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 and 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) | 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) | 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 | NR17 eIAB (Johan)  [8.4.1],  [8.4.3],  [8.4.2], | 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 (Emre/Brian)  4.1  7.3  4.2  7.2 |
| **Friday** |  |  |  |
| 04:45 – 06:15 | NR16 V2X (Kyeongin)  6.4.3, 6.4.4  Comebacks (if needed) | NR17 SONMDT (HuNan)  8.13.2  8.13.3  8.13.4: Only email discussion and summary | TBD |

|  |  |  |  |
| --- | --- | --- | --- |
| **Time Zone UTC** | **Web Conference R2 - Main** | **Web Conference R2 - BO1** | **Web Conference R2 - BO2** |
| **Monday** |  |  |  |
| 12:45 – 13:55 | NR16 IIOT (Johan) | 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 |
| 13:55 – 15:05 | NR17 Multicast (Johan) | 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 | NR17 Multicast (Johan) | NR16 (Diana) | 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)  - 8.12.2  - 8.12.3 | NR17 SL Relay SI (Nathan)  - Checkpoint for email discussions  - 8.7.3 Discovery  - 8.7.4 Other |
| 13:55 – 15:05 | TBD (Tero / Johan) | NR17 NTN (Sergio)  - 8.10.2 | NR17 Pos SI (Nathan)  - Any overflow from first week session  - Checkpoint for email discussions  - 8.11.3 Integrity |
| 15:05 – 16:15 | NR16 Main Session (Johan) | NR17 NTN (Sergio)  - 8.10.3 | 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) | NR17 SL Enh (Kyeongin)  8.15.2.1, 8.15.2.2, 8.15.2.3 |
| 13:55 – 15:05 | NR17 QoE SI (Johan) | NR17 IIOTURLLC (Diana) | NR17 SL Enh (Kyeongin)  8.15.2.2, 8.15.2.3, 8.15.3 |
| 15:05 – 16:15 | NR17 IoT NTN (Johan) | TBD (Diana) | CB Sergio  - R16 comebacks from AI 6.12, AI 6.14  - R17 comebacks from RedCap (if time allows) |
| **Thursday** |  |  |  |
| 04:45 – 06:15 | CB Johan | CB Sergio  - R17 comebacks from RedCap and NTN | 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 Brian, Emre |
| 05:30 – 06:30 | CB | CB Kyeongin | CB |

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): Tuesday 2021-01-26 16:00 UTC CRs listed as "can be agreed as is" in R2-2102011 and not challenged until Wednesday 2021-01-27 04:00 UTC will be declared as agreed by the session chair. For the other ones, the discussion will continue online.

Status: Ongoing

* [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

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

Proposals marked "for agreement" in R2-2102013 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: 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): Monday 2021-02-01 17:00 UTC

Proposals marked "for agreement" in R2-2102014 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: 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): Monday 2021-02-01 23:00 UTC

Proposals marked "for agreement" in R2-2102015 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: Ongoing

* [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): Monday 2021-02-01 23:00 UTC

Proposals marked "for agreement" in R2-2102016 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: 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
* …

[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
* …

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
* …

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
* …

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
* …

[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
* …

[R2-2101852](file:///C:\Data\3GPP\Extracts\._R2-2101852%20Stop%20conditions%20of%20T320%20&%20T325%20in%20NR%20protocols.docx) 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
* …
* [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): Tuesday 2021-01-26 16:00 UTC CRs listed as "can be agreed as is" in R2-2102011 and not challenged until Wednesday 2021-01-27 04:00 UTC will be declared as agreed by the session chair. For the other ones, the discussion will continue online.

R2-2102011 Summary of offline 101 - PRN corrections Nokia discussion Rel-16 NG\_RAN\_PRN-Core

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

[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

[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

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

## 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

* …

[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

[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

[R2-2101365](file:///C:\Data\3GPP\Extracts\._R2-2101365_38.306CR0506_(Rel-16)_38.306%20CR%20on%20SpCell%20BFR_v0.docx) 38.306 CR on SpCell BFR Apple CR Rel-16 38.306 16.3.0 0506 - F NR\_eMIMO-Core

[R2-2101366](file:///C:\Data\3GPP\Extracts\._R2-2101366_38.331CR2407_(Rel-16)_RRC%20CR%20on%20SpCell%20BFR_v0.docx) RRC CR on SpCell BFR Apple CR Rel-16 38.331 16.3.1 2407 - F NR\_eMIMO-Core

[R2-2101367](file:///C:\Data\3GPP\Extracts\._R2-2101367_38.321CR1030_(Rel-16)_MAC%20CR%20on%20SpCell%20BFR_v0.docx) MAC CR on SpCell BFR Apple CR Rel-16 38.321 16.3.0 1030 - F NR\_eMIMO-Core

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

### 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

[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

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

R2-2102012 Summary of offline 102 - [NTN] Reply LSs to SA2 and RAN3 Qualcomm discussion NR\_NTN\_solutions-Core

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

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

[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

[R2-2100251](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

[R2-2101048](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)

[R2-2101125](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

[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

[R2-2101582](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

[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.

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

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

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.

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

Proposals marked "for agreement" in R2-2102013 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.

R2-2102013 Summary of offline 103 - [NTN] HARQ aspects 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

[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

[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): Monday 2021-02-01 17:00 UTC

Proposals marked "for agreement" in R2-2102014 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.

R2-2102014 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): Monday 2021-02-01 23:00 UTC

Proposals marked "for agreement" in R2-2102015 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 Summary of offline 105 - [NTN] Idle mode aspects Nokia discussion NR\_NTN\_solutions-Core

[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): Monday 2021-02-01 23:00 UTC

Proposals marked "for agreement" in R2-2102016 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.

R2-2102016 Summary of offline 106 - [NTN] CHO aspects 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

[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

[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

[R2-2100256](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.

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.

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

### 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: Continue the discussion on L2 capabilities, impacts on procedures, number of RedCap types 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)

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 R2-2102017): Monday 2021-02-01 17:00 UTC

Proposals marked "for agreement" in R2-2102017 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.

R2-2102017 Summary of offline 107 - [REDCAP] L2 capabilties and UE types Huawei discussion FS\_NR\_redcap

[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)

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 17:00 UTC

Initial deadline (for rapporteur's summary in R2-2102018): Monday 2021-02-01 23:00 UTC

Proposals marked "for agreement" in R2-2102018 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.

R2-2102018 Summary of offline 107 - [REDCAP] L2 capabilties and UE types 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 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.

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

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.

Proposal 4: Capture in the TR that it is recommended to support eDRX value up to 10485.76 s.

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.

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.

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

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.

Proposal 11: Capture in the TR the two options for the deciding node for the eDRX configuration for RRC INACTIVE: RAN or CN.

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

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.

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.

[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\Extracts\._R2-2101460-256-DRX.docx) 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.

Proposal 2: Irrespective of RRC state, whether to enable/disable RRM relaxation function for Redcap UEs is within network’s control.

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);

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. Among these solutions, Enhancement #1 can be considered as higher priority.

• 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;

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”.

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.

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;

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).

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.

* [AT113-e][109][REDCAP] RRM relaxations (ZTE)

Scope: Continue the discussion on RRM relaxations …

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 R2-2102019): Monday 2021-02-01 17:00 UTC

Proposals marked "for agreement" in R2-2102019 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.

R2-2102019 Summary of offline 10x - [REDCAP] 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