3GPP TSG-RAN WG2 Meeting #112 electronic R2-2010702

Online, November 2nd - 13th, 2020

**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 [AT112e][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:
* [AT112e][100] Organizational Sergio's session (eMIMO, CLI, PRN, RACS, NTN, REDCAP)

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 ZoneUTC** | **Web Conference R2 - Main** | **Web Conference R2 - BO1** | **Web Conference R2 - BO2** |
| **Monday** |  |  |  |
|  | Early Items, if needed (Johan) |  |  |
| 13:00 – 14:30 | NR15 Stage-2, CP (and UP if needed) (Johan) | NR16 2-step, PowSav (Diana) | NR16 V2X (Kyeognin) |
| 14:30 – 16:00 | NR17 DCCA FEnh (Tero) | NR16 NR-U, Including UE caps for unlicensed (Diana) | LTE16 and earlier IoT (Brian, Emre) |
| **Tuesday** |  |  |  |
| 13:00 – 14:30 | NR16 General and UE caps (Johan) | NR17 NTN (Sergio)AI 8.10.1 and reports from [Post111-e][908][909][910[911] | NR16 and earlier Pos (Nathan) |
| 14:30 – 16:00 | NR16 IIOT (Johan) | NR16 L1 Centric (Sergio)AI 6.13 (including status of [AT112e][101])AI 6.14 | NR17 Pos SI (Nathan) |
| **Wednesd** |  |  |   |
| 13:00 – 14:30 | NR17 Multi-SIM (Tero)  | NR17 Red Cap SI (Sergio)reports from [Post111-e][912][913][914[915] | NR17 SL Relay SI (Nathan) |
| 14:30 – 16:00 | NR16 IAB (Johan) | NR16 Other CP Centric (Sergio)AI 6.12 (including status of [AT112e][102]) | LTE17 IoT (Brian) |
| **Thursday** |  |  |  |
| 13:00 – 14:30 | NR16 DCCA (Tero) | NR17 Small Data Enh (Diana) | NR16 V2X, LTE 16 and earlier V2X SL (Kyeongin) |
| 14:30 – 16:00 | NR17 Multicast (Johan) | LTE16 and earlier IoT (Brian, Emre) | NR16 Pos (Nathan)NR17 Pos SI (Nathan) (if time) |
| **Friday** |  |  |  |
| 04:30-06:00 | NR17 Multicast (Johan) | NR16 Mob, LTE16 Mob (Tero) | NR17 SON MDT (HuNan) |

|  |  |  |  |
| --- | --- | --- | --- |
| **Time ZoneUTC** | **Web Conference R2 - Main** | **Web Conference R2 - BO1** | **Web Conference R2 - BO2** |
| **Monday** |  |  |  |
| 14:00 – 15:30 | NR17 UE Power Saving (Johan) | NR17 RAN Slicing SI (Tero) | NR17 SL enh (Kyeongin)  |
| 15:30 – 17:00 | NR16 General, UE caps, R4 items (Johan) | NR17 IIOT URLLC (Diana) | NR16 SON/MDT (HuNan) |
| **Tuesday** |  |  |  |
| 14:00 – 15:30 | LTE16 and earlier General (Tero) | NR17 NTN (Sergio):Continue the discussion on CP and UP aspects | Pos CB (Nathan) |
| 15:30 – 17:00 | NR16 MobEnh (Tero)LTE16 MobEnh (Tero)NR16 DCCA (Tero) | NR17 Small data + CB (Diana) | NR17 SL enh (Kyeongin)  |
| **Wednesd** |  |  |  |
| 14:00 – 15:30 | NR17 IAB (Johan) | CB NR16 (Sergio)Continue the discussion on eMIMO, CLI, PRN and other CP issues | LTE16 IoT (Emre, Brian) |
| 15:30 – 17:00 | CB (Johan) | NR16 2-step PowSav NR-U CB (Diana) | NR17 SL Relay SI + CB (Nathan) |
| **Thursday** |  |  |  |
| 05:00 – 06:30 | CB (Johan) | CB (Kyeongin) | CB (Brian/Emre) |
| **Friday** |  |  |  |
| 05:00 – 06:30 | CB (Nathan)CB (HuNan)  | CB (Diana) CB (Sergio) Remaining NTN and RedCap issues  | CB (Tero) |

List and status of offline email discussions

NOTE: No offline email discussions will be kicked off before Monday November 2nd, 07:00 UTC

* [AT112][101][eMIMO] MAC corrections (Samsung)

Scope: Discuss the CRs in AI 6.13.1

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 2020-11-03 07:00 UTC

Initial deadline (for rapporteur's summary in R2-2010760): Tuesday 2020-11-03 09:00 UTC

CRs listed as "can be agreed as is" in R2-2010760 and not challenged until Tuesday 2020-11-03 13:00 UTC will be declared as agreed by the session chair. For the other ones, the discussion will continue online.

Status: Not yet started

* [AT112][102][PRN] Stage 3 Corrections (Nokia)

Scope: Discuss the PRN Stage 3 CRs 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): Wednesday 2020-11-04 07:00 UTC

Initial deadline (for rapporteur's summary in R2-2010761): Wednesday 2020-11-04 09:00 UTC

CRs listed as "can be agreed as is" in R2-2010761 and not challenged until Wednesday 2020-11-04 13:00 UTC will be declared as agreed by the session chair. For the other ones, the discussion will continue online.

Status: Not yet started

## 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%3A%5CData%5C3GPP%5Carchive%5CRAN%5CRAN%2383%5CTdocs%5CRP-190713.zip))

(RACS-RAN-Core, leading WG: RAN2; REL-16; started: Mar 19; completed: Jun 20; WID: [RP-191088](file:///C%3A%5CData%5C3GPP%5Carchive%5CRAN%5CRAN%2384%5CTdocs%5CRP-191088.zip))

(NG\_RAN\_PRN-Core; leading WG: RAN3; REL-16; started: Mar 19; completed: June 20; WID: [RP-200122](file:///C%3A%5CData%5C3GPP%5Carchive%5CRAN%5CRAN%2387%5CTdocs%5CRP-200122.zip))

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

Limit: 3 email threads

PRN - Incoming LSs

[R2-2008753](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2008753_S1-203272.docx) Reply LS on human-readable network name (HRNN) (CP-201361/S1-203197) (S1-203272; contact: vivo) SA1 LS in Rel-16 To:SA2, CT, CT1, RAN2 Cc:CT4

* Noted

[R2-2008762](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2008762_S2-2007809.doc) Reply LS on Clarification of CAG only UE accessing EPS network (S2-2007809; contact: Oppo) SA2 LS in Rel-16 Vertical\_LAN To:CT1 Cc:RAN2

* Noted

PRN - PNI-NPN related parameter selection

[R2-2009065](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009065%20ParametersInSharedCells.docx) Considerations on parameter selection for shared cells Nokia, Nokia Shanghai Bell discussion Rel-16 NG\_RAN\_PRN-Core

* Discussed in offline 102
* Noted

[R2-2009066](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009066%20CR38331-ParametersInSharedCells.docx) Corrections for PNI-NPN related parameter selection Nokia, Nokia Shanghai Bell CR Rel-16 38.331 16.2.0 2028 - F NG\_RAN\_PRN-Core

* Initially discussed in offline 102

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[R2-2010015](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010015%20-%20Selecting%20index%20for%20PLMN%20SNPN%20and%20UAC%20parameters.docx) Selecting index for PLMN, SNPN and UAC parameters Ericsson discussion

* Discussed in offline 102
* Noted

[R2-2010355](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010355%20Discussion%20on%20selected%20CAG.docx) Discussion on selected CAG Huawei, HiSilicon discussion Rel-16 NG\_RAN\_PRN-Core

* Discussed in offline 102
* Noted

[R2-2010356](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010356%20Discussion%20on%20the%20selection%20between%20PLMN%20and%20PNI-NPNs.docx) Discussion on the selection between PLMN and PNI-NPNs Huawei, HiSilicon discussion Rel-16 NG\_RAN\_PRN-Core

* Discussed in offline 102
* Noted

PRN - Forbidden Tracking Areas - suitable cells

[R2-2009625](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009625.docx) Further Clarification on the Forbidden Tracking Areas ZTE Corporation, Sanechips discussion Rel-16 NG\_RAN\_PRN-Core

* Discussed in offline 102
* Noted

[R2-2009628](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009628.docx) CR on Forbidden Tracking Areas ZTE Corporation, Sanechips CR Rel-16 38.304 16.2.0 0190 - F NG\_RAN\_PRN-Core

* Initially discussed in offline 102

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[R2-2010496](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010496%20Clarification%20on%20the%20selection%20of%20suitable%20cell.docx) Clarification on the selection of suitable cell Huawei, HiSilicon CR Rel-16 38.304 16.2.0 0192 - F NG\_RAN\_PRN-Core

* Initially discussed in offline 102

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PRN - NPN-only cell

[R2-2009626](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009626.docx) Further Clarification on the NPN-only cell ZTE Corporation, Sanechips discussion Rel-16 NG\_RAN\_PRN-Core

* Discussed in offline 102
* Noted

[R2-2009629](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009629.docx) CR on NPN-only Cell ZTE Corporation, Sanechips CR Rel-16 38.331 16.2.0 2098 - F NG\_RAN\_PRN-Core

* Initially discussed in offline 102

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PRN -Other 38.331 corrections

[R2-2010033](file:///C%3A%5CData%5C3GPP%5CExtracts%5C38331_CR2167_%28Rel-16%29_R2-2010033_NPN_corrections.docx) Clarification on the total number of CAG identifiers Lenovo, Motorola Mobility CR Rel-16 38.331 16.2.0 2167 - F NG\_RAN\_PRN-Core

* Initially discussed in offline 102

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* [AT112][102][PRN] Stage 3 Corrections (Nokia)

Scope: Discuss the PRN Stage 3 CRs 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): Wednesday 2020-11-04 07:00 UTC

Initial deadline (for rapporteur's summary in R2-2010761): Wednesday 2020-11-04 09:00 UTC

CRs listed as "can be agreed as is" in R2-2010761 and not challenged until Wednesday 2020-11-04 13:00 UTC will be declared as agreed by the session chair. For the other ones, the discussion will continue online.

