g. mandatory 12-bit SN).

Observation 1: RedCap UE may consume more power than non-RedCap UE during cell search and cell re-selection.

Observation 2: If RedCap UEs share PO with non-RedCap UE, the power consumption of RedCap UEs may be impacted because of false probability and unnecessary SIB1 reading.

Observation 3: RedCap UE needs measurement GAP for serving cell measurement with higher probability than non-RedCap UE.

Proposal 3: Capture above observations into the TR.

[R2-2100310](file:///C:\Data\3GPP\Extracts\R2-2100310_Definition%20of%20RedCap%20UEs.docx) Definition of RedCap UEs Qualcomm Incorporated discussion Rel-17 FS\_NR\_redcap

Proposal 1. Only a single RedCap UE type (per FR) is defined.

Proposal 2. A baseline set of UE features for discussions on RedCap UE capabilities in WI phase include the following:

- R15 eMBB, including VoNR enhancements;

- R16 power saving, two-step RACH, positioning;

- R17 power saving, small data transfer, multi-SIM, coverage enhancements, enhanced positioning.

UE features not included in the above set are not supported by RedCap.

Proposal 3. Make the following upper-layer UE capabilities optional for RedCap UEs:

- Maximum number of DRBs;

- Total layer-2 buffer size;

- 18-bit sequence number field for PDCP and RLC AM;

- RRC processing delay.

[R2-2100460](file:///C:\Data\3GPP\Extracts\R2-2100460_UE%20type%20definition%20and%20constraining%20for%20RedCap%20UEs.doc) UE type defination and constraining for RedCap UEs vivo, Guangdong Genius discussion Rel-17 FS\_NR\_redcap

Proposal 1: Two UE types/categories should be defined for RedCap devices to cover various use cases: high-end and low-end devices.

Proposal 2: Two UE types/categories for RedCap devices can be defined based on the UE features (e.g. Bandwidth, antenna number, etc.). Detailed reduced capability could be discussed and decided in WI.

* [AT113-e][107][REDCAP] L2 capabilities and UE types (Huawei)

Scope: based on the proposals in [R2-2101255](file:///C:\Data\3GPP\Extracts\R2-2101255%20Higher%20layer%20capabilities%20and%20procedural%20impacts%20of%20RedCap%20UE.doc), [R2-2100310](file:///C:\Data\3GPP\Extracts\R2-2100310_Definition%20of%20RedCap%20UEs.docx) and [R2-2100460](file:///C:\Data\3GPP\Extracts\R2-2100460_UE%20type%20definition%20and%20constraining%20for%20RedCap%20UEs.doc), discuss:

1. which "reduced L2 capabilities" can be listed as possible enhancements in the TR
2. which impacts on procedures for RedCap UEs can be described in the TR
3. which pros and cons to have only one vs multiple RedCap UE types can be listed in the TR

For all the aspects (and namely for 3), the intention of this offline is to describe options and implications in the TR, not to down-select any alternatives

Initial intended outcome: Summary of the offline discussion with:

* + - List of proposals for agreement
    - List of proposals that require online discussions
    - Corresponding TP for the TR

Initial deadline (for companies' feedback): Monday 2021-02-01 11:00 UTC

Initial deadline (for rapporteur's summary in [R2-2102017](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102017.zip)): Monday 2021-02-01 17:00 UTC

Updated scope: continue the discussion on p5 and p6 from [R2-2102017](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102017.zip), also attempt to draft a recommendation from RAN2 perspective that a single RedCap UE type is preferred

Updated intended outcome: Summary of the offline discussion with:

* + - List of proposals for agreement
    - Corresponding TP for the TR

Initial deadline (for companies' feedback): Wednesday 2021-02-03 11:00 UTC

Initial deadline (for rapporteur's summary in R2-2102037): Wednesday 2021-02-03 13:00 UTC

[R2-2102017](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102017.zip) Summary of offline 107 - [REDCAP] L2 capabilties and UE types Huawei discussion FS\_NR\_redcap

Proposal for agreement:

Proposal 1: Capture ‘maximum number of DRBs mandatory supported’ in the TR as one L2 capability which can be reduced for RedCap UEs. (17/20)

* Agreed

Continue online discussion:

Proposal 2: Capture the following in the TR on reducing total layer-2 buffer size for RedCap UEs:

“According to the calculation in TS 38.306, with peak data rate reductions, L2 buffer requirements for RedCap UEs are implicitly reduced accordingly. The need for further reduction compared to calculation in TS 38.306 needs more discussion”.

* Agreed

Proposal 3: Capture ‘18-bit SN for PDCP and RLC AM’ in the TR as one L2 capability which can be reduced for RedCap UEs if clear benefit is identified.

* Agreed

Proposal 4: Capture in the TR that the gain to reduce RRC processing delay needs further discussion.

* Agreed

Proposal 5: Capture in the TR that paging false alarm is not a specific issue for RedCap UEs. The paging enhancements discussed in R17 Power saving are applicable to RedCap also.

* Apple suggests to have some wording improvements.
* Discuss detailed wording in a followup offline

Proposal 6: Capture the pros/cons to have only one v.s. multiple RedCap UE type(s) in the TR as below:

Only one RedCap UE type:

Pros:

- No market fragmentation of “types”

- Simpler specification, e.g. on early identification, access control, etc.

Cons:

- Cannot provide independent access control for different UE types

Multiple RedCap UE types:

Pros:

- Flexible access control is possible if necessary, e.g. independent access control for different UE types

Cons:

- Potential market fragmentation of “types”

- More specification complexity/effort, e.g. on early identification, access control, etc.

- May lead to non-technical discussion outside 3GPP’s scope, e.g. product management

- Vivo suggests to list all pros and cons. At least add one cons for single type: difficult to achieve the targets on data rate and power efficiency for different use cases. Huawei thinks this might not be specific of the single type case. Intel, Nokia, Mediatek, Ericsson, ZTE agree.

- Intel suggests to add the following to the list of pros for multiple RedCap UE types: "Flexible access control is possible if necessary, e.g. independent access control for different UE types".

- LG thinks the wording on the access control aspects might be misleading and suggests to have some wording enhancements

* Continue to fine tune the wording offline, e.g. on access control aspects
* Also attempt to draft a recommendation from RAN2 perspective that a single RedCap UE type is preferred.

Agreements via email - from offline [107]

1. Capture ‘maximum number of DRBs mandatory supported’ in the TR as one L2 capability which can be reduced for RedCap UEs.

Agreements online:

1. Capture the following in the TR on reducing total layer-2 buffer size for RedCap UEs:

“According to the calculation in TS 38.306, with peak data rate reductions, L2 buffer requirements for RedCap UEs are implicitly reduced accordingly. The need for further reduction compared to calculation in TS 38.306 needs more discussion”.

1. Capture ‘18-bit SN for PDCP and RLC AM’ in the TR as one L2 capability which can be reduced for RedCap UEs if clear benefit is identified.
2. Capture in the TR that the gain to reduce RRC processing delay needs further discussion.

[R2-2102037](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102037.zip) Summary of offline 107 - [REDCAP] L2 capabilties and UE types - second round Huawei discussion FS\_NR\_redcap

Proposal 1: Capture the text below in the TR:

“The power consumption of RedCap UEs may be impacted because of paging false alarm and unnecessary SIB1 reading. Paging false alarm and unnecessary SIB1 reading are not specific to RedCap UEs and are discussed in R17 power saving WI. Enhancements introduced by R17power saving WI should also be applicable to RedCap UEs.”

Proposal 2: Capture the pros/cons to have only one v.s. multiple RedCap UE type(s) in the TR as below:

From RAN2 perspective, the pros and cons to define only one device type or multiple device types are:

Only one RedCap UE type:

Pros:

- No market fragmentation of “types”

- Simpler specification, e.g. on early identification, access control, etc.

- Avoid non-technical discussion outside 3GPP’s scope, e.g. product management, similar to the discussions on LTE categories

Cons:

- Cannot provide independent access control for different UE types, if this was deemed necessary

Multiple RedCap UE types:

Pros:

- Flexible access control is possible if necessary, e.g. independent access control for different UE types

Cons:

- Potential market fragmentation of ‘types’ leading to loss of economies of scale and increased device costs

- More specification complexity/effort, e.g. on early identification, access control, etc.

- May lead to non-technical discussion outside 3GPP’s scope, e.g. product management, similar to the discussions on LTE categories

The need on independent access control for different RedCap UE types is not discussed in the SI phase.

Proposal 3: It is recommended that from RAN2 perspective only one RedCap UE type per FR is preferred.