R2-2010761 Summary of offline 102 - PRN Stage 3 Corrections Nokia discussion Rel-16 NG\_RAN\_PRN-Core

PRN - Stage2 corrections

[R2-2009627](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009627.docx) CR on non-CAG-capable UE ZTE Corporation, Sanechips CR Rel-16 38.300 16.3.0 0309 - F NG\_RAN\_PRN-Core

[R2-2010016](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010016%20-%20Aligning%20use%20of%20PNI-NPN%20in%20RAN2%20specs%20to%20SA2%20specs.docx) Aligning use of PNI-NPN in RAN2 specs to SA2 specs Ericsson discussion

[R2-2010630](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010630%2038.300%20Correction%20on%20the%20SNPN-only%20cell.docx) 38.300 Correction on the SNPN-only cell vivo CR Rel-16 38.300 16.3.0 0320 - F NG\_RAN\_PRN-Core

[R2-2010631](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010631%2038.300%20Correction%20on%20CAG%20information.docx) 38.300 Correction on CAG information vivo CR Rel-16 38.300 16.3.0 0321 - F NG\_RAN\_PRN-Core

RACS/SRVCC

[R2-2010259](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010259%20Dynamic%20UMTS%20Radio%20Capability%20impact%20on%20SRVCC%20and%20RACS.docx) Dynamic UMTS Radio Capability impact on SRVCC and RACS Huawei, HiSilicon, Vodafone, China Unicom CR Rel-16 38.300 16.3.0 0317 - F SRVCC\_NR\_to\_UMTS-Core, RACS-RAN-Core

[R2-2010407](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010407_Clarification%20on%20SRVCC%20handover_R16.docx) Clarification on SRVCC handover Google Inc. CR Rel-16 38.331 16.2.0 2215 - F SRVCC\_NR\_to\_UMTS-Core

Other non-PRN CRs

[R2-2010632](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010632%2038.331%20Clarification%20on%20the%20release%20of%20RRC%20connection.docx) 38.331 Clarification on the release of RRC connection vivo CR Rel-16 38.331 16.2.0 2264 - F NG\_RAN\_PRN-Core

* VC: the spec number in the coversheet, the WI code and the clauses affected are not correct
* …

## 6.13 NR eMIMO

(NR\_eMIMO-Core, leading WG: RAN1; REL-16; started: Jun 18; target; Aug 20; WID: [RP-200474](file:///C%3A%5CData%5C3GPP%5Carchive%5CRAN%5CRAN%2387%5CTdocs%5CRP-200474.zip); R2 part completed)

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

Limit: 2 email threads

Stage2

[R2-2009905](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009905_CR0310_38300_R16_BFR%20on%20SCell.docx) BFR on SCell ZTE Corporation, Sanechips, Nokia (Rapporteur) CR Rel-16 38.300 16.3.0 0310 - F NR\_eMIMO-Core

[R2-2009170](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009170%20Stage-2%20Description%20of%20multi-TRP.docx) Stage-2 description of multi-TRP Nokia (Rapporteur) CR Rel-16 38.300 16.3.0 0300 - F NR\_eMIMO-Core

### 6.13.1 User plane corrections

Misc corrections to BFR procedure

[R2-2009098](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009098_CR0907_38321_Rel16_%20Correction%20to%20parameter%20list%20for%20beam%20failure%20recovery%20procedure.docx) Correction to parameter list for beam failure recovery procedure Samsung Electronics Co., Ltd CR Rel-16 38.321 16.2.1 0907 - F NR\_eMIMO-Core

* Initially discussed in offline 101

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[R2-2009904](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009904_CR0948_38321_R16_Miscellaneous%20correction%20on%20BFR%20and%20BFR%20MAC%20CE.docx) Miscellaneous on 38.321 for BFR and BFR MAC CE ZTE Corporation, Sanechips CR Rel-16 38.321 16.2.1 0948 - F NR\_eMIMO-Core

* Initially discussed in offline 101

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[R2-2010494](file:///C%3A%5CData%5C3GPP%5CExtracts%5C38321_CR0991_%28Rel_16%29_R2-2010494_correction%20to%20BFR%20MAC%20CEs.docx) Correction to bitmap length determination in MAC CEs for BFR Fujitsu CR Rel-16 38.321 16.2.1 0991 - F NR\_eMIMO-Core

* Initially discussed in offline 101

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BFR trigger point / BFR MAC CE generation

[R2-2009795](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009795%20BFR%20triggering%20with%20candidate%20beam%20search.docx) BFR triggering with candidate beam search Nokia, Nokia Shanghai Bell, Ericsson, ZTE discussion Rel-16 NR\_eMIMO-Core

* Discussed in offline 101
* Noted

[R2-2009796](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009796%20Clarification%20on%20the%20BFR%20trigger%20upon%20candidate%20search%20v1.docx) Clarification on the BFR trigger upon candidate search Nokia, Nokia Shanghai Bell, Ericsson, ZTE CR Rel-16 38.321 16.2.1 0944 - F NR\_eMIMO-Core

* Initially discussed in offline 101

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[R2-2009797](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009797%20Draft%20LS%20on%20BFR%20requirements%20time%20reference.docx) Draft LS on BFR requirements time reference Nokia LS out Rel-16 NR\_eMIMO-Core To:RAN WG4

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[R2-2010009](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010009_CR0885_38321_Rel16_%20Correction%20on%20BFR%20MAC%20CE%20generation.docx) Correction on BFR MAC CE generation Qualcomm Incorporated, Samsung CR Rel-16 38.321 16.2.1 0885 1 F NR\_eMIMO-Core [R2-2008219](file:///C%3A%5CData%5C3GPP%5Carchive%5CRAN2%5CRAN2%23111%5CTdocs%5CR2-2008219.zip)

* Initially discussed in offline 101

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multi-CC simultaneous TCI activation with multi-TRP/panel transmission

[R2-2010013](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010013.docx) Discussion on Enhanced TCI States Activation/Deactivation for UE-specific PDSCH MAC CE on multiple CC case Qualcomm Incorporated discussion Rel-16 NR\_eMIMO-Core

* Discussed in offline 101
* Noted

[R2-2010014](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010014_CR0955_38321_Rel16_%20Correction%20on%20Enhanced%20TCI%20States%20Activation%20Deactivation%20for%20UE-specific%20PDSCH%20MAC%20CE.docx) Correction on Enhanced TCI States Activation/Deactivation for UE-specific PDSCH MAC CE Qualcomm Incorporated CR Rel-16 38.321 16.2.1 0955 - F NR\_eMIMO-Core

* Initially discussed in offline 101

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[R2-2010628](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010628%20eMIMO%20TCI%20state%20update%20sPDCCH%20mTRP%20per%20CC%20list.docx) Multi-CC simultaneous TCI activation with multi-TRP/panel transmission Ericsson discussion Rel-16 NR\_eMIMO-Core

* Discussed in offline 101
* Noted

[R2-2010634](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010634%20reply%20LS_update.docx) Reply LS on multi-CC simultaneous TCI activation with multi-TRP/panel transmission Ericsson LS out Rel-16 NR\_eMIMO-Core To:RAN1

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[R2-2010637](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010637%20R16%2038321%20CR%20Correction%20for%20CC%20list%20operation%20for%20TCI%20state%20update%20MAC%20CE.docx) Correction for CC list operation for TCI state update MAC CE Ericsson, Samsung CR Rel-16 38.321 16.2.1 0994 - F NR\_eMIMO-Core

* Initially discussed in offline 101

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Other

[R2-2009903](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009903_CR0947_38321_R16_%2038.321%20Correction%20on%20%20Enhanced%20PUCCH%20Spatial%20Relation%20ActivationDeactivation%20MAC%20CE.docx) 38.321 Correction on Enhanced PUCCH Spatial Relation ActivationDeactivation MAC CE ZTE Corporation, Sanechips CR Rel-16 38.321 16.2.1 0947 - F NR\_eMIMO-Core

* Initially discussed in offline 101

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* [AT112][101][eMIMO] MAC corrections (Samsung)

Scope: Discuss the CRs in AI 6.13.1

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)
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Initial deadline (for companies' feedback): Tuesday 2020-11-03 07:00 UTC

Initial deadline (for rapporteur's summary in R2-2010760): Tuesday 2020-11-03 09:00 UTC

CRs listed as "can be agreed as is" in R2-2010760 and not challenged until Tuesday 2020-11-03 13:00 UTC will be declared as agreed by the session chair. For the other ones, the discussion will continue online.

R2-2010760 Summary of offline 101 - MAC corrections for eMIMO Samsung discussion Rel-16 NR\_eMIMO-Core

### 6.13.2 Control plane corrections

38.331 CRs

[R2-2009169](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009169%20Correction%20to%20PDSCH%20TDRA%20for%20DCI%201-2.docx) Clarification to DCI format 1-2 TDRA Nokia, Nokia Shanghai Bell CR Rel-16 38.331 16.2.0 2038 - F NR\_eMIMO-Core

[R2-2010011](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010011_CR2159_38331_Rel16_Correction%20on%20BFD%20resource%20on%20SCell.docx) Correction on BFD resource on SCell Qualcomm Incorporated CR Rel-16 38.331 16.2.0 2159 - F NR\_eMIMO-Core

[R2-2010126](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010126.docx) Correction on HARQ ACK/NACK feedback configuration Huawei, HiSilicon CR Rel-16 38.331 16.2.0 2181 - F NR\_eMIMO-Core

[R2-2010127](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010127.docx) Correction on slot based repetition Huawei, HiSilicon CR Rel-16 38.331 16.2.0 2182 - F NR\_eMIMO-Core

[R2-2010625](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010625%20eMIMO%20capability.docx) On number for supported CORESETs Ericsson discussion Rel-16 NR\_eMIMO-Core

38.306 CRs

[R2-2010636](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010636%20R16%2038306%20CR%20Clarification%20for%20mTRP.docx) Clarification for multiDCI-MultiTRP-r16 applicability Ericsson CR Rel-16 38.306 16.2.0 0469 - F NR\_eMIMO-Core

R2-2010655 Correction on slot based repetition Huawei, HiSilicon CR Rel-16 38.306 16.2.0 0470 - F NR\_eMIMO-Core Late

## 6.14 NR Other R1 WIs

(NR\_CLI\_RIM; leading WG: RAN1; REL-16; started: Dec 18; Completed: Jun 20; WID: [RP-191997](file:///C%3A%5CData%5C3GPP%5Carchive%5CRAN%5CRAN%2385%5CTdocs%5CRP-191997.zip);)