[R2-2100571](file:///C:\Data\3GPP\Extracts\R2-2100571%20Define%20and%20Constrain%20Reduced%20Capability%20for%20RedCap.docx) Define and constrain reduced capabilities for Redcap ZTE Corporation, Sanechips discussion Rel-17 FS\_NR\_redcap

[R2-2100636](file:///C:\Data\3GPP\Extracts\R2-2100636.docx) Methods for barring and for capability reporting Sierra Wireless, S.A. discussion Rel-17

[R2-2100770](file:///C:\Data\3GPP\Extracts\R2-2100770%20Discussion%20on%20intended%20use%20cases%20for%20RedCap%20UEs.docx) Discussion on intended use cases for RedCap Ues LG Electronics UK discussion Rel-17

[R2-2101240](file:///C:\Data\3GPP\Extracts\R2-2101240%20redcap%20cap%20vf.doc) Further Discussions on UE Capability for RedCap CATT discussion Rel-17 FS\_NR\_redcap

[R2-2101617](file:///C:\Data\3GPP\Extracts\R2-2101617.docx) Discussion on the definition and constraining of reduced capabilities CMCC discussion Rel-17 FS\_NR\_redcap

#### 8.12.2.2 Identification and access restrictions

[R2-2100985](file:///C:\Data\3GPP\Extracts\R2-2100985%20-%20%20TP%20for%20UE%20identification%20and%20access%20restriction.docx) TP for UE identification and access restriction Ericsson discussion FS\_NR\_redcap

Observation 1 RedCap early indication is not required for any of the following: UE capability for UL modulation order, UE minimum processing times capabilities, or UE FD-FDD capability.

Observation 2 RedCap early indication may be required for UE max bandwidth capability and/or coverage compensation.

Observation 3 Without 3 dB UE antenna efficiency loss, coverage compensation is only needed for Msg2 in the specific case with 24 dBm/MHz PSD (e.g. micro deployment) and 1 Rx, which can be solved by TBS scaling for Msg2.

Observation 4 The purpose of the potential RedCap early indication is to be able to apply coverage compensation to RedCap UEs only, and not to all UEs in the cell, to avoid negative impact.

Observation 5 For RedCap specific coverage compensation of MsgA (PUSCH part), separate 2-step resources for MsgA preamble part are required.

Observation 6 For coverage compensation for MsgB and later messages, early RedCap indication in the preamble part of MsgA (e.g. separate 2-step RACH resources) does not have any advantages compared to indication in MsgA PUSCH.

Observation 7 By using multiple bits in SI for indicating whether a RedCap UE can camp on the cell differentiation can be achieved per network, per slice, or per service.

Observation 8 A new UAC Access Identity could be connected to the RedCap UE type.

Observation 9 Operator defined or newly defined Access Categories could be used for RedCap UEs.

Observation 10 RedCap early indication in Msg3 enables RRC connection rejection in Msg4 if the UE comes from RRC\_IDLE.

Observation 11 RRC connection reject enables RedCap authorization based on UE capabilities and/or subscription information.

Observation 12 RRC connection reject can provide improved differentiated access restriction among different types of RedCap UEs.

Observation 13 Extended waitTime could be considered for RedCap UEs.

Observation 14 RedCap RA restriction can be achieved by RedCap-specific configuration for e.g. back-off or max number of attempts.

Proposal 1 Support early RedCap indication in Msg3.

Proposal 2 Support optionally configurable Early RedCap indication in Msg1.

Proposal 3 For 2-step RACH, MsgA early RedCap indication in MsgA preamble part (e.g. separate preambles) is configurable.

Proposal 4 Support early RedCap indication in MsgA PUSCH.

Proposal 5 Multiple Access Categories should be supported for RedCap to allow for different barring configuration for different access attempt types (e.g. alarms or video).

Proposal 6 A common RedCap UAC is applicable for all potential types of RedCap UEs.

* [AT113-e][108][REDCAP] UE identification and access restriction (Ericsson)

Scope: Continue the discussion on UE identification and access restriction based on the proposals in [R2-2100985](file:///C:\Data\3GPP\Extracts\R2-2100985%20-%20%20TP%20for%20UE%20identification%20and%20access%20restriction.docx)

The intention of this offline is to describe options in the TR and, whenever applicable/possible, also down-select some alternatives / provide some recommendations.

Initial intended outcome: Summary of the offline discussion with e.g.:

* + - List of proposals for agreement
    - List of proposals that require online discussions
    - Corresponding TP for the TR

Initial deadline (for companies' feedback): Monday 2021-02-01 16:00 UTC

Initial deadline (for rapporteur's summary in R2-2102018): Monday 2021-02-01 22:00 UTC

Updated Scope: Continue the discussion on p13, p18 and detailed TP for p16 and p17 from [R2-2102018](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102018.zip).

Updated intended outcome: Summary of the offline discussion with e.g.:

* + - List of proposals for agreement
    - Corresponding TP for the TR

Deadline (for companies' feedback): Wednesday 2021-02-03 18:00 UTC

Deadline (for rapporteur's summary in R2-2102039): Wednesday 2021-02-03 22:00 UTC

[R2-2102018](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102018.zip) Summary of offline 107 - [REDCAP] L2 capabilties and UE types Huawei discussion FS\_NR\_redcap

Proposal 1 Capture following text in 11.1 in description of Option 4:

“Option 4: During MsgA transmission

- E.g., via separate initial UL BWP or in MsgA preamble part via separate PRACH resource or PRACH preamble partitioning, or in MsgA PUSCH part.”

* Agreed

Proposal 2 Capture the following as ”pros” for Option 1:

- “Enables RRC connection rejection of RedCap UE for access restriction (for UEs coming from RRC\_IDLE and RRC\_INACTIVE if the UE context is not found).”

- ”Makes it possible to differentiate or enable prioritization of non-RedCap UEs vs. RedCap UEs during contention resolution if RedCap UE type is visible to MAC layer.”

- ”Enables the RedCap UE to operate in an initial BWP which is wider than the RedCap UE bandwidth, as the gNB can take into account UE RF-retuning time while transmitting RAR”

* Agreed

Proposal 4 Update the text in 11.1 in “feasibility” of Option 2 as follows:

“Feasibility: Identification of RedCap UE type(s) based on Msg3 may be feasible at least for the following solutions, which don’t need to be mutually exclusive:

- Using the spare bit in existing Msg3 definition.

- Extension of existing RRC message or Msg3 size to carry additional one or more bits, indicating RedCap UE type(s).

- Introduction of new larger RRC message (e.g. on CCCH1).

- New MAC control element or LCID”

* Agreed

Proposal 5 Capture the following as ”pros” for Option 2:

- “Enables RRC connection rejection of RedCap UE for access restriction (for UEs coming from RRC\_IDLE and RRC\_INACTIVE if the UE context is not found).”

- ”Makes it possible to differentiate or enable prioritization of non-RedCap UEs vs. RedCap UEs during contention resolution if RedCap UE type is visible to MAC layer.”

- ”Enables handling of different processing delay requirements (if such are agreed and specified) for RRC procedures between RedCap and non-RedCap i.e. RRC Setup -> RRC Setup Complete and RRC Resume and RRC Resume Complete delays.”

* Agreed

Proposal 6 Add to ”feasibility” of Option 3:

”From RAN2 perspective this is already covered by existing signalling with limited specification impact.”

* Agreed

Proposal 7 Capture the following as ”cons” for Option 3:

- “Cannot enable RRC connection rejection of RedCap UE for RedCap-specific access restriction (for UEs coming from RRC\_IDLE and RRC\_INACTIVE if the UE context is not found)”.

* Agreed

Proposal 8 Update the text proposal for Option 4 with the following and capture the TP in the TR:

- Align wording of pros and cons with Option 1-3 (where applicable).

- Clarify that for fallback case indication in MsgA preamble part is beneficial.

- Add the UE differentiation / prioritization to “pros” as in Option 1 and 2.

* Agreed

Proposal 11 Capture following text in 11.2.1 in Description of feature “The purpose of the feature is to not only provide the same functionality as for legacy UEs but to have RedCap specific access restrictions to be able to avoid or limit negative impact on legacy performance.” (19/20)

* Agreed

Proposal 12 Capture following text in 11.2.1 on Cell barring: ”For RedCap UEs, an explicit or implicit indication in broadcast system information can be used to indicate whether a RedCap UE can camp on the cell or not. If a RedCap UE is not allowed to camp on a cell or the RedCap UE considers the cell as barred, it could be of interest to bar all cells on the frequency to ensure RedCap UEs only camp on the strongest cell. Legacy UEs have the same functionality and the IE intraFreqReselection configures in the UE should consider only the current cell as barred or all cells on the frequency. For RedCap it remains to be determined if the functionality should be controlled by the same intraFreqReselection IE or if a new separate parameter should be introduced.” (20/20)

* Agreed

Proposal 16 Capture following options with descriptions in TR for RedCap UAC (first two have been agreed to be studied earlier):

1) Define new Access Identity or Identities for RedCap UE

2) Define new Access Category or Categories for RedCap UE

3) Broadcast a separate set of parameters for RedCap UEs

4) Use existing broadcasted UAC parameters for RedCap UEs without any changes

- Intel thinks this should be discussed together p15

* Continue online
* Agreed

Proposal 19 Update the text proposal and capture text in 11.2.2 Analysis of coexistence and 11.2.3 Analysis of specification impacts once it is clear which options and mechanisms for access restrictions are captured in the TR.