(NR\_L1enh\_URLLC-Core, leading WG: RAN1; REL-16; Completed: June 20; WID: [RP-191584](file:///C%3A%5CData%5C3GPP%5Carchive%5CRAN%5CRAN%2384%5CTdocs%5CRP-191584.zip))

(R1 Led NR TEI16, Other R1 led items)

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

Limit: 5 email threads

### 6.14.1 User plane corrections

### 6.14.2 Control plane corrections

CLI

[R2-2008705](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2008705_R1-2007187.doc) Reply LS on exchange of information related to SRS-RSRP measurement resource configuration for UE-CLI (R1-2007187; contact: ZTE) RAN1 LS in Rel-16 NR\_CLI\_RIM To:RAN3 Cc:RAN2

* Noted

[R2-2008729](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2008729_R3-205794.docx) Full slot formats support in TDD UL-DL configuration (R3-205794; contact: Qualcomm) RAN3 LS in Rel-16 NR\_CLI\_RIM To:RAN1, RAN2

[R2-2010134](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010134.docx) Discussion on RAN3 LS on full slot format support Huawei, HiSilicon discussion Rel-16 NR\_CLI\_RIM-Core

[R2-2010172](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010172.docx) DRAFT Reply LS on Full slot formats support in TDD UL-DL configuration Qualcomm Incorporated LS out Rel-16 NR\_CLI\_RIM To:RAN3 Cc:RAN1

[R2-2010521](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010521%20-%20Supported%20slot%20formats%20in%20RAN2%20specifications.docx) Supported slot formats in RAN2 specifications Ericsson discussion

TEI16

[R2-2008825](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2008825%20TS%2038.331%20Directional%20collision%20handling.docx) Missing configuration for half-DuplexTDD-CA-SameSCS-r16 Nokia, Nokia Shanghai Bell, Ericsson CR Rel-16 38.331 16.2.0 2017 - B TEI16

[R2-2008826](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2008826%20Draft%20LS%20on%20half-duplex%20operation.docx) Missing configuration for half-DuplexTDD-CA-SameSCS-r16 Nokia, Nokia Shanghai Bell LS out TEI16 To:RAN1

## 8.10 NR Non-Terrestrial Networks (NTN)

(NR\_NTN\_solutions-Core; leading WG: RAN2; REL-17; WID: [RP-201256](file:///C%3A%5CData%5C3GPP%5Carchive%5CRAN%5CRAN%2388%5CTdocs%5CRP-201256.zip))

Time budget: 2 TU

Tdoc Limitation: 6 tdocs

Email max expectation: 4-5 threads

### 8.10.1 Organizational

Rapporteur inputs and other organizational documents. Documents in this AI do not count towards the tdoc limitation.

Workplan

[R2-2009695](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009695-Rel17%20NR-NTN%20workplan%20v25.docx) NR\_NTN\_solutions work plan THALES Work Plan Rel-17

* Noted

Incoming LS

[R2-2010686](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010686_C1-205967.doc) LS on NAS procedure guard timers for GEO satellite (C1-205967; contact: OPPO) CT1 LS in Rel-17 5GSAT\_ARCH-CT To:RAN2 Cc:SA2

[R2-2009377](file:///C%3A%5CData%5C3GPP%5CRAN2%5CDocs%5CR2-2009377.zip) Discussion on CT1 LS on NAS procedure guard timers for GEO satellite OPPO discussion Rel-17 NR\_NTN\_solutions-Core Late

[R2-2009378](file:///C%3A%5CData%5C3GPP%5CRAN2%5CDocs%5CR2-2009378.zip) Draft reply LS on NAS procedure guard timers for GEO satellite OPPO LS out Rel-17 NR\_NTN\_solutions-Core To:CT1 Cc:SA2 Late

[R2-2008730](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2008730_R3-205795.docx) Reply LS on SA WG2 assumptions from conclusion of study on architecture aspects for using satellite access in 5G (R3-205795;; contact: Qualcomm) RAN3 LS in Rel-17 NR\_NTN\_solutions-Core To:SA2, RAN2, CT1

* Noted

[R2-2010696](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010696_S2-2008307.docx) Reply LS on SA WG2 assumptions from conclusion of study on architecture aspects for using satellite access in 5G (S2-2008307; contact: Intel) SA2 LS in Rel-17 5GSAT\_ARCH To:RAN3 Cc:RAN2, SA3-LI, SA5

* Noted

[R2-2010697](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010697_S2-2008308.doc) LS on signalling of satellite backhaul connection (S2-2008308;contact: Samsung) SA2 LS in Rel-17 5GSAT\_ARCH To:RAN3 Cc:RAN1, RAN2

* Noted

Stage 2

[R2-2009136](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009136_NTN%20TP%20for%20TS%2038%20300_v4.docx) NR-NTN: TP for TS 38.300 Thales, Huawei, CATT, ZTE other Rel-17 38.300

Positioning aspects

[R2-2008884](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2008884_NR-NTN_Positioning.docx) NR-NTN: Positioning Methods Fraunhofer IIS, Fraunhofer HHI discussion Rel-17 38.821 [R2-2006699](file:///C%3A%5CData%5C3GPP%5Carchive%5CRAN2%5CRAN2%23111%5CTdocs%5CR2-2006699.zip)

### 8.10.2 User Plane

#### 8.10.2.1 RACH aspects

Including the outcome of Post111-e][908][NTN] RACH and HARQ feedback aspects

[R2-2010455](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010455%20%28R17%20NTN%20WI%20AI%208.10.2.1%20Summary%20of%20%5BPost111-e%5D%5B908%5D%5BNTN%5D%29.docx) Summary of [Post111-e][908][NTN] RACH and HARQ feedback aspects InterDigital discussion Rel-17 NR\_NTN\_solutions-Core Late

Consensus

Proposal 6: If UE pre-compensates UE-specific RTD, preamble ambiguity is not an issue in Rel-17 NTN (i.e. no enhancements are necessary). (consensus)

Proposal 8: From RAN2 perspective, for UE with UE-specific pre-compensation as a baseline it is up to gNB implementation to ensure sufficient time on UE side for the Msg3 transmission. (consensus)

Proposal 11: HARQ uplink retransmission at the UE transmitter is enabled/disabled per HARQ process (consensus)

Likely Agreeable

Proposal 1: RAN2 working assumption: Rel-17 UE with pre-compensation capability can at least obtain UE specific RTD based on its GNSS in LEO/GEO. FFS additional signalling (e.g. common TA) to obtain full UE-gNB RTD. (27/28)

Proposal 2: For UE with pre-compensation capability, start of the ra-ContentionResolutionTimer is offset by UE-gNB RTD in LEO/GEO. (24/28)

Proposal 3: From RAN2 perspective, for UE with pre-compensation capability, start of the ra-ResponseWindow and msgB-ResponseWindow is offset by UE-gNB RTD in LEO/GEO. (23/28)

Proposal 5: If the start of the ra-ResponseWindow and msgB-ResponseWindow is compensated by UE-gNB RTD, ra-ResponseWindow and msgB-ResponseWindow are not extended in LEO/GEO. (26/28)

Proposal 10: From a RAN2 perspective, HARQ uplink retransmission relying on the decoding result of previous PUSCH transmission at the UE transmitter can be enabled/disabled in Rel-17 NTN (i.e. blind retransmission and slot aggregation if configured are not disabled). (25/28)

Proposal 12: From RAN2 perspective, HARQ uplink retransmission at the UE transmitter can be enabled/disabled, but HARQ processes remain configured. The criteria to enable/disable HARQ uplink retransmission is under network control, and is signalled to UE via RRC in a semi-static manner. (24/26)

Proposal 14: An LS is sent to RAN1 regarding RAN2 agreements on HARQ UL retransmission (20/26).

Proposal 15: For UE with pre-compensation capability, drx-HARQ-RTT-TimerUL and drx-HARQ-RTT-TimerDL are offset by UE-specific RTD (UE-gNB delay) in LEO/GEO. FFS if offset is applied to: 1) the start of the timers or; 2) the timer value range (i.e. existing values within value range increased by offset); (26/27)

Proposal 16: If HARQ feedback is disabled, drx-HARQ-RTT-TimerDL and drx-HARQ-RTT-TimerUL are not started for both LEO and GEO scenarios. FFS modification of drx-RetransmissionTimerDL and drx-RetransmissionTimerUL to support blind retransmission, if agreed. (21/27)

Requires Discussion

Proposal 4: An LS is sent to RAN1 to inform RAN1 of the following (if agreed), and ask it be captured in TS 38.213 (20/27):

From RAN2 perspective, for UE with pre-compensation capability, start of the ra-ResponseWindow and msgB-ResponseWindow is offset by UE-gNB RTD in LEO/GEO.

Proposal 7a: RAN2 preference on UE-specific timing pre-compensation method is Option 1 (i.e. TA is estimated by the UE based on its GNSS acquired position together with the serving satellite ephemeris indicated by the network). However, RAN2 has not identified any prohibitive technical constraint to RAN2 specification for Option 2. (17/28)

Proposal 7b: Inform RAN1 of RAN2 preference on UE-specific timing pre-compensation (i.e. Option 1).

Proposal 9: The following 2-step and 4-step RACH enhancements are FFS:

4. Report UE-calculated TA in e.g. msg3/msg5/msgA (7);

5. Enhancements to RSRP-based selection mechanism of 2-step vs. 4-step RACH (6);

6. Introduction of K\_offset in SI (to support RAN1 agreements) (5).

Proposal 13: FFS: LCP impact caused by disabling HARQ UL retransmission.