* Agreed

Agreements via email - from offline [108]

1. Capture following text in 11.1 in description of Option 4:

“Option 4: During MsgA transmission

- E.g., via separate initial UL BWP or in MsgA preamble part via separate PRACH resource or PRACH preamble partitioning, or in MsgA PUSCH part.”

2. Capture the following as ”pros” for Option 1:

- “Enables RRC connection rejection of RedCap UE for access restriction (for UEs coming from RRC\_IDLE and RRC\_INACTIVE if the UE context is not found).”

- ”Makes it possible to differentiate or enable prioritization of non-RedCap UEs vs. RedCap UEs during contention resolution if RedCap UE type is visible to MAC layer.”

- ”Enables the RedCap UE to operate in an initial BWP which is wider than the RedCap UE bandwidth, as the gNB can take into account UE RF-retuning time while transmitting RAR”

3. Update the text in 11.1 in “feasibility” of Option 2 as follows:

“Feasibility: Identification of RedCap UE type(s) based on Msg3 may be feasible at least for the following solutions, which don’t need to be mutually exclusive:

- Using the spare bit in existing Msg3 definition.

- Extension of existing RRC message or Msg3 size to carry additional one or more bits, indicating RedCap UE type(s).

- Introduction of new larger RRC message (e.g. on CCCH1).

- New MAC control element or LCID”

4. Capture the following as ”pros” for Option 2:

- “Enables RRC connection rejection of RedCap UE for access restriction (for UEs coming from RRC\_IDLE and RRC\_INACTIVE if the UE context is not found).”

- ”Makes it possible to differentiate or enable prioritization of non-RedCap UEs vs. RedCap UEs during contention resolution if RedCap UE type is visible to MAC layer.”

- ”Enables handling of different processing delay requirements (if such are agreed and specified) for RRC procedures between RedCap and non-RedCap i.e. RRC Setup -> RRC Setup Complete and RRC Resume and RRC Resume Complete delays.”

5. Add to ”feasibility” of Option 3:

”From RAN2 perspective this is already covered by existing signalling with limited specification impact.”

6. Capture the following as ”cons” for Option 3:

- “Cannot enable RRC connection rejection of RedCap UE for RedCap-specific access restriction (for UEs coming from RRC\_IDLE and RRC\_INACTIVE if the UE context is not found)”.

7. Update the text proposal for Option 4 with the following and capture the TP in the TR:

- Align wording of pros and cons with Option 1-3 (where applicable).

- Clarify that for fallback case indication in MsgA preamble part is beneficial.

- Add the UE differentiation / prioritization to “pros” as in Option 1 and 2.

8. Capture following text in 11.2.1 in Description of feature “The purpose of the feature is to not only provide the same functionality as for legacy UEs but to have RedCap specific access restrictions to be able to avoid or limit negative impact on legacy performance.” (19/20)

9. Capture following text in 11.2.1 on Cell barring: ”For RedCap UEs, an explicit or implicit indication in broadcast system information can be used to indicate whether a RedCap UE can camp on the cell or not. If a RedCap UE is not allowed to camp on a cell or the RedCap UE considers the cell as barred, it could be of interest to bar all cells on the frequency to ensure RedCap UEs only camp on the strongest cell. Legacy UEs have the same functionality and the IE intraFreqReselection configures in the UE should consider only the current cell as barred or all cells on the frequency. For RedCap it remains to be determined if the functionality should be controlled by the same intraFreqReselection IE or if a new separate parameter should be introduced.” (20/20)

10. Update the text proposal and capture text in 11.2.2 Analysis of coexistence and 11.2.3 Analysis of specification impacts once it is clear which options and mechanisms for access restrictions are captured in the TR.

Proposals to be discussed online during online session / GTW:

Proposal 3 Discuss further whether and where to capture separate RAN slices as a possible solution for configuring slice-specific resources for RedCap UEs.

* Oppo/Intel wonders whether we need to add anything for this. ZTE thinks that if we provide per-slice RACH resources (as discussed in other WIs) we can use this without specs impacts. Nokia/Xiaomi agree with Oppo.

Proposal 9 From RAN2 perspective recommend specifying Msg3 RedCap indication and a configurable Msg1 indication. Details pending RAN1 decision and to be discussed in WI phase. (13-14/22)

* ZTE is fine to list all the options but not to prioritize anything. Intel/Oppo/Vivo/LG/Lenovo/Xiaomi think there are no real issues from RAN2 perspective so we can leave all this to RAN1. Apple is fine not to give any recommendation for this.

Proposal 10 From RAN2 perspective recommend specifying a configurable RedCap indication in preamble part of MsgA and an indication on PUSCH part of MsgA. Details pending RAN1 decision and to be discussed in WI phase. (12/20)

Proposal 15 Network should be able to differentiate between RedCap and non-RedCap UEs using UAC (e.g. configure different parameters to RedCap and non-RedCap UEs) (17/22)

* Apple thinks this should be considered as an option, to be discussed in the WI phase. Intel is fine with this and thinks we could also check with SA1.
* Capture this as an option without giving a recommendation for now.

Proposals to be discussed if time permits:

Proposal 13 The legacy UAC principle for Access Categories is assumed for RedCap, that is, different access types are differentiated using Access Categories.

* Continue offline

Proposal 17 Capture following text in 11.2.1 on RRC Connection reject: ”To save radio resources and limit negative impact on legacy network performance it is beneficial to bar or reject UEs as early as possible, preferably without additional signalling. Therefore, cell barring and UAC is beneficial compared to RRC connection rejection. However, if the network is aware the UE is a RedCap during initial access, it is possible for the network to reject RRC connection based on UE being a RedCap UE. There is no additional specification impact in case early indication is specified.”

* Agreed (detailed wording to be discussed offline)

Proposal 18 Discuss whether TR should capture RedCap access control by using separate RACH configuration.

* Continue offline

Postpone the following:

Proposal 14 Postpone UAC discussion related to possible multiple UE types.

Agreements;

1. Capture following options with descriptions in TR for RedCap UAC (first two have been agreed to be studied earlier):

1) Define new Access Identity or Identities for RedCap UE

2) Define new Access Category or Categories for RedCap UE

3) Broadcast a separate set of parameters for RedCap UEs

4) Use existing broadcasted UAC parameters for RedCap UEs without any changes

2. Capture in the TR that one option (without giving any recommendation) is that the network should be able to differentiate between RedCap and non-RedCap UEs using UAC (e.g. configure different parameters to RedCap and non-RedCap UEs)

3. Capture following text in 11.2.1 on RRC Connection reject: ”To save radio resources and limit negative impact on legacy network performance it is beneficial to bar or reject UEs as early as possible, preferably without additional signalling. Therefore, cell barring and UAC is beneficial compared to RRC connection rejection. However, if the network is aware the UE is a RedCap during initial access, it is possible for the network to reject RRC connection based on UE being a RedCap UE. There is no additional specification impact in case early indication is specified.” (detailed wording can still be discussed)

R2-2102039 Summary of offline 107 - [REDCAP] L2 capabilties and UE types - second round Huawei discussion FS\_NR\_redcap

[R2-2100311](file:///C:\Data\3GPP\Extracts\R2-2100311_Impact%20of%20reduced%20capabilities%20on%20idle%20mode%20procedures.docx) Impact of reduced capabilities on idle mode procedures Qualcomm Incorporated discussion Rel-17 FS\_NR\_redcap

[R2-2100155](file:///C:\Data\3GPP\Extracts\R2-2100155%20RedCap%20access%20control.doc) Discussion on RedCap UE’s access control OPPO discussion Rel-17 FS\_NR\_redcap

[R2-2100208](file:///C:\Data\3GPP\Extracts\R2-2100208.docx) Supported bandwidth of RedCap UEs Samsung discussion Rel-17 FS\_NR\_redcap

[R2-2100209](file:///C:\Data\3GPP\Extracts\R2-2100209.docx) UAC enhancements for RedCap UE Samsung discussion Rel-17 FS\_NR\_redcap

[R2-2100572](file:///C:\Data\3GPP\Extracts\R2-2100572%20Identification%20and%20Access%20Restriction%20for%20RedCap.docx) Identification and access restrictions for Redcap ZTE Corporation, Sanechips discussion Rel-17 FS\_NR\_redcap

[R2-2100652](file:///C:\Data\3GPP\Extracts\R2-2100652%20UAC%20for%20RedCap%20UE.docx) UAC for RedCap UE Intel Corporation, Facebook discussion Rel-17 FS\_NR\_redcap [R2-2009010](file:///C:\Data\3GPP\Extracts\R2-2009010%20UAC%20for%20RedCap%20UE.doc)

[R2-2100721](file:///C:\Data\3GPP\Extracts\R2-2100721%20Discussion%20on%20Identification%20and%20UE%20access%20restrictions%20for%20Redcap%20devices.doc) Discussion on Identification and UE access restrictions for Redcap devices Xiaomi Communications discussion