[R2-2010456](file:///C%3A%5CData%5C3GPP%5CRAN2%5CDocs%5CR2-2010456.zip) [DRAFT] LS to RAN1 on RAN2 agreements for ra-ResponseWindow and msgB-ResponseWindow InterDigital LS out Rel-17 NR\_NTN\_solutions-Core To:RAN1 Late

[R2-2010457](file:///C%3A%5CData%5C3GPP%5CRAN2%5CDocs%5CR2-2010457.zip) [DRAFT] LS to RAN1 on RAN2 agreements for enabling/disabling HARQ UL retransmission InterDigital LS out Rel-17 NR\_NTN\_solutions-Core To:RAN1 Late

[R2-2008911](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2008911_For8.10.2.1_RACH_Aspects_ObservationsProposals_Samsung.doc) RACH Aspects for an NTN- Observations and Proposals Samsung Research America discussion

[R2-2008979](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2008979.docx) MAC issues for NTN Intel Corporation discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2008980](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2008980.docx) Timing advance for NTN Intel Corporation discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2008998](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2008998%20Consideration%20on%20TA%20compensation%20for%20HAPS%20and%20ATG%20case.doc) Consideration on TA compensation for HAPS and ATG case Beijing Xiaomi Mobile Software discussion Rel-17

[R2-2009063](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009063_MAC_NTN.docx) Enhancements for NTN on MAC Layer Nomor Research GmbH, Thales discussion Rel-17 [R2-2006702](file:///C%3A%5CData%5C3GPP%5Carchive%5CRAN2%5CRAN2%23111%5CTdocs%5CR2-2006702.zip)

[R2-2009107](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009107%20-%20Discussion%20on%20RACH%20in%20NTN.doc) Discussion on RACH in NTN OPPO discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2009139](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009139.doc) Discussion on Random Access Spreadtrum Communications discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2009451](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009451.doc) Random Access procedure with timing reference at gateway vs satellite Qualcomm Inc discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2009514](file:///C%3A%5CData%5C3GPP%5CExtracts%5C._R2-2009514%20On%20Preamble%20Ambiguity%20in%20NTN%20networks.docx) On preamble ambiguity in NTN networks Apple discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2009595](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009595%20Discussion%20on%20HARQ%20and%20RACH%20aspects%20in%20NTN.docx) Discussion on HARQ and RACH aspects in NTN Asia Pacific Telecom co. Ltd discussion NR\_NTN\_solutions-Core

[R2-2009635](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009635%20Consideration%20on%20MAC%20enhancements%20for%20NTN.doc) Consideration on MAC enhancements for NTN Huawei, HiSilicon discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2009636](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009636%20Consideration%20on%20varying%20RTD%20for%20earth%20fixed%20beam%20case.doc) Consideration on varying RTD for earth fixed beam case Huawei, HiSilicon discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2009860](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009860%20Considerations%20on%20timing%20advance%20pre-compensation%20in%20NTN.docx) Considerations on timing advance pre-compensation in NTN Lenovo, Motorola Mobility discussion Rel-17

[R2-2009861](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009861%20Preamble%20ambiguity%20for%20UE%20without%20TA%20pre-compensation%20capability.docx) Preamble ambiguity for UE without TA pre-compensation capability Lenovo, Motorola Mobility discussion Rel-17

[R2-2009932](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009932.docx) Considerations on RACH procedure enhancements in NTN CAICT discussion

[R2-2009975](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009975_Support%20UE%20with%20or%20without%20UE-specific%20pre-compensation.docx) Support of UEs with/without UE-specific pre-compensation NEC Telecom MODUS Ltd. discussion

[R2-2009981](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009981%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

[R2-2009984](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009984%20NTN%20timers%20and%20common%20delay%20update%20in%20moving%20satellite%20scenario.docx) NTN timers and common delay update in moving satellite scenario Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2010091](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010091%20Timing%20Advance%20management%20in%20NTN.docx) Timing Advance management in NTN ETRI discussion Rel-17 NR\_NTN\_solutions

[R2-2010169](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010169%20-%20On%20Random%20Access%20in%20NTN.docx) On Random Access in NTN Ericsson discussion Rel-17 NR\_NTN\_solutions-Core

* revised in [R2-2010980](file:///C%3A%5CData%5C3GPP%5CRAN2%5CDocs%5CR2-2010980.zip)

[R2-2010980](file:///C%3A%5CData%5C3GPP%5CRAN2%5CDocs%5CR2-2010980.zip) On Random Access in NTN Ericsson discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2010319](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010319%20Considerations%20on%20Random%20Access%20in%20NTN.doc) Considerations on Random Access in NTN ZTE Corporation, Sanechips discussion Rel-17

[R2-2010339](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010339_Enhancement%20on%20random%20access%20procedure_r2.DOCX) Enhancement on random access procedure LG Electronics Inc. discussion NR\_NTN\_solutions-Core

[R2-2010393](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010393%20Discussion%20on%20pre-compensation%20in%20NTN.docx) Discussion on pre-compensation in NTN CMCC discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2010451](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010451%20%28R17%20NTN%20WI%208.10.2.1%20Delay%20compensation%29.docx) Delay calculation and compensation in NTN InterDigital discussion Rel-17 NR\_NTN\_solutions-Core

#### 8.10.2.2 Other MAC aspects

[R2-2009064](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009064_NTN_MAC_UL_scheduling.docx) Enhancements on UL scheduling for NTN Nomor Research GmbH, Thales discussion Rel-17

Proposal 1: In NTN, the preferred configured grant is Type 1, which is configurable for a group of UEs.

Proposal 2: Enhancement to reduce the signaling overhead on configuration as well as activation / deactivation of configured grant should be discussed for NTN.

Proposal 3: There is no need to modify periodicity of information element (IE) ConfiguredGrantConfig to support NTN.

Proposal 4: There is no need to modify maxNrofConfiguredGrantConfig-r16 and maxNrofConfiguredGrantConfigMAC-r16 to support NTN.

Proposal 5: Support configured grant in NTN for UL scheduling.

Proposal 6: 2-step RACH procedure will be the preferred random access procedure to request for a grant for UL data transmission in NTN.

Proposal 7: In NTN, use BSR over 2-step RACH only to a limited level. FFS whether a level should be specified or is up to network implementation.

Proposal 8: Support BSR over 2-step RACH procedure in NTN for UL scheduling.

[R2-2009109](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009109%20-%20Discussion%20on%20other%20MAC%20issues%20in%20NTN.doc) Discussion on other MAC issues in NTN OPPO discussion Rel-17 NR\_NTN\_solutions-Core

Proposal 1 For a UE configured with both CG and 2-step RACH, when a BSR is triggered, whether the UE triggers 2-step RACH or send BSR through CG is up to UE implementation.

Proposal 2 Introduce an offset for the start of sr-ProhibitTimer.

[R2-2008836](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2008836%20Discussion%20on%20other%20MAC%20Enhancement%20and%20Impact%20for%20NTN.docx) Discussion on Other MAC aspects enhancements in NR NTN CATT discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2008912](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2008912_For8.10.2.2_OtherMACAspects_ObservationsProposals_Samsung.doc) MAC Aspects for an NTN- Observations and Proposals Samsung Research America discussion

[R2-2008936](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2008936%20Discussion%20on%20DRX%20operation%20associated%20with%20blind%20retransmission.docx) Discussion on DRX operation associated with blind retransmission PANASONIC R&D Center Germany discussion

[R2-2008969](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2008969%20RTD%20offset%20for%20CG%20timers_v2.docx) Round trip delay offset for configured grant timers MediaTek Inc. discussion

[R2-2008970](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2008970%20LCP%20impact%20of%20disabling%20HARQ%20UL%20retransmission_v2.docx) LCP impact of disabling HARQ uplink retransmission MediaTek Inc. discussion

[R2-2008997](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2008997%20Consideration%20on%20HARQ%20blind%20retransmission.doc) Consideration on HARQ blind retransmission Beijing Xiaomi Mobile Software discussion Rel-17

[R2-2009108](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009108%20-%20HARQ%20impact%20on%20MAC%20procedures%20in%20NTN.doc) HARQ impact on MAC procedures in NTN OPPO discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2009140](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009140.doc) Discussion on HARQ and related timers Spreadtrum Communications discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2009452](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009452.doc) UL HARQ process without HARQ retransmission Qualcomm Inc discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2009511](file:///C%3A%5CData%5C3GPP%5CExtracts%5C._R2-2009511%20On%20User%20Plane%20Latency%20Reduction%20Mechanisms%20in%20NTN%20Networks.docx) On user plane latency reduction mechanisms in NTN networks Apple discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2009864](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009864%20Discussion%20on%20DRX%20in%20NTN-v1.0.doc) Discussion on DRX for NTN Lenovo, Motorola Mobility discussion Rel-17

[R2-2009895](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009895.doc) Other MAC aspects in NTN Sony discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2009987](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009987%20Discussion%20on%20HARQ%20and%20UL%20scheduling%20enhancement%20aspects%20in%20NTN.docx) Discussion on HARQ and UL scheduling enhancement aspects in NTN Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2010168](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010168%20-%20On%20scheduling%20HARQ%20and%20DRX%20for%20NTN.docx) On scheduling, HARQ, and DRX for NTN Ericsson discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2010320](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010320%20Considerations%20on%20HARQ%20in%20NTN.doc) Considerations on HARQ in NTN ZTE Corporation, Sanechips discussion Rel-17

[R2-2010334](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010334_Discussion%20on%20disabling%20HARQ%20feedback%20and%20uplink%20retransmission_r4.DOCX) Discussion on disabling HARQ feedback and uplink retransmission LG Electronics Inc. discussion NR\_NTN\_solutions-Core

[R2-2010335](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010335_Discussion%20on%20scheduling%20enhancement_r1.DOCX) Discussion on scheduling enhancement LG Electronics Inc. discussion NR\_NTN\_solutions-Core

[R2-2010368](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010368%20Further%20discussion%20of%20HARQ%20operation%20for%20NTN.docx) Further discussion of HARQ operation for NTN CMCC discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2010369](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010369%20HARQ%20enhancement%20for%20NTN%20system.docx) HARQ enhancement for NTN system CMCC discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2010533](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010533%20HARQ%20aspects%20in%20NTN%20-%20final.docx) HARQ aspects in NTN ETRI discussion

[R2-2010664](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010664.docx) Considerations on scheduling request in NTN CAICT discussion

#### 8.10.2.3 RLC and PDCP aspects

Including the outcome of Post111-e][909][NTN] RLC and PDCP aspects

[R2-2008896](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2008896_PDCP-RLC_EMail%20Discussion%20Summary.docx) [POST111e][909][NTN] Email Discussions Summary on RLC and PDCP aspects (MediaTek) MediaTek Inc. discussion

Proposals with Complete Consensus

Proposal 1: RLC t-Reassembly timer needs to be extended in NR-NTN.

Proposal 3: There is no need to extend t-PollRetransmit Timer in NR-NTN.

Proposal 4: There is no need to extend t-statusProhibit Timer in NR-NTN.

Proposal 5: There is no need to extend RLC SN length in NR-NTN

Proposal 9: There is no need to extend PDCP SN length in NR-NTN

Proposals with Majority Support

Proposal 2: The extension of RLC t-Reassembly timer is left on network implementation. The maximum value (or value range) of the extended timer is FFS.

Proposal 6: There is no need to extend the PDCP Discard timer in NR-NTN until any new QoS requirement (5QI) is defined.

Proposal 7: If RAN2 agrees to extend the PDCP Discard timer, it will extend the value-range of the PDCP discard timer by a fixed set of values.

Proposal 8: There is no need to extend the PDCP t-Reordering timer in NR-NTN until any new QoS requirement (5QI) is defined

Proposals with No Clear Majority (Needs Online Discussion)

Proposal 10: RAN2 to send an LS to SA2, requesting to define new 5QI values that can meet NTN requirements (including GEO).

[R2-2008913](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2008913_For8.10.2.3_RLC_PDCP_Aspects_ObservationsProposals_Samsung.doc) RLC and PDCP Aspects for an NTN- Observations and Proposals Samsung Research America discussion

[R2-2009070](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009070_RLC_PDCP_NTN.doc) Remaining Aspects on Enhancements for NTN on RLC and PDCP Timers Nomor Research GmbH, Thales discussion Rel-17

[R2-2009647](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009647_Consideration%20of%20RLC%20and%20PDCP%20in%20NTN.docx) Consideration of RLC and PDCP in NTN China Telecom discussion

[R2-2010167](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010167%20-%20On%20RLC%20and%20PDCP%20for%20NTN.docx) On RLC and PDCP for NTN Ericsson discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2010170](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010170_Additional%20RLC%20and%20PDCP%20aspects_for_NTN.docx) Additional RLC and PDCP aspects for NTN Sequans Communications discussion Rel-17 NR\_NTN\_solutions-Core

### 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

Including the outcome of Post111-e][910[NTN] Impacts of earth fixed and moving beams

[R2-2009820](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009820_RAN2Email910_EarthFixedMovingBeams_Report.docx) [POST111e][910][NTN] Impacts of earth fixed and moving beams (Ericsson) Ericsson report

Proposal 1 RAN2 to consider Case 1 where gNB is co-located at the GW as priority.

Proposal 2 RAN2 does not continue inspecting differences between Earth fixed and Earth moving beams for Case 2. This does not preclude individual companies to bring contributions to RAN2 about it.

Proposal 3 RAN2 to discuss below issues for soft feeder link switch

Issue 1: Many connected mode UEs need to be handed over within the duration of the feeder link switch

Issue 2: Many idle mode UEs need to reselect another cell

Proposal 4 RAN2 to discuss below issues for hard feeder link switch

Issue 6: Many connected mode UEs need to be moved to next cell within the duration of the feeder link switch

Issue 7: Many idle mode UEs need to reselect another cell

Issue 9: Service interruption due to tearing down one feeder&service link and building other

Proposal 5 RAN2 to send LS to RAN1 to ask feasibility of having same PCI from two satellites during service link switch.

Proposal 6 RAN2 to discuss below issues for service link switch

Issue 10: Many connected mode UEs need to be handed over within the duration of the service link switch

Issue 11: Many idle mode UEs need to reselect another cell

Proposal 7 RAN2 to prioritize discussing CHO in context of Scenarios 1-3.

Proposal 8 RAN2 to discuss the below solutions or their variants further(yellow most straightforward additions added)

* Solution 11: Informing of the upcoming feeder link switch (the UE about PCI leaving and another PCI appearing due to feeder link switch)
	+ stored at UE or via system information or paging indicator
* Solution 12: UE does cell ranking and reselection based on
* information of Solution 7 stored at UE or via system information or paging indicator
* UE absolute location
* UE location relative to serving satellite
* Round trip time (RTT) for the satellite
* Remaining dwell time(time left to be served) in a cell that is leaving or appearing

Proposal 9 RAN2 to agree to support the following solutions (detailesdetails FFS)

* information of Solution 7(Informing of the upcoming feeder link switch (the UE about PCI leaving and another PCI appearing due to feeder link switch))
* Remaining dwell time(time left to be served) in a cell that is leaving or appearing(which is same as signal left to be available):

Proposal 10 RAN2 to study further whether location can be used as part of cell reselection procedure while concerning UE’s power consumption.

Proposal 11 RAN2 to prioritize discussing soft TAI update

[R2-2010377](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010377%20Considerations%20on%20Soft%20TAI%20Update.docx) Considerations on Soft TAI Update CMCC discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2008838](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2008838%20Discussion%20on%20Tracking%20Area%20for%20Earth%20Moving%20Cells.docx) Discussion on tracking area for earth moving cells CATT discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2008914](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2008914_For8.10.3.1_BeamAspects_ObservationsProposals_Samsung.doc) Beam Aspects for an NTN- Observations and Proposals Samsung Research America discussion

[R2-2009110](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009110%20Discussion%20on%20earth%20fixed%20and%20moving%20cells.doc) Discussion on earth fixed and moving cells OPPO discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2009141](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009141.doc) Discussion on Floor Layout Information Spreadtrum Communications discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2009256](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009256%20Earth%20fixed%2C%20moving%20cells%20in%20NTN.doc) Earth fixed/moving beams related issues THALES discussion Rel-17

[R2-2009453](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009453.docx) Gateway switch procedure for earth fixed and moving beam scenario Qualcomm Inc discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2009512](file:///C%3A%5CData%5C3GPP%5CExtracts%5C._R2-2009512%20Analysis%20of%20Mobility%20Management%20with%20Earth%20Fixed%20and%20Earth%20Moving%20Beams_Cells%20in%20NTN%20Networks.docx) Analysis of mobility management solutions with earth fixed and earth moving beams/cells in NTN networks Apple discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2009773](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009773%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

[R2-2009805](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009805_Tracking%20area%20management%20for%20earth%20moving%20cells.docx) Tracking area management for earth moving cells ZTE corporation, Sanechips discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2009823](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009823%20NTN%20Fixed%20Moving%20Beams.docx) Aspects for Earth fixed and Earth moving beams for NTN Ericsson discussion NR\_NTN\_solutions-Core

[R2-2009977](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009977_Mobility%20scenarios%20of%20Earth%20fixed-moving%20beams.docx) Mobility scenarios of Earth fixed/moving beams NEC Telecom MODUS Ltd. discussion

[R2-2009980](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009980_TAI%20update%20for%20earth%20moving%20cell.docx) TAI update for earth moving cell NEC Telecom MODUS Ltd. discussion

[R2-2010261](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010261%20Discussion%20on%20soft%20feeder%20link%20switch.doc) Discussion on soft feeder link switch Huawei, HiSilicon discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2010447](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010447_Discussion%20on%20service%20link%20feeder%20link%20switch%20in%20NTN.doc) Discussion on service link/feeder link switch in NTN Xiaomi Communications discussion

[R2-2010452](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010452%20%28R17%20NTN%20WI%20AI%208.10.3.1%20Feeder%20link%20switch%29.docx) Feeder-link switch InterDigital discussion Rel-17 NR\_NTN\_solutions-Core

Withdrawn

R2-2010480 Tracking area management for earth moving cells ZTE corporation, Sanechips discussion Rel-17 NR\_NTN\_solutions-Core Withdrawn

#### 8.10.3.2 Idle Inactive mode

Idle/inactive mode specific issues.

Including cell selection/reselection & system information.

[R2-2009774](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009774%20IDLE%20mode%20aspects%20for%20Non-Terrestrial%20Networks%20%28NTN%29.docx) IDLE mode aspects for Non-Terrestrial Networks (NTN) Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_NTN\_solutions-Core

Proposal 1: RAN2 is asked to discuss what implicit means can be used to make the UE aware of network type. RAN2 may consider e.g. PLMN ID or the existence of NTN SIB in SI scheduling information.

Proposal 2: RAN2 does not define any explicit NTN scenario indication. Instead satellite ephemeris or Koffset can be considered to make the UE aware of the associated NTN scenario.

Proposal 3: RAN2 is asked to consider two groups of ephemeris elements: satellite-specific and orbit-common. The latter is not provided multiple times for satellites in the same orbit.

Observation 2: Single satellite’s ephemeris can consume 56 bytes while the NR System Information Block size is constrained to 372 bytes.

Proposal 4: RAN2 shall consider other means than SIB segmentation to address the excessive size of satellite ephemeris which needs to be broadcasted in NTN cells.

Proposal 5: RAN2 is asked to consider which elements of the ephemeris could be preconfigured to the UE, to avoid the Uu interface signalling overload.

Proposal 6: RAN2 is asked to conclude the existing cell reselection prioritization is sufficient for NTN Rel-17.

[R2-2008984](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2008984.docx) Idle mode operation in NTN Intel Corporation discussion Rel-17 NR\_NTN\_solutions-Core

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

• 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.