[R2-2100755](file:///C:\Data\3GPP\Extracts\R2-2100755%20Cell%20reselection%20of%20RedCap%20UE_v1.doc) Cell reselection of RedCap UE Fujitsu discussion Rel-17 FS\_NR\_redcap

[R2-2100769](file:///C:\Data\3GPP\Extracts\R2-2100769%20Discussion%20on%20identification%20and%20access%20restrictions.docx) Discussion on identification and access restrictions LG Electronics UK discussion Rel-17

[R2-2101135](file:///C:\Data\3GPP\Extracts\R2-2101135_UAC%20enhancement%20for%20REDCAP%20UEs.docx) UAC enhancement for REDCAP UEs Lenovo, Motorola Mobility discussion Rel-17

[R2-2101205](file:///C:\Data\3GPP\Extracts\R2-2101205%20Cell%20access%20for%20REDCAP%20UE%20with%20reduced%20bandwidth.docx) Cell access for REDCAP UE with reduced bandwidth Nokia, Nokia Shanghai Bell discussion Rel-17 FS\_NR\_redcap

[R2-2101239](file:///C:\Data\3GPP\Extracts\R2-2101239%20Further%20Discussion%20on%20Access%20Restriction.doc) Further Discussion on Access Restriction CATT discussion Rel-17 FS\_NR\_redcap

[R2-2101256](file:///C:\Data\3GPP\Extracts\R2-2101256%20Identification%20and%20access%20restriction%20for%20RedCap%20UE.docx) Identification and access restriction for RedCap UE Huawei, HiSilicon discussion Rel-17

[R2-2101309](file:///C:\Data\3GPP\Extracts\R2-2101309%20Cell%20access%20restrictions%20for%20REDCAP%20UE.docx) Cell access restrictions for REDCAP UE Nokia, Nokia Shanghai Bell discussion Rel-17 FS\_NR\_redcap

[R2-2101630](file:///C:\Data\3GPP\Extracts\R2-2101630.docx) Discussion on Early Identification CMCC discussion Rel-17 FS\_NR\_redcad

* Revised in [R2-2101949](file:///C:\Data\3GPP\Extracts\R2-2101949-Discussion%20on%20Early%20Identification.docx)

[R2-2101949](file:///C:\Data\3GPP\Extracts\R2-2101949-Discussion%20on%20Early%20Identification.docx) Discussion on Early Identification CMCC discussion Rel-17 FS\_NR\_redcap [R2-2101630](file:///C:\Data\3GPP\Extracts\R2-2101630.docx) Late

Withdrawn

[R2-2100461](file:///C:\Data\3GPP\Extracts\R2-2100461_Identification%20and%20access%20restrictions%20for%20RedCap%20UEs.docx) Identification and access restrictions for RedCap UEs vivo, Guangdong Genius discussion Rel-17 FS\_NR\_redcap

* Withdrawn

R2-2100722 Discussion on Identification and UE access restrictions for Redcap devices Xiaomi Communications discussion Late

* Withdrawn

R2-2100723 Discussion on Identification and UE access restrictions for Redcap devices Xiaomi Communications discussion Late

* Withdrawn

### 8.12.3 UE power saving and battery lifetime enhancement

UE power saving and battery lifetime enhancement for reduced capability UEs in applicable use cases (e.g. delay tolerant case).

#### 8.12.3.1 eDRX cycles

Including the outcome of [Post112-e][154][REDCAP] eDRX cycles (CATT)

[R2-2101242](file:///C:\Data\3GPP\Extracts\R2-2101242%20Summary%20of%20email%20discussion%20154%20-%20eDRX%20cycles.docx) Summary of email discussion 154 - eDRX cycles CATT discussion Rel-17 FS\_NR\_redcap

Proposal 1: Capture in the TR that from RAN2 perspective it is recommended for UE in RRC IDLE and eDRX cycle is equal to 10.24s, that paging monitoring does not use PTW and PH.

* Agreed. SA2 will have be consulted on this

Proposal 2: Capture in the TR the related pros/cons aspects listed below.

Pros:

• It enables longer eDRX cycles needed by some RedCap UEs and yet allow other UEs that do not need long eDRX cycles (>10.24s) to reuse NR R16 eDRX implementation without additional development work and without a need for an explicit capability signalling.

• NR already has 10.24sec interval in C-DRX

• For 10.24 s and RRC\_INACTIVE similar solution was adopted for LTE in eMTC

Cons:

• It is different from LTE solution for eDRX cycle = 10.24s in RRC\_IDLE

• It will impact 5GC and RAN2 will need to inform/consult SA2/CT1

• UE can no longer have multiple opportunities to receive its paging during an eDRX cycle

* Agreed to capture this list of pros and cons (the list can be further checked and amended if needed)

Proposal 3: Capture in the TR the below pros/cons aspects related to the requirement for eDRX to support emergency broadcast services reception.

Pros

• It enables a mix of smartphones and wearables in the network, with an appropriate paging cycle configured for each of them.

• If not supported, the proposed solution by opponents is to use the default/RAN paging DRX cycle = 2.56s (instead of eDRX) which will work for REDCAP UEs but might be overkill, latency-wise, for other UEs in the cell with tighter latency requirements e.g. smartphones.

• Alternately, if not supported and the default/RAN paging DRX cycle in the cell is configured to a small value (e.g. targeting smartphones), those REDCAP UEs in that cell that want to receive emergency broadcast services will have no other choice but to be configured with this DRX cycle, hence won't be able to benefit from the power savings of the eDRX feature.

Cons:

• This solution assumes REDCAP UEs configured with eDRX do not need to monitor gNB configured default paging (and RAN paging) cycles which presents a potential risk of UE missing SI change indicator.

* LG wonders if p3 is related to the proposals to introduce 2.56s eDRX cycles.
* Apple also would like to continue the discussion
* Continue in offline 109

Proposal 4: Capture in the TR that it is recommended to support eDRX value up to 10485.76 s.

* Vivo wonders if there is RRM relaxation in this case. ZTE wonders why this is related to RRM relaxation.
* T-mobile wonders if there is any use case for this.
* Mediatek thinks there are no technical concerns and there are use cases. Ericsson thinks use cases were already discussed and we should not discuss this again
* continue in offline 109

Proposal 5: Capture in the TR the related pros/cons aspects listed below.

Pros

• The upper limit of the H-SFN (10bit) already is 10485.76s

• The CN already supports eDRX values up to 10485.76s

• It is future-proof

• No reason to artificially limit without technical concern

Cons:

• There are no REDCAP use cases that require eDRX cycles beyond 2621.44s

• Little power saving gain beyond 2621.44s. Simulation results show that the gain is saturated at around 40mins.

* Agreed to capture this list of pros and cons

Proposal 6: Capture in the TR that RAN2 sees a benefit and recommends extending the eDRX cycle in RRC\_INACTIVE beyond 10.24s for REDCAP UEs.

* continue in offline 109

Proposal 7: Capture in the TR the justifying benefits listed below and associated issues to solve.

Benefits

• It is very beneficial to have >10.24 sec in RRC\_INACTIVE to effectively support the usage of SDT (small data transfer) for e.g. use cases with periodic uplink data with periodicity > 10.24 s. TS 22.104 provides such usecases, e.g. some industrial wireless sensors need to transfer small packets while they are not very sensitive to DL traffic delay, but they have strict battery lifetime requirement.

• Based on the results in the Appendix of the TR, there is a clear power saving gain vs eDRX in RRC\_IDLE at least for eDRX cycles of 10.24 s – couple of minutes, where the UE in eDRX in RRC\_INACTIVE additionally benefits from less signaling. Based on these results, lifetime of several years would not be achievable in some cases (e.g. 1 minute IAT) if only RRC\_IDLE can be used, because of the signaling overhead.

• Signaling reduction is an additional benefit from network point of view – there is need for less RRC signaling

Issues:

• Impact on NAS retransmission, SA2/CT1 must be involved

• Potential handling of different eDRX cycles > 10.24s and/or PTWs, one for IDLE the other for INACTIVE

• Need to study which Node decides the eDRX cycle for RRC\_INACTIVE

* continue in offline 109

Proposal 10: Capture in the TR that RAN2 will consider as a starting point a common PTW and eDRX cycle configuration for RRC\_IDLE and RRC\_INACTIVE, justified by its simplicity. More flexible solutions can be considered if shown beneficial.

* continue in offline 109

Proposal 11: Capture in the TR the two options for the deciding node for the eDRX configuration for RRC INACTIVE: RAN or CN.

* continue in offline 109

Proposal 12: Capture in the TR the below arguments in favour of each option.

Option 1: CN decides the eDRX parameters for RRC\_INACTIVE

• CN has better insight on UE traffic profile

• Better for addressing the NAS retransmission timer issue

• CN is responsible for eDRX in RRC\_IDLE (and UE needs to monitor for CN paging also in RRC\_INACTIVE)

Option 2: RAN decides the eDRX parameters for RRC\_INACTIVE

• It provides more flexibility to the RAN node in the configuration of the eDRX parameters

• It allows RAN to configure different eDRX cycle for RRC INACTIVE

• In R16 eMTC connected to 5GC, it is already NR-RAN that choses and configures the final eDRX cycle for RRC\_INACTIVE, based on idle mode eDRX cycle as provided by the AMF

* continue in offline 109

Proposal 13: Capture in the TR that RAN2 recommends supporting a common design for handling eDRX cycle = 10.24s in RRC\_IDLE and RRC\_INACTIVE.