[R2-2008814](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2008814%20Consideration%20on%20idle%20mode%20issues%20in%20NTN.docx) Consideration on idle mode issues in NTN CAICT discussion

[R2-2008837](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2008837.docx) Remaining Issues of IDLE and Inactive Mode for NTN CATT discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2008897](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2008897_Cell-Reselection_NR-NTN_v2.0.docx) On Cell Re-selection in NR-NTN MediaTek Inc. discussion

[R2-2008898](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2008898_TAU_NR-NTN_v2.0.docx) Improving Tracking Area Updates in NR-NTN MediaTek Inc. discussion

[R2-2008915](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2008915_For8.10.3.2_IdleInactiveMode_ObservationsProposals_Samsung.doc) Idle and Inactive Mode Aspects for an NTN- Observations and Proposals Samsung Research America discussion

[R2-2009111](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009111%20NTN%20Idle%20inactive%20mode%20procedures.doc) Discussion on idle/inactive mode procedures in NTN OPPO discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2009120](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009120%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 [R2-2006821](file:///C%3A%5CData%5C3GPP%5Carchive%5CRAN2%5CRAN2%23111%5CTdocs%5CR2-2006821.zip)

[R2-2009142](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009142.doc) Discussion on Mobility Spreadtrum Communications discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2009255](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009255%20Idle%20mode%20procedures%20in%20NR%20NTN.doc) Idle mode procedures in NR NTN THALES discussion Rel-17

[R2-2009454](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009454.doc) Cell selection and reselection enhancements Qualcomm Inc discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2009510](file:///C%3A%5CData%5C3GPP%5CExtracts%5C._R2-2009510%20Cell%20Selection%20And%20Reselection%20Solutions%20for%20NTN%20Networks.docx) Cell Selection and Reselection solutions for NTN networks Apple discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2009597](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009597_Control%20plane%20for%20idle%20mode%20UE%20.doc) Control Plane for Idle mode UE Xiaomi discussion Rel-17

[R2-2009621](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009621_Enhancements%20on%20cell%20reselection.doc) Enhancements on cell reselection Xiaomi discussion Rel-17

[R2-2009637](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009637%20Discussion%20on%20RRC_IDLE%20mode%20issues%20in%20NTN.DOC) Discussion on RRC\_IDLE mode issues in NTN Huawei, HiSilicon discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2009645](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009645_NTN_ephemeris.doc) Ephemeris data to be included in system information ITRI discussion NR\_NTN\_solutions-Core

[R2-2009648](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009648_The%20consideration%20of%20satellite%20ephemeris%20in%20NTN.docx) The consideration of satellite ephemeris in NTN China Telecom discussion

[R2-2009818](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009818%20NTN%20Idle%20mode.docx) Idle mode aspects for NTN Ericsson LM discussion NR\_NTN\_solutions-Core

[R2-2009862](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009862%20Ephemeris%20data%20provision%20in%20NTN%20%28Revision%20of%20R2-2007473%29.docx) Ephemeris data provision in NTN Lenovo, Motorola Mobility discussion Rel-17

[R2-2009894](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009894.doc) Idle mode aspects in NTN Sony discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2010094](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010094%20Earth%20moving%20beam%20scenarios%20in%20Earth%20fixed%20tracking%20areas.docx) Earth moving beam scenarios in Earth fixed tracking areas ETRI discussion Rel-17 NR\_NTN\_solutions

[R2-2010260](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010260%20Considerations%20on%20satellite%20ephemeris.doc) Considerations on satellite ephemeris Huawei, HiSilicon discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2010370](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010370%20Discussion%20of%20UE%20location%20information%20assistant%20for%20cell%20selection%20and%20reselection%20in%20NTN.docx) Discussion of UE location information assistant for cell selection and reselection in NTN CMCC discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2010453](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010453%20%28R17%20NTN%20WI%20AI%208.10.3.2%20Ephemeris%29.docx) Satellite ephemeris in NTN InterDigital discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2010578](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010578%20Idle%20mode%20issues%20in%20NR%20NTN.DOC) Idle mode issues in NR NTN LG Electronics Inc. discussion Rel-17 NR\_NTN\_solutions-Core

#### 8.10.3.3 Connected mode

Connected mode specific issues.

Including the outcome of Post111-e][911[NTN] Connected mode aspects

[R2-2009803](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009803_Report%20of%20%5BPost111-e%5D%20%5B911%5D%20%5BNTN%5D%20Connected%20mode%20aspects%20%28ZTE%29.doc) Report of [Post111-e] [911] [NTN] Connected mode aspects (ZTE) ZTE corporation, Sanechips discussion Rel-17 NR\_NTN\_solutions-Core

List of agreeable proposals

Proposal 1: Reconfiguration with sync shall be used for connected mode mobility (at least) for the following scenarios (the use of legacy RLF and re-establishment mechanism are not excluded):

Scenario 4: Connected mode mobility for earth moving cell when the cell no longer serves the UE

Scenario 5: Connected mode mobility for both earth moving and earth fixed cell due to UE movement

Proposal 2.1: The CHO can be used in NTN for both moving cell and fixed cell scenarios, and the CHO procedure and execution condition defined in Rel-16 shall be considered as baseline.

Proposal 2.2: NTN specific CHO execution condition should be introduced.

Proposal 2.3a: location based CHO execution condition should be introduce for both moving cell and fixed cell scenario.

Proposal 4: The existing measurement framework (e.g. measurement configuration, execution and reporting) shall be considered as a baseline, and all the existing measurement criteria and event can be used in NTN.

Proposal 5.1: Permission from UE is needed for the network to collect the UE location information for the purpose other than SON/MDT. If the UE location information is collected for other purpose, the UE consent for SON/MDT cannot be reused and a similar but independent procedure for permission should be considered.

Proposal 6.1: The Location-based measurement event should be supported in NTN for both moving cell and fixed cell scenario.

Proposal 7.1: Some enhancement is needed in SMTC and measurement gap configuration, taken into consideration the propagation delay difference in NTN.

Proposal 7.2: SSB period other than 5ms shall be supported in NTN.

List of proposals to be discussed

Proposal 2.3b: Timer based CHO execution condition should be introduced for moving cell scenario.

Proposal 3.1: From RAN2’s perspective, RACH-less HO should be introduced in NTN. An LS should be sent to RAN1 to confirm the feasibility of RACH-less HO in NTN.

Proposal 3.2a: DAPS HO for NTN is de-prioritized in this release.

Proposal 5.2: The location information report should be supported in NTN for the purpose other than SON/MDT.

Proposal 6.2a: For moving cell scenario, a relative area scope expressed as the distance between UE and satellite or cell center will be configured and measurement report will be triggered when UE moves out of or moves in the area scope configured.

Proposal 6.2b: For fixed cell scenario, an absolute area scope will be configured and measurement report will be triggered when UE moves out of or moves in the area scope configured.

[R2-2009859](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009859%20Conditional%20handover%20in%20NTN%20v1.0.doc) Conditional handover in NTN Lenovo, Motorola Mobility discussion Rel-17

[R2-2009456](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009456.doc) SMTC and measurement gap configuration Qualcomm Inc discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2008833](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2008833%20Feeder%20Link%20Switch.docx) Feeder Link Switch CATT discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2008834](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2008834%20Open%20Issues%20for%20Measurements%20in%20NTN.docx) Open Issues for Measurements in NTN CATT discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2008835](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2008835%20Discussion%20on%20UE-based%20location%20requirement%20in%20NR%20NTN.docx) Discussion on UE-based location requirement in NR NTN CATT discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2008916](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2008916_For8.10.3.3_ConnectedMode_ObservationsProposals_Samsung.doc) Connected Mode Aspects for an NTN- Observations and Proposals Samsung Research America discussion

[R2-2008973](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2008973%20Service%20Continuity%20between%20NTN%20and%20TN%20.docx) Service continuity between NTN and TN HUGHES Network Systems Ltd, Thales, BT, Turkcell, Vodafone discussion Rel-17 38.821

[R2-2008981](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2008981.docx) Feeder link switch over for NTN Intel Corporation discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2008982](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2008982.docx) Mobility enhancement for NTN Intel Corporation discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2009112](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009112%20NTN%20connected%20mode%20mobility.doc) Discussion on mobility management for connected mode UE in NTN OPPO discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2009121](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009121%20Overhead%20Reduction%20for%20the%20Handover%20Procedure%20in%20NTN.docx) Overhead Reduction for the Handover Procedure in NTN PANASONIC R&D Center Germany discussion [R2-2006822](file:///C%3A%5CData%5C3GPP%5Carchive%5CRAN2%5CRAN2%23111%5CTdocs%5CR2-2006822.zip)

[R2-2009443](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009443%20Measurement%20window%20enhancements.doc) Measurement window enhancements LG Electronics Inc. discussion

[R2-2009455](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009455.doc) Configuration and triggering of CHO Qualcomm Inc discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2009513](file:///C%3A%5CData%5C3GPP%5CExtracts%5C._R2-2009513%20Analysis%20of%20Proposed%20Conditional%20Handover%20Solutions%20for%20NTN%20Networks.docx) Analysis of proposed conditional handover solutions for NTN Networks Apple discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2009772](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009772%20Simulation%20assumptions%20for%20evaluating%20NTN%20mobility.docx) Simulation assumptions for evaluating NTN mobility Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_NTN\_solutions-Core [R2-2007363](file:///C%3A%5CData%5C3GPP%5Carchive%5CRAN2%5CRAN2%23111%5CTdocs%5CR2-2007363.zip)

[R2-2009804](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009804_Consideration%20on%20the%20measurement%20configuration%20and%20reporting%20in%20NTN.docx) Consideration on the measurement configuration and reporting in NTN ZTE corporation, Sanechips discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2009821](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009821%20NTN%20connected%20mode.docx) Connected mode aspects for NTN Ericsson discussion

[R2-2009863](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009863%20Considerations%20on%20measurements%20in%20NTN.docx) Considerations on measurements in NTN Lenovo, Motorola Mobility discussion Rel-17

[R2-2009896](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009896.doc) Mobility management in NTN Sony discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2010262](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010262%20Discussion%20on%20enhancements%20for%20connected%20mode%20in%20NTN.DOC) Discussion on enhancements for connected mode in NTN Huawei, HiSilicon discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2010371](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010371%20Discussion%20of%20mobility%20enhancements%20for%20NTN.docx) Discussion of mobility enhancements for NTN CMCC discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2010446](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010446_Discussion%20on%20mobility%20management%20in%20NTN.doc) Discussion on mobility management in NTN Xiaomi Communications discussion

[R2-2010454](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010454%20%28R17%20NTN%20WI%20AI%208.10.3.3%20Mobility%29.docx) Connected mode mobility in NTN InterDigital discussion Rel-17 NR\_NTN\_solutions-Core [R2-2007618](file:///C%3A%5CData%5C3GPP%5Carchive%5CRAN2%5CRAN2%23111%5CTdocs%5CR2-2007618.zip)

[R2-2010579](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010579%20New%20triggering%20condition%20for%20CHO%20in%20NTN.DOC) New triggering condition for CHO in NTN LG Electronics Inc. discussion Rel-17 NR\_NTN\_solutions-Core

Withdrawn

R2-2010478 Report of [Post111-e] [911] [NTN] Connected mode aspects (ZTE) ZTE corporation, Sanechips discussion Rel-17 NR\_NTN\_solutions-Core Withdrawn

R2-2010479 Consideration on the measurement configuration and reporting in NTN ZTE corporation, Sanechips discussion Rel-17 NR\_NTN\_solutions-Core Withdrawn

## 8.12 Reduced Capability SI

(FS\_NR\_redcap; leading WG: RAN1; REL-17; WID: [RP-201386](file:///C%3A%5CData%5C3GPP%5Carchive%5CRAN%5CRAN%2388%5CTdocs%5CRP-201386.zip))

Time budget: 1 TU

Tdoc Limitation: 3 tdocs

Email max expectation: 3 threads

### 8.12.1 Organizational

Rapporteur inputs and other organizational documents. Documents in this AI do not count towards the tdoc limitation.