* Agreed

Proposal 14: Send an LS to CT1/SA2 informing them about RAN2’s preference to support eDRX cycles >10.24s in RRC\_INACTIVE and asking about feasibility.

* No need to discuss the content of an LS to SA2/CT1 as part of offline 109. An LS is needed, but the exact content will be discussed after the conclusion of offline 109

Agreements:

1. Capture in the TR that from RAN2 perspective it is recommended for UE in RRC IDLE and eDRX cycle is equal to 10.24s, that paging monitoring does not use PTW and PH. Send an LS to SA2 to check this
2. Capture in the TR the related pros/cons aspects listed below (the list can be further checked and amended if needed):

Pros:

• It enables longer eDRX cycles needed by some RedCap UEs and yet allow other UEs that do not need long eDRX cycles (>10.24s) to reuse NR R16 eDRX implementation without additional development work and without a need for an explicit capability signalling.

• NR already has 10.24sec interval in C-DRX

• For 10.24 s and RRC\_INACTIVE similar solution was adopted for LTE in eMTC

Cons:

• It is different from LTE solution for eDRX cycle = 10.24s in RRC\_IDLE

• It will impact 5GC and RAN2 will need to inform/consult SA2/CT1

• UE can no longer have multiple opportunities to receive its paging during an eDRX cycle

1. Regarding the support of eDRX value up to 10485.76s, capture in the TR the pros/cons aspects listed below:

Pros

• The upper limit of the H-SFN (10bit) already is 10485.76s

• The CN already supports eDRX values up to 10485.76s

• It is future-proof

• No reason to artificially limit without technical concern

Cons:

• There are no REDCAP use cases that require eDRX cycles beyond 2621.44s

• Little power saving gain beyond 2621.44s. Simulation results show that the gain is saturated at around 40mins.

1. Capture in the TR that RAN2 recommends supporting a common design for handling eDRX cycle = 10.24s in RRC\_IDLE and RRC\_INACTIVE.

* [AT113-e][109][REDCAP] eDRX cycles (CATT)

Scope: Continue the discussion on eDRX cycles based on the proposals in [R2-2101242](file:///C:\Data\3GPP\Extracts\R2-2101242%20Summary%20of%20email%20discussion%20154%20-%20eDRX%20cycles.docx) marked as "continue in offline 109". Also discuss the 2.56s DRX operation in [R2-2101460](file:///C:\Data\3GPP\RAN2\Docs\R2-2101460.zip).

The intention of this offline is to describe options in the TR (possibly with pros and cons) and, whenever applicable/possible, also provide some recommendations (i.e. p4, p6 and p10 in [R2-2101242](file:///C:\Data\3GPP\Extracts\R2-2101242%20Summary%20of%20email%20discussion%20154%20-%20eDRX%20cycles.docx))

Initial intended outcome: Summary of the offline discussion with e.g.:

* + - List of proposals for agreement
    - List of proposals that require online discussions
    - Corresponding TP for the TR

Initial deadline (for companies' feedback): Monday 2021-02-01 16:00 UTC

Initial deadline (for rapporteur's summary in [R2-2102019](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102019.zip)): Monday 2021-02-01 22:00 UTC

Updated scope: Continue the discussion on p2 from [R2-2102019](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102019.zip)

Updated intended outcome: Summary of the offline discussion with e.g.:

* + - List of proposals for agreement
    - Corresponding TP for the TR

Deadline (for companies' feedback): Wednesday 2021-02-03 18:00 UTC

Deadline (for rapporteur's summary in R2-2102040): Wednesday 2021-02-03 22:00 UTC

[R2-2102019](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102019.zip) Summary of offline 109 - [REDCAP] eDRX cycles CATT discussion FS\_NR\_redcap

Proposals for agreement

Proposal 0 (20/23): Agree the below TP for capturing agreements #1, #2 and #4 from online GTW session:

<see TP in summary tdoc>

* Vivo would like to discuss this (add "further update according to the conclusions on P2 and P4)
* Continue online
* Agreed with the addition that "further update according to the conclusions on P2 and P4 are possible"

Proposal 1 (all): It should be possible for (at least some) REDCAP Ues to receive emergency broadcast services.

* Agreed

Proposal 2: Capture in the TR the below five options allowing REDCAP Ues to receive emergency broadcast services (and resulting recommended eDRX lower bound) and the associated pros/cons.

Option 1: eDRX supports a lower bound of 2.56s.

Option 2: For RedCap UEs, if the NAS configures the UE with a 2.56 DRX cycle, the RedCap UE follows this DRX even when the RAN paging cycle is shorter. eDRX lower bound can be kept to baseline 5.12s.

Options 1-2 pros/cons:

Pros

· It enables a mix of smartphones and wearables in the network, with an appropriate paging cycle configured for each of them.

Cons:

· This solution assumes such REDCAP Ues do not need to monitor gNB configured default broadcasted paging (and UE-specific RAN paging) cycles, thus resulting in network not being able to reach such RedCap Ues by using default broadcasted paging cycles and/or UE-specific RAN paging cycles. This may result e.g. in a potential risk of UE missing SI change indicator.

· Specifically for Option 2, it requires a different way to determine the UE DRX cycle for REDCAP Ues in both the UE and the gNB.

Option 3: gNB can configure 2.56s default broadcasted DRX cycle for those RedCap Ues that need to receive emergency broadcast services and a shorter UE-specific RAN paging cycle for Ues with tighter latency requirements (e.g. smartphones). eDRX lower bound can be kept to baseline 5.12s.

Pros

· Consistent with the LTE solution.

· Solution based on Network implementation and there is no additional impact.

Cons:

· A default broadcasted DRX value of 2.56s is expected seldom used in existing deployments supporting smartphones and requires configuring on top a UE-specific RAN paging cycle for each such smartphones.

Option 4: RedCap Ues that need to receive emergency broadcast services are not expected to request to be configured with eDRX, and no specific handling/configuration is required for those Ues. eDRX lower bound can be kept to baseline 5.12s.

Pros

· No specification or configuration impact.

Cons:

· Those REDCAP Ues do not benefit from eDRX power saving.

Option 5: REDCAP UE can request an eDRX configuration while still monitoring in between for ETWS and CMAS. eDRX lower bound can be kept to baseline 5.12s.

* Apple has some remarks on this
* Continue in a follow-up of offline 109

Proposal 3 (18/21): Capture in the TR that it is recommended to support eDRX value up to 10485.76 s.

* Vivo would like to discuss this. Would like to some clarification on RRM relaxation out of the PTW. Apple thinks that RedCap UEs measure serving cell within the DRX occasions within the PTW. Vodafone thinks this is more or less ok but it needs to be clarified better. Ericsson/Mediatek agree with Apple observation and thinks this is the common understanding.
* T-mobile still does not see the benefit but will not object.
* Continue in a follow-up of offline 110

Proposal 4 (21/23): Agree the below TP on eDRX upper bound.

<see TP in summary tdoc>

* Vivo would like to discuss this
* Continue offline

Proposal 5 (20/21): Capture in the TR that RAN2 sees a benefit and recommends extending the eDRX cycle in RRC\_INACTIVE beyond 10.24s for REDCAP Ues.

* Agreed

Proposal 6 (20/21): Capture in the TR the justifying benefits listed below and associated issues to solve.

Benefits

· It is very beneficial to have >10.24 sec in RRC\_INACTIVE to effectively support the usage of SDT (small data transfer) for e.g. use cases with periodic uplink data with periodicity > 10.24 s. TS 22.104 provides such usecases, e.g. some industrial wireless sensors need to transfer small packets while they are not very sensitive to DL traffic delay, but they have strict battery lifetime requirement.

· Based on the results in the Appendix of the TR, there is a clear power saving gain vs eDRX in RRC\_IDLE at least for eDRX cycles of 10.24 s – couple of minutes, where the UE in eDRX in RRC\_INACTIVE additionally benefits from less signaling. Based on these results, lifetime of several years would not be achievable in some cases (e.g. 1 minute IAT) if only RRC\_IDLE can be used, because of the signaling overhead.

· Signaling reduction is an additional benefit from network point of view – there is need for less RRC signaling

Issues:

· Impact on NAS retransmission, SA2/CT1 must be consulted on the feasibility

· Potential handling of different eDRX cycles > 10.24s and/or PTWs, one for IDLE the other for INACTIVE

· Need to study which Node decides the eDRX cycle for RRC\_INACTIVE

* QC has some remarks on this
* continue online
* Agreed

Proposal 6b (22/23): Agree the below TP for eDRX > 10.24s in Inactive.

<see TP in summary tdoc>

* QC has some remarks on this
* continue online
* CATT suggests to add "SA2/CT1 must be consulted on the feasibility prior to the introduction of eDRX cycles longer than 10.24 seconds in RRC Inactive." to the TP
* SA2/CT1 must be consulted on the feasibility prior to the introduction of eDRX cycles longer than 10.24 seconds in RRC Inactive.
* TP agreed with the addition of the sentence

Proposals for agreement, conditional to proposal 5:

Proposal 7: Capture in the TR that RAN2 will consider the following configurations for the PTW and eDRX for RRC\_IDLE and RRC\_INACTIVE:

· Common PTW and eDRX cycle configuration (as a baseline for its simplicity)

· A common PTW but with different eDRX cycle

· A common eDRX cycle but with different PTW length

· Different eDRX cycle and different PTW length

* QC, Oppo, ZTE have some remarks on this (suggest to remove "as a baseline for its simplicity")
* Continue online
* Agreed with the removal of "as a baseline for its simplicity"
* SA2/CT1 must be consulted on this before taking a decision on which way to go

Proposal 7b: Agree the below updated TP on configuration solutions for the PTW and eDRX for RRC\_IDLE and RRC\_INACTIVE.

<see TP in summary tdoc>

* QC, ZTE have some remarks on this
* Continue online
* Agreed with the removal of "as a baseline for its simplicity"

Proposal 8 (all): Capture in the TR the two options for the deciding node for the eDRX configuration for RRC INACTIVE: RAN or CN.

* Agreed

Proposal 9 (all): Capture in the TR the below arguments in favour of each option.

Option 1: CN decides the eDRX parameters for RRC\_INACTIVE

· CN has better insight on UE traffic profile

· Better for addressing potential core network impacts

· CN is responsible for eDRX in RRC\_IDLE (and UE needs to monitor for CN paging also in RRC\_INACTIVE)

· If RAN2 agrees to consider a common PTW and eDRX cycle configuration, CN based eDRX configuration can be supported with minimum impact to specifications where RAN follows the CN configured cycle justified by its simplicity and less impact expected to other WGs

Option 2: RAN decides the eDRX parameters for RRC\_INACTIVE

· It provides more flexibility to the RAN node in the configuration of the eDRX parameters

· It allows RAN to configure different eDRX cycle for RRC INACTIVE

· In R16 eMTC connected to 5GC, it is already NR-RAN that choses and configures the final eDRX cycle for RRC\_INACTIVE, based on idle mode eDRX cycle as provided by the AMF

* Agreed

Proposal 10 (all): Agree the below TP on eDRX parameters configuring node.

<see TP in summary tdoc>

* Agreed

Agreements via email - from offline [109]

1. It should be possible for (at least some) REDCAP Ues to receive emergency broadcast services.
2. Capture in the TR the two options for the deciding node for the eDRX configuration for RRC INACTIVE: RAN or CN.
3. Capture in the TR the below arguments in favour of each option.

Option 1: CN decides the eDRX parameters for RRC\_INACTIVE

· CN has better insight on UE traffic profile

· Better for addressing potential core network impacts

· CN is responsible for eDRX in RRC\_IDLE (and UE needs to monitor for CN paging also in RRC\_INACTIVE)

· If RAN2 agrees to consider a common PTW and eDRX cycle configuration, CN based eDRX configuration can be supported with minimum impact to specifications where RAN follows the CN configured cycle justified by its simplicity and less impact expected to other WGs

Option 2: RAN decides the eDRX parameters for RRC\_INACTIVE

· It provides more flexibility to the RAN node in the configuration of the eDRX parameters

· It allows RAN to configure different eDRX cycle for RRC INACTIVE

· In R16 eMTC connected to 5GC, it is already NR-RAN that choses and configures the final eDRX cycle for RRC\_INACTIVE, based on idle mode eDRX cycle as provided by the AMF

1. Agree the below TP on eDRX parameters configuring node.
2. Capture in the TR that RAN2 sees a benefit and recommends extending the eDRX cycle in RRC\_INACTIVE beyond 10.24s for REDCAP Ues.

Agreements online:

1. SA2/CT1 must be consulted on the feasibility prior to the introduction of eDRX cycles longer than 10.24 seconds in RRC Inactive.
2. Agree the TP as in [R2-2102019](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102019.zip) for capturing agreements #1, #2 and #4 from online GTW session with the addition that "further update according to the conclusions on P2 and P4 are possible"
3. Capture in the TR the justifying benefits listed below and associated issues to solve.

Benefits

· It is very beneficial to have >10.24 sec in RRC\_INACTIVE to effectively support the usage of SDT (small data transfer) for e.g. use cases with periodic uplink data with periodicity > 10.24 s. TS 22.104 provides such usecases, e.g. some industrial wireless sensors need to transfer small packets while they are not very sensitive to DL traffic delay, but they have strict battery lifetime requirement.

· Based on the results in the Appendix of the TR, there is a clear power saving gain vs eDRX in RRC\_IDLE at least for eDRX cycles of 10.24 s – couple of minutes, where the UE in eDRX in RRC\_INACTIVE additionally benefits from less signaling. Based on these results, lifetime of several years would not be achievable in some cases (e.g. 1 minute IAT) if only RRC\_IDLE can be used, because of the signaling overhead.

· Signaling reduction is an additional benefit from network point of view – there is need for less RRC signaling

Issues:

· Impact on NAS retransmission, SA2/CT1 must be consulted on the feasibility

· Potential handling of different eDRX cycles > 10.24s and/or PTWs, one for IDLE the other for INACTIVE

· Need to study which Node decides the eDRX cycle for RRC\_INACTIVE

1. Agree the TP for eDRX > 10.24s in Inactive as in [R2-2102019](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102019.zip), with the addition of the sentence as in 1. above
2. Capture in the TR that RAN2 will consider the following configurations for the PTW and eDRX for RRC\_IDLE and RRC\_INACTIVE (SA2/CT1 must be consulted on this before taking a decision on which way to go):

· Common PTW and eDRX cycle configuration

· A common PTW but with different eDRX cycle

· A common eDRX cycle but with different PTW length

· Different eDRX cycle and different PTW length

1. Agree the updated TP as in [R2-2102019](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102019.zip) on configuration solutions for the PTW and eDRX for RRC\_IDLE and RRC\_INACTIVE, with the removal of "as a baseline for its simplicity"

R2-2102040 Summary of offline 109 - [REDCAP] eDRX cycles - second round CATT discussion FS\_NR\_redcap

[R2-2100156](file:///C:\Data\3GPP\Extracts\R2-2100156%20-%20Consideration%20on%20eDRX%20for%20RedCap%20UEs.doc) Consideration on eDRX for RedCap UEs OPPO discussion Rel-17 FS\_NR\_redcap

[R2-2101241](file:///C:\Data\3GPP\Extracts\R2-2101241%20On%20eDRX%20for%20NR%20RRC%20Inactive%20and%20Idle.doc) On eDRX for NR RRC Inactive and Idle CATT discussion Rel-17 FS\_NR\_redcap

[R2-2100344](file:///C:\Data\3GPP\Extracts\R2-2100344%20Discussion%20on%20e-DRX%20for%20Redcap%20Devices.doc) Discussion on e-DRX for Redcap Devices Xiaomi Communications discussion

[R2-2100986](file:///C:\Data\3GPP\Extracts\R2-2100986%20-%20Extended%20DRX%20for%20RRC%20Inactive%20and%20Idle%20for%20RedCap%20NR.docx) Extended DRX for RRC\_IDLE and RRC\_INACTIVE for NR RedCap Ues Ericsson discussion FS\_NR\_redcap

[R2-2101460](file:///C:\Data\3GPP\RAN2\Docs\R2-2101460.zip) 2.56 sec non-eDRX operation for RedCap Apple Inc, MediaTek Inc, Facebook Inc discussion Rel-17 FS\_NR\_redcap

[R2-2101797](file:///C:\Data\3GPP\Extracts\R2-2101797%20Impact%20of%20eDRX%20PTW%20for%20Reduced%20Capability%20NR%20Devices.docx) Impact of eDRX PTW for Reduced Capability NR Devices Convida Wireless discussion Rel-17

Withdrawn

R2-2100343 Discussion on e-DRX for Redcap Devices Xiaomi Communications discussion Late

=> Withdrawn

#### 8.12.3.2 RRM relaxations

Including the outcome of [Post112-e][155][REDCAP] RRM relaxations (ZTE)

[R2-2100569](file:///C:\Data\3GPP\Extracts\R2-2100569%20Report%20of%20Email%20discussion%5b155%5d%5bREDCAP%5d%20RRM%20relaxations.docx) Report of Email discussion[155][REDCAP] RRM relaxations ZTE Corporation, Sanechips discussion Rel-17 FS\_NR\_redcap

General principles

Proposal 1: RAN2 is mainly responsible for discussing and deciding solutions for triggering RRM measurement relaxation. For measurement relaxation methods, RAN2 can discuss preferable solutions, but RAN4 should be consulted before making the final decision.

* VC thinks it's clear that RAN4 needs to be consulted on the measurement relaxation methods, but after all maybe it's good to attempt a formal agreement on this.
* Continue in offline 110 to discuss the proposal that "For measurement relaxation methods, RAN2 can discuss preferable solutions, but RAN4 should be consulted before making the final decision."

Proposal 2: Irrespective of RRC state, whether to enable/disable RRM relaxation function for Redcap UEs is within network’s control.

* Agreed

Neighbour cell RRM relaxation in RRC\_IDLE/INACTIVE

Proposal 3: Capture in TR the following enhancements for triggering neighbour RRM relaxation in RRC\_IDLE/RRC\_INACTIVE. Among these solutions, Enhancement #1, #2, #3 and #5 can be considered as higher priority.

• Enhancement 1: Introduce additional SsearchDeltaP\_stationary threshold to support 2 level speed evaluation (i.e. stationary, low mobility);

• Enhancement 2: Take into account of beam switching in low mobility evaluation;

• Enhancement 3: UE determines its stationary property based on subscription information (e.g. USIM);

• Enhancement 4: Introduce an additional SsearchDeltaP\_correction threshold and configure the UE to use it if only it detects that it observes higher received signal power variation that do not violate stationarity i.e., rotating around itself, dynamically changing multipaths.

• Enhancement 5: Introduce additional TSearchDeltaP\_stationary to support 2-level stationarity (i.e. fixed location vs low mobility);

* Oppo ok in general but wonders whether 1 and 5 can be combined
* Endorse the list of enhancements. Continue in offline 110 to discuss a corresponding TP and also see whether some amendments are needed/ further enhancements based on contributions at this meeting.

Proposal 4: From RAN2 perspective, enhancements of neighbour RRM relaxation methods are only needed if significant gain (compared to NR Rel-16) can be demonstrated.

Proposal 5: Capture in TR the following enhancements for neighbour RRM relaxation methods in RRC\_IDLE/RRC\_INACTIVE.

• Enhancement 1: UE can stop measurements on neighbor cells for T (T>>1) hours;

• Enhancement 2: Enabling further relaxation via reducing the number of monitored RS;

• Enhancement 3: UE only perform measurements on a number of dedicated intra-freq, inter-freq cells;

• Enhancement 4: Minimize the number of measured frequencies;

* Endorse the list of enhancements (with no priority). Continue in offline 110 to discuss a corresponding TP and also see whether some amendments are needed/ further enhancements based on contributions at this meeting.

Neighbour cell RRM relaxation in RRC\_CONNECTED

Proposal 6: For neighbour cell RRM relaxation in RRC\_CONNECTED, “fixed or immobile UEs” are considered with higher priority than “slightly moving UEs”.

* Agreed

Proposal 7: Compared to RRC\_IDLE/INACTIVE, RRM relaxation in RRC\_CONNECTED can be considered with low priority if the time is limited in WI.

* Continue in offline 110

Proposal 8: Capture in TR the following solutions for triggering neighbour RRM relaxation in RRC\_CONNECTED.

• Solution 1: UE reports “stationary” property to network in Msg5;

• Solution 2: Network provides (e.g. low mobility, not-at-cell-edge) evaluation parameters to UE via dedicated signalling;

• Solution 3: AMF sends “stationary” indication to gNB (based on UE subscription);

• Solution 4: UE reports “stationary” in UE Assistance Information to network;

* Continue in offline 110

Proposal 9: Capture in TR the potential solutions for neighbour cell RRM relaxation methods in RRC\_CONNECTED. The exact mechanism, if any, should be decided by RAN4. From RAN2’s perspective, other solutions are not precluded (e.g. network does not configure measurements for mobility purpose, UE only performs measurement on single RS type).

* Continue in offline 110

Serving cell RRM relaxation in RRC\_IDLE/INACTIVE/CONNECTED

Proposal 10: Irrespective of RRC state, serving cell RRM relaxation for Redcap UEs is not considered in Rel-17.

* Continue in offline 110

Agreements:

1. Irrespective of RRC state, whether to enable/disable RRM relaxation function for Redcap UEs is within network’s control.
2. The following enhancements for triggering neighbour RRM relaxation in RRC\_IDLE/RRC\_INACTIVE are endorsed for inclusion in the TR. Among these solutions, -Enhancement #1, #2, #3 and #5 can be considered as higher priority. Exact TP and whether some amendments are needed/ further enhancements need to be added can be further discussed:

* Enhancement 1: Introduce additional SsearchDeltaP\_stationary threshold to support 2 level speed evaluation (i.e. stationary, low mobility);
* Enhancement 2: Take into account of beam switching in low mobility evaluation;
* Enhancement 3: UE determines its stationary property based on subscription information (e.g. USIM);
* Enhancement 4: Introduce an additional SsearchDeltaP\_correction threshold and configure the UE to use it if only it detects that it observes higher received signal power variation that do not violate stationarity i.e., rotating around itself, dynamically changing multipaths;
* Enhancement 5: Introduce additional TSearchDeltaP\_stationary to support 2-level stationarity (i.e. fixed location vs low mobility);

1. The following enhancements for neighbour RRM relaxation methods in RRC\_IDLE/RRC\_INACTIVE are endorsed for inclusion in the TR. Exact TP and whether some amendments are needed/ further enhancements need to be added can be further discussed:

* Enhancement 1: UE can stop measurements on neighbor cells for T (T>>1) hours;
* Enhancement 2: Enabling further relaxation via reducing the number of monitored RS;
* Enhancement 3: UE only perform measurements on a number of dedicated intra-freq, inter-freq cells;
* Enhancement 4: Minimize the number of measured frequencies;

1. For neighbour cell RRM relaxation in RRC\_CONNECTED, “fixed or immobile UEs” are considered with higher priority than “slightly moving UEs”.

* [AT113-e][110][REDCAP] RRM relaxations (ZTE)

Scope: Continue the discussion on RRM relaxations based on the proposals in [R2-2100569](file:///C:\Data\3GPP\Extracts\R2-2100569%20Report%20of%20Email%20discussion%5b155%5d%5bREDCAP%5d%20RRM%20relaxations.docx) marked as "continue in offline 110". Also discuss possible evaluations to be added in the Annex.

The intention of this offline is to describe options in the TR and, whenever applicable/possible, also provide some recommendations (i.e. p7 and p10 in [R2-2100569](file:///C:\Data\3GPP\Extracts\R2-2100569%20Report%20of%20Email%20discussion%5b155%5d%5bREDCAP%5d%20RRM%20relaxations.docx))

Initial intended outcome: Summary of the offline discussion with e.g.:

* + - List of proposals for agreement
    - List of proposals that require online discussions
    - Corresponding TP for the TR

Initial deadline (for companies' feedback): Monday 2021-02-01 11:00 UTC

Initial deadline (for rapporteur's summary in [R2-2102020](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102020.zip)): Monday 2021-02-01 17:00 UTC

Updated scope: Continue the discussion on p8 and the TP in p12 from [R2-2102020](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102020.zip). Also discuss p3 from [R2-2102019](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102019.zip) (report of offline [109])

Updated intended outcome: Summary of the offline discussion with e.g.:

* + - List of proposals for agreement
    - Corresponding TP for the TR

Deadline (for companies' feedback): Wednesday 2021-02-03 11:00 UTC

Deadline (for rapporteur's summary in R2-2102038): Wednesday 2021-02-03 13:00 UTC

Final scope: Finalize a TP covering all the RRM relaxation agreements

Final intended outcome: TP in R2-2102048

Deadline (for companies' feedback): Thursday 2021-02-05 22:00 UTC

Deadline (for TP in in R2-2102048): Friday 2021-02-05 08:00 UTC

[R2-2102020](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102020.zip) Summary of offline 110 - [REDCAP] RRM relaxations ZTE discussion FS\_NR\_redcap

List of proposal for agreement:

Proposal 1: For measurement relaxation methods, RAN2 can discuss preferable solutions, but RAN4 should be consulted before making the final decision.

* Agreed

Proposal 8: Capture in TR the following solutions to assist triggering neighbour RRM relaxation in RRC\_CONNECTED.

• Solution 1: UE reports “stationary” status to network in Msg5;

• Solution 2: Network provides (e.g. low mobility, not-at-cell-edge) evaluation parameters to UE via dedicated signalling;

• Solution 3: AMF sends “stationary” indication to gNB (based on UE subscription);

• Solution 4: UE reports “stationary” in UE Assistance Information to network;

* Ericsson wonders it the intention is that the potential triggering for RRM relaxation would be controlled by the NW? Let’s say the UE reports it is “stationary” or subs. Info says the UE is “stationary”, but the network/gNB wants that the UE continues with normal RRM procedures – is the intention that this is possible?
* Continue offline

Proposal 9: Capture in TR the potential solutions for neighbour cell RRM relaxation methods in RRC\_CONNECTED. The exact mechanism, if any, should be decided by RAN4. From RAN2’s perspective, other solutions are not precluded (e.g. network does not configure measurements for mobility purpose, UE only performs measurement on single RS type).

* Agreed

Proposal 11: To capture simulation results of R2-2100459 to TR (take into account the received comments).

* Agreed

Proposal 13: To capture simulation results from R2-2101257 to TR .

* Agreed

Agreements via email - from offline [110]:

1. For measurement relaxation methods, RAN2 can discuss preferable solutions, but RAN4 should be consulted before making the final decision.
2. Capture in TR the potential solutions for neighbour cell RRM relaxation methods in RRC\_CONNECTED. The exact mechanism, if any, should be decided by RAN4. From RAN2’s perspective, other solutions are not precluded (e.g. network does not configure measurements for mobility purpose, UE only performs measurement on single RS type).
3. To capture simulation results of R2-2100459 to TR (take into account the received comments).
4. To capture simulation results from R2-2101257 to TR.

List of proposals that require online discussions:

Proposal 7: To online discuss the following options:

- Alt 1: Confirms that compared to RRC\_IDLE/INACTIVE, RRM relaxation in RRC\_CONNECTED can be considered with low priority if the time is limited in WI.

- Alt 2: The prioritization between RRM relaxation in RRC\_IDLE/INACTIVE and RRM relaxation in RRC\_CONNECTED will be decided by RANP.

* CB online on Wednesday
* Vivo suggests to revise as "Compared to RRC\_CONNECTED, RRM relaxation in RRC\_IDLE/INACTIVE can be considered with higher priority". Apple is fine
* Ericsson is not happy with rewording suggested by Vivo.
* Vivo can then accept Atl1. Oppo is not ok with 1. Nokia as well
* Agree Alt 2. No recommendation on prioritization on this from RAN2

Proposal 10: Irrespective of RRC state, serving cell RRM relaxation for Redcap UEs is not considered in Rel-17 (This does not impact RAN4 to define RRM requirement for eDRX case).

* CB online on Wednesday
* Agreed with removal of the part in brackets

Proposal 12: To further discuss whether and how to capture the observation 1 from R2-2101461 to TR.

* Continue offline
* Agree to include. Detailed wording offline to be discussed offline

Agreements:

1. No recommendation on prioritization for neighbour cell RRM relaxation among different RRC states
2. Indicate in the TR conclusions that irrespective of RRC state, serving cell RRM relaxation for Redcap UEs is not considered in Rel-17
3. Capture the observation 1 from R2-2101461 to TR. Detailed wording offline to be discussed offline

[R2-2102038](file:///C:\Data\3GPP\RAN2\Inbox\R2-2102038.zip) Summary of offline 110 - [REDCAP] RRM relaxations - second round ZTE discussion FS\_NR\_redcap

Proposal 8: Capture in TR the following solutions to assist triggering neighbour RRM relaxation in RRC\_CONNECTED.

• Solution 1: UE reports “stationary” status to network in Msg5;

• Solution 2: Network provides (e.g. low mobility, not-at-cell-edge) evaluation parameters to UE via dedicated signalling;

• Solution 3: AMF sends “stationary” indication to gNB (based on UE subscription);

• Solution 4: UE reports “stationary” in UE Assistance Information to network;

* Ericsson is fine
* Agreed

#related to previous P3 in offline-109#

Proposal 20: Capture in the TR that it is recommended to support eDRX value up to 10485.76 s for RRC Idle, unless RAN4 indicates such eDRX value requires UE to perform RRM on serving cell outside PTW

* Vivo can accept this as a compromise
* Ericsson thinks this is fine. We can also capture in the TR that this aspect has RAN4 (and maybe RAN3) impacts
* CATT suggests to add "differently from 2621.44s" at the end
* ZTE thinks we can keep the original wording
* Agreed

Proposal 21: Discuss in RANP about RAN4’s work on defining RRM requirement for eDRX (i.e. as objective in WID), no immediate RAN2 requirement is needed.

Agreements:

1. Capture in TR the following solutions to assist triggering neighbour RRM relaxation in RRC\_CONNECTED.

• Solution 1: UE reports “stationary” status to network in Msg5;

• Solution 2: Network provides (e.g. low mobility, not-at-cell-edge) evaluation parameters to UE via dedicated signalling;

• Solution 3: AMF sends “stationary” indication to gNB (based on UE subscription);

• Solution 4: UE reports “stationary” in UE Assistance Information to network;

1. Capture in the TR that it is recommended to support eDRX value up to 10485.76 s for RRC Idle, unless RAN4 indicates such eDRX value requires UE to perform RRM on serving cell outside PTW

R2-2102048 TP for RRM relaxations ZTE discussion FS\_NR\_redcap

[R2-2100459](file:///C:\Data\3GPP\Extracts\R2-2100459_TP%20for%20TR%2038875%20on%20evaluation%20for%20RRM%20relaxation.docx) TP for TR 38875 on evaluation for RRM relaxation vivo, Guangdong Genius discussion Rel-17 FS\_NR\_redcap

[R2-2100987](file:///C:\Data\3GPP\Extracts\R2-2100987%20-%20RRM%20relaxation%20evaluations.docx) Further evaluations of RRM relaxation Ericsson discussion FS\_NR\_redcap

[R2-2100312](file:///C:\Data\3GPP\Extracts\R2-2100312_Power%20saving%20enhancements%20for%20RedCap%20UEs.docx) Power saving enhancements for RedCap UEs Qualcomm Incorporated discussion Rel-17 FS\_NR\_redcap

[R2-2100157](file:///C:\Data\3GPP\Extracts\R2-2100157%20Discussion%20on%20RRM%20relaxation.doc) Discussion on RRM relaxation OPPO discussion Rel-17 FS\_NR\_redcap

[R2-2100410](file:///C:\Data\3GPP\Extracts\R2-2100410%20Discussion%20on%20RRM%20relaxation%20for%20RedCap%20UE.docx) Discussion on RRM relaxation for RedCap UE Xiaomi Communications discussion Rel-17

[R2-2100462](file:///C:\Data\3GPP\Extracts\R2-2100462_RRM%20Relaxation%20for%20Power%20Saving.docx) RRM relaxation for power saving vivo, Guangdong Genius discussion Rel-17 FS\_NR\_redcap [R2-2009087](file:///C:\Data\3GPP\Extracts\R2-2009087%20RRM%20Relaxation%20for%20Power%20Saving.docx)

[R2-2100570](file:///C:\Data\3GPP\Extracts\R2-2100570%20Consideration%20on%20interoperability%20between%20Rel-17%20Redcap%20RRM%20relaxation%20and%20Rel-16%20RRM%20relaxation.docx) Consideration on interoperability between Rel-17 Redcap RRM relaxation and Rel-16 RRM relaxation ZTE Corporation, Sanechips discussion Rel-17 FS\_NR\_redcap

[R2-2100581](file:///C:\Data\3GPP\Extracts\R2-2100581%20RRM%20relaxation%20enhancement%20for%20RedCap%20UEs.doc) RRM relaxation enhancement for RedCap UEs LG Electronics Inc. discussion Rel-17 FS\_NR\_redcap

[R2-2100805](file:///C:\Data\3GPP\Extracts\R2-2100805%20RRM%20relaxation%20for%20RedCap%20UEs.doc) RRM relaxation for RedCap UEs SHARP Corporation discussion

[R2-2101114](file:///C:\Data\3GPP\Extracts\R2-2101114%20RRM%20relaxation%20for%20stationary%20UE%20with%20reduced%20capability.docx) RRM relaxation for stationary UE with reduced capability Lenovo, Motorola Mobility discussion Rel-17

[R2-2101257](file:///C:\Data\3GPP\Extracts\R2-2101257%20RRM%20measurement%20relaxation%20for%20RedCap%20UE.doc) RRM measurement relaxation for RedCap UE Huawei, HiSilicon discussion Rel-17

[R2-2101308](file:///C:\Data\3GPP\Extracts\R2-2101308%20UE%20power%20saving%20and%20battery%20lifetime%20enhancement%20for%20REDCAP%20UE.docx) Power saving and battery lifetime enhancement for REDCAP UE Nokia, Nokia Shanghai Bell discussion Rel-17 FS\_NR\_redcap

[R2-2101461](file:///C:\Data\3GPP\RAN2\Docs\R2-2101461.zip) Localized mobility of some RedCap devices Apple Inc discussion Rel-17 FS\_NR\_redcap

[R2-2101540](file:///C:\Data\3GPP\Extracts\R2-2101540.docx) Relax measurement for stationary and low mobility devices Intel Corporation discussion Rel-17 FS\_NR\_redcap [R2-2009022](file:///C:\Data\3GPP\Extracts\R2-2009022.docx)

[R2-2101618](file:///C:\Data\3GPP\Extracts\R2-2101618.docx) Discussion on the RRM relaxation CMCC discussion Rel-17 FS\_NR\_redcap

[R2-2101877](file:///C:\Data\3GPP\Extracts\R2-2101877.doc) RRM relaxation for RedCap devices Samsung discussion Rel-17

## Summary

TBD