Including outcome of [Post111-e][912][REDCAP] TP for the TR

[R2-2009615](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009615%20-%20Way%20forward%20for%20RedCap%20in%20RAN2.docx) Way forward for RedCap in RAN2 Ericsson discussion FS\_NR\_redcap

[R2-2009617](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009617%20-%20Report%20of%20%5B912%5D%20TP%20for%20the%20TR.docx) Summary of [Post111-e][912][RedCap] TP for TR Ericsson report FS\_NR\_redcap

Proposal 1 Endorse the TR revision in R2-2009616.

Proposal 2 Use the power consumption model in TR 38.840, taking the latest RAN1 agreements into account, as the baseline for the power consumption analysis of eDRX and RRM relaxation.

Proposal 3 Capture power consumption analysis of eDRX in RRC\_IDLE and RRC\_INACTIVE and of alternatives for RRM relaxation in the TR.

[R2-2009616](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009616%20TR%2038875%20update.docx) TR38875 update Ericsson discussion FS\_NR\_redcap

### 8.12.2 Framework for reduced capabilities

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

Including outcome of [Post111-e][913][REDCAP] Definition and constraining of reduced capabilities

[R2-2009004](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009004%20Report%20of%20913-RedCap-Capabilities.docx) Report of [POST111e][913][REDCAP] Definition and constraining of reduced capabilities (Intel) Intel Corporation discussion Rel-17 FS\_NR\_redcap

Proposal 1: RedCap UE capabilities can be categorized as:

* Min capabilities all RedCap UEs support (i.e. mandatory for RedCap UE) if identified;

o FFS on whether some features are mandatory with signaling for RedCap UE, i.e. IOT bit;

o It is up to RAN1 on the number of RedCap UE types and whether different RedCap type UEs may support different value for mandatory features;

* Optional capabilities (signaled explicitly)

Proposal 2: Following scenarios are considered when design the capability signaling for RedCap UE, but FFS on the details, e.g. what each category of features may include:

For the features that are mandatory for non-Redcap UEs, following scenarios are considered:

Case1: The Redcap UE mandatorily supports the feature with the same value;

Case2: The Redcap UE mandatorily supports the feature, but with different value (e.g. bandwidth value);

Case3: The Redcap UE optionally supports the feature;

Case4: The Redcap UE does not support the feature at all.

For the features that are optional for non-Redcap UEs, following scenario is considered:

Case1: The Redcap UE does not support the feature at all.

Case 2: The RedCap UE supports the feature with different value;

Proposal 3: Following capability design principle is considered for RedCap UE, but details should be discussed in WI phase:

* The UE capability requirements for a RedCap device type, that are different from those for non-RedCap UEs, are listed in the specifications. That is:

o Mandatory features for non-RedCap UE that are not supported for RedCap UE;

o Mandatory features for non-RedCap UE that are optional for RedCap UE;

o Mandatory features for non-RedCap UE that are supported for RedCap UE but with different value;

o Optional features for non-RedCap UE that are not supported for RedCap UE;

o Optional features for non-RedCap UE that are mandatorily supported for RedCap UE.

For a RedCap device type, define new signaling fields in UE Capability for the features that are mandatory w/o capability signaling for non-RedCap UEs but are optional for Redcap UEs, or mandatory with capability signaling for non-RedCap UEs but with different value for RedCap UEs.

Proposal 4: Regarding how can the network know whether the UE is RedCap UE or not in order to handle UE capabilities properly, following options are considered and to be captured in the TR, the further analysis/down selection should be done in WI phase:

Option 1: RedCap device type is indicated as part of the capability signaling

Option 2: Define a new IE specifically for RedCap Ues containing these additional Redcap specific capabilities that is included only by Redcap UEs.

Option 3: The network obtains the RedCap based on identification solution during initial access, and forwards it to target during Handover.

Proposal 5: Regarding how to ensure the RedCap UE is only used for intended use cases, following potential solutions are considered in the SI phase (other solutions are not precluded), and to be captured in the TR. The decision should be made in WI phase.

* Option 1:

One potential problem could be when a RedCap UE requests a service that does not match the RedCap UE type. This would be similar to if e.g. an NB-IoT UE requested a video call to be set up. RAN can already reject an RRC connection establishment attempt e.g. based on the establishment cause provided in Msg3 or through higher layer mechanisms.

RAN can reject an RRC connection establishment attempt for a RedCap UE if the service the UE requested is not allowed for the RedCap UE. That is, the RAN needs to identify whether the UE is a RedCap UE or not, and be aware of the requested service, e.g. based on the cause value or other ways.

* Option 2: subscription validation

During RRC connection setup, UE indicates it is a RedCap UE to core network, e.g.

• UE includes this indication in its NAS signaling message to core network; or

• UE informs this indication during its RRC connection establishment procedure to RAN; RAN then informs core network of UE’s RedCap type in its Initial UE Context message to core network.

After network receives UE’s RedCap indication, it validates UE’s indication against its subscription plan, which includes information such as the set of services allowed for the UE. Based on the outcome of this validation, network then decide whether to accept or reject UE’s registration request. For example, network may reject UE if UE indicates RedCap but its subscription does not include any RedCap-specific services.

* Option 3. Verification of RedCap UE

Network can additionally perform capability match procedure between UE’s reported radio capabilities and the set of capability criteria associated with UE’s RedCap type, to prevent a hacked or misconfigured UE from falsely reporting as a RedCap UE.

[R2-2008889](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2008889_Define%20and%20constrain%20RedCap%20UEs_v1.docx) Define and constrain RedCap UEs Qualcomm Incorporated discussion Rel-17 FS\_NR\_redcap

[R2-2008951](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2008951%20General%20views%20on%20Higher-layer%20impacts%20for%20Redcap%20devices.doc) General views on Higher-layer impacts for Redcap devices Xiaomi Communications discussion

[R2-2009008](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009008_Device%20type%20definition%20and%20how%20to%20signal%20the%20device%20type%20to%20network.doc) Device type definition and how to signal the device type to network Fujitsu discussion Rel-17 FS\_NR\_redcap

[R2-2009085](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009085_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

[R2-2009104](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009104%20-%20Discussion%20on%20definition%20of%20reduced%20capabilities.doc) Discussion on definition of reduced capabilities OPPO discussion Rel-17 FS\_NR\_redcap

[R2-2009115](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009115%20-%20On%20the%20definition%20of%20a%20RedCap%20device%20type.docx) On the definition of a RedCap device type MediaTek Inc. discussion Rel-17 FS\_NR\_redcap [R2-2007492](file:///C%3A%5CData%5C3GPP%5Carchive%5CRAN2%5CRAN2%23111%5CTdocs%5CR2-2007492.zip)

[R2-2009248](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009248%20Consideration%20on%20definition%20and%20constraining%20of%20Reduced%20Capability.docx) Consideration on definition and constraining of Reduced Capability ZTE Corporation, Sanechips discussion Rel-17 FS\_NR\_redcap

[R2-2009361](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009361.doc) On Definition and Constraint of Reduced Capabilities CATT discussion Rel-17 FS\_NR\_redcap

[R2-2009618](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009618%20-%20Framework%20and%20principles%20for%20RedCap.docx) Framework and principles for RedCap Ericsson discussion FS\_NR\_redcap

[R2-2009762](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009762%20Discussion%20on%20how%20to%20define%20and%20constrain%20the%20REDCAP%20UE.doc) Discussion on how to define and constrain the REDCAP UE China Telecommunications discussion

[R2-2009933](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009933%20Capability%20framework%20and%20constraining%20of%20RedCap%20UE.doc) Capability framework and constraining of RedCap UE Huawei, HiSilicon discussion Rel-17 FS\_NR\_redcap

[R2-2009958](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009958_Discussion%20on%20how%20to%20ensure%20devices%20only%20access%20to%20intended%20services.docx) Discussion on how to ensure devices only access to intended services China Telecommunications discussion Rel-17

[R2-2010225](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010225%20Discussion%20on%20the%20intended%20use%20cases%20for%20RedCap%20UEs.doc) Discussion on the intended use cases for RedCap UEs LG Electronics UK discussion Rel-17

[R2-2010376](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010376.docx) Discussion on the definition and constraining of reduced capabilities CMCC discussion Rel-17 FS\_NR\_redcap

[R2-2010458](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010458%20%28R17%20RedCap%20WI%20AI%208.12.2.1%20Device%20Type%29.docx) Reduced capability device type definition InterDigital discussion Rel-17 FS\_NR\_redcap

Withdrawn

R2-2009957 Discussion on how to ensure devices only access to intended services China Telecommunications discussion Rel-17 Late

#### 8.12.2.2 Identification and access restrictions

Including outcome of [Post111-e][914][REDCAP] UE identification and access restrictions

[R2-2009936](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009936%20Summary%20of%20email%20discussion%20%5B914%5D.docx) Summary of email discussion 914 on UE identification and access restrictions Huawei report Rel-17 FS\_NR\_redcap

Proposal 1: It is not needed from RAN2 perspective to identify RedCap UEs during Msg1.

Proposal 2: Whether it is needed to identify RedCap UEs during Msg3 from RAN2 perspective or not depends on the following two aspects:

- Whether Msg4/5 special handing for RedCap UE is needed, pending RAN1

- Whether there is a need to reject part of RedCap UEs in addition to cell barring and UAC mechanism.

Proposal 3: It is not needed from RAN2 perspective to identify RedCap UEs during Msg5.

Proposal 4: From RAN2 perspective, the need to identify RedCap UEs during MsgA is the same as the need to identify RedCap UEs during Msg1 or Msg3.

Proposal 5: Capture options Msg1/A and Msg3/A in the TR with the following clarification:

- From RAN2 perspective, it is not needed to identify RedCap UEs during Msg1.

- The final decision of solution selection is pending on RAN1 output.

Proposal 6: Do not send a LS on RedCap UE identification to RAN1 and wait for more RAN1 process.

Proposal 7: Send a LS to SA1 including the following contents:

- RAN2 motivation for UAC enhancement for RedCap UEs

- Ask SA1 whether they see any issue

Proposal 8: Postpone the discussion on the camping indicator for RedCap UEs to the WI phase.

Proposal 9: Postpone the discussion on intraFreqReselection indicator for RedCap UEs to the WI phase.

[R2-2008890](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2008890_Impact%20of%20reduced%20capabilities%20on%20idle%20mode%20procedures%20_v1.docx) Impact of reduced capabilities on idle mode procedures Qualcomm Incorporated discussion Rel-17 FS\_NR\_redcap

[R2-2008947](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2008947%20Discussion%20on%20Identification%20and%20UE%20access%20restrictions%20for%20Redcap%20devices.doc) Discussion on Identification and UE access restrictions for Redcap devices Xiaomi Communications discussion

[R2-2008996](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2008996.docx) Early identification of RedCap UEs Samsung discussion Rel-17 FS\_NR\_redcap

[R2-2009009](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009009%20Access%20restriction%20of%20RedCap%20UE.doc) Access restriction of RedCap UE Fujitsu discussion Rel-17 FS\_NR\_redcap

[R2-2009010](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009010%20UAC%20for%20RedCap%20UE.doc) UAC for RedCap UE Intel Corporation, Facebook discussion Rel-17 FS\_NR\_redcap

[R2-2009086](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009086%20Identification%20and%20Access%20Restrictions%20for%20RedCap%20UEs.docx) Identification and access restrictions for RedCap UEs vivo, Guangdong Genius discussion Rel-17 FS\_NR\_redcap

[R2-2009105](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009105%20RedCap%20access%20control.doc) Discussion on RedCap UE’s access control OPPO discussion Rel-17 FS\_NR\_redcap

[R2-2009249](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009249%20Further%20consideration%20on%20Redcap%20UE%20identification%20and%20access%20control.docx) Further consideration on Identification and access restrictions ZTE Corporation, Sanechips discussion Rel-17 FS\_NR\_redcap

[R2-2009362](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009362%20On%20Identification%20and%20Access%20Restrictions%20for%20Reduced%20Capability%20UE.doc) On Identification and Access Restrictions for Reduced Capabilities UE CATT discussion Rel-17 FS\_NR\_redcap

[R2-2009515](file:///C%3A%5CData%5C3GPP%5CExtracts%5C._R2-2009515-RedCap-MSG3.docx) Ineffectiveness of MSG3 based RAN node identification of RedCap UE Apple discussion Rel-17 FS\_NR\_redcap

[R2-2009619](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009619%20-%20Identification%20and%20access%20control%20of%20RedCap%20UEs.docx) Identification and access control of RedCap Ues Ericsson discussion FS\_NR\_redcap

[R2-2009670](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009670_Redcap_early_identification.doc) Early identification of Redcap UEs Lenovo, Motorola Mobility discussion Rel-17 FS\_NR\_redcap

[R2-2009751](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009751%20Discussion%20on%20identification%20and%20access%20restriction%20of%20REDCAP%20UE.docx) Discussion on identification and access restriction of REDCAP UE China Telecommunications discussion

[R2-2009800](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009800%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

[R2-2009817](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009817_RedCap%20identify.docx) RedCap UE identification options NEC discussion Rel-17 FS\_NR\_redcap

[R2-2009871](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009871_Cell%20restriction%20and%20UAC%20enhancement%20for%20REDCAP%20UEs.docx) Cell restriction and UAC enhancement for REDCAP Ues Lenovo, Motorola Mobility discussion Rel-17

[R2-2009916](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009916%20Cell%20access%20restrictions%20for%20REDCAP%20UE.docx) Cell access restrictions for REDCAP UE Nokia, Nokia Shanghai Bell discussion Rel-17 FS\_NR\_redcap

[R2-2009934](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009934%20Identification%20and%20access%20restriction%20of%20RedCap%20UE.docx) Identification and access restriction of RedCap UE Huawei, HiSilicon discussion Rel-17 FS\_NR\_redcap

[R2-2010224](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010224%20Discussion%20on%20access%20restriction%20during%20Msg3.doc) Consideration on access restriction during Msg3 LG Electronics UK discussion Rel-17

### 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).

Including outcome of [Post111-e][915][REDCAP] UE power saving features

[R2-2009364](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009364%20Summary%20of%20email%20discussion%20915%20-%20Summary%20-%20final.docx) Summary of email discussion 915 - UE power saving features CATT discussion Rel-17 FS\_NR\_redcap

Proposal 1: Supporting years-long battery life is a requirement of REDCAP UEs

Proposal 2: The eDRX cycle in RRC\_IDLE is extended beyond 10.24s for REDCAP UEs.

Proposal 3: The eDRX cycle in RRC\_IDLE is extended up to 2621.44s for REDCAP UEs, as a baseline.

Proposal 4: If it is agreed to extend the eDRX cycle in RRC\_INACTIVE beyond 10.24s for REDCAP UEs, the extended value is the same as for RRC\_IDLE i.e. 2621.44s, as a baseline.

Proposal 5: In case RAN2 agrees to extend the maximum eDRX cycle in RRC\_INACTIVE beyond 10.24s, SA2/CT1/RAN3 should be informed.

Proposal 6: The lowest value of eDRX cycle is 5.12s for RRC\_IDLE and RRC\_INACTIVE REDCAP UEs.

Proposal 7: For UE in RRC IDLE/INACTIVE and eDRX cycle is less than 10.24s, paging monitoring is based on eDRX cycle and PTW, PH, if any, are not used.

Proposal 8: For UE in RRC IDLE and eDRX cycle is equal to 10.24s:

• If eDRX cycle > 10.24s is not supported (as outcome of Q1.1), paging monitoring is based on eDRX cycle (taking eDRX cycle as T in PF/PO formula);

• If eDRX cycle > 10.24s is supported (as outcome of Q1.1), paging monitoring involves PTW, PH, similar to the LTE ‎eDRX mechanism beyond 10.24s

Proposal 9: For UE in RRC INACTIVE and eDRX cycle is equal to 10.24s:

• If eDRX cycle > 10.24s is supported for RRC\_INACTIVE (as outcome of Q1.3) or for RRC\_IDLE (as outcome of Q1.1), paging monitoring involves PTW, PH, similar to the LTE ‎eDRX mechanism beyond 10.24s.

o FFS how to support PTW and PH for both RRC\_IDLE and RRC\_INACTIVE

• Otherwise, paging monitoring is based on eDRX cycle (taking eDRX cycle as T in PF/PO formula)

Proposal 10: The target REDCAP UE, considering mobility, is not limited to a fixed UE, but can also experience some low mobility, and this, during some “stationary” periods of time.

Proposal 11: RAN2 will study ways and feasibility of supporting different relaxation levels for fixed UEs and slightly moving UEs.

Proposal 12: The RRM relaxation of REDCAP UEs is triggered based on measurements.

Proposal 13: RAN2 takes R16 NR RRM relaxation procedures as a baseline to study further enhancements for REDCAP UEs.

Proposal 14: RAN2 de-prioritizes work on RRM relaxation of the serving cell for REDCAP UEs until RAN4 analyzes the resulting performance impact. RAN2 sends an LS at this meeting to RAN4 asking to study such performance impacts.

[R2-2008891](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2008891_DRX%20enhancements%20for%20RedCap%20UEs_v1.docx) DRX enhancements for RedCap UEs Qualcomm Incorporated discussion Rel-17 FS\_NR\_redcap

[R2-2008948](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2008948%20Discussion%20on%20e-DRX%20for%20Redcap%20Devices.doc) Discussion on e-DRX for Redcap Devices Beijing Xiaomi Mobile Software discussion

[R2-2009011](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009011_RedCap_eDRX%20INACTIVE.docx) Support of extend paging DRX cycle for Inactive UE Intel Corporation discussion Rel-17

[R2-2009022](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009022.docx) Relax measurement for stationary and low mobility devices Intel Corporation discussion Rel-17 FS\_NR\_redcap

[R2-2009087](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009087%20RRM%20Relaxation%20for%20Power%20Saving.docx) RRM relaxation for power saving vivo, Guangdong Genius discussion Rel-17 FS\_NR\_redcap

[R2-2009106](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009106%20RRM%20relax.doc) Discussion on RRM relaxation OPPO discussion Rel-17 FS\_NR\_redcap

[R2-2009116](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009116%20-%20Further%20considerations%20for%20eDRX.DOCX) Further considerations for eDRX MediaTek Inc. discussion Rel-17 FS\_NR\_redcap

[R2-2009247](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009247%20Discussion%20on%20eDRX%20for%20Redcap%20UE.docx) Discussion on eDRX for Redcap UE ZTE Corporation, Sanechips discussion Rel-17 FS\_NR\_redcap

[R2-2009363](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009363%20On%20eDRX%20for%20NR%20RRC%20Inactive%20and%20Idle.doc) On eDRX for NR RRC Inactive and Idle CATT discussion Rel-17 FS\_NR\_redcap

[R2-2009532](file:///C%3A%5CData%5C3GPP%5CExtracts%5C._R2-2009532_edrx256_cmas_v3.docx) Support of 2.56 eDRX cycle and emergency broadcast reception for RedCap UEs Apple, Facebook discussion Rel-17 FS\_NR\_redcap

[R2-2009620](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009620%20-%20RedCap%20Power%20Saving.docx) RedCap power saving enhancements Ericsson discussion FS\_NR\_redcap

[R2-2009877](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009877%20RRM%20relaxation%20for%20stationary%20UE%20with%20reduced%20capability.docx) RRM relaxation for stationary UE with reduced capability Lenovo, Motorola Mobility discussion Rel-17

[R2-2009917](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009917%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

[R2-2009935](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2009935%20eDRX%20and%20RRM%20measurement%20relaxation%20for%20RedCap%20UE.doc) eDRX and RRM measurement relaxation for RedCap UE Huawei, HiSilicon discussion Rel-17 FS\_NR\_redcap

[R2-2010113](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010113%20eDRX%20for%20Reduced%20Capability%20NR%20Devices.docx) eDRX for Reduced Capability NR Devices Convida Wireless discussion Rel-17

[R2-2010392](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010392%20eDRX%20for%20reduced%20capability%20UE.docx) eDRX for reduced capability UE CMCC discussion Rel-17 FS\_NR\_redcap

[R2-2010406](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010406.doc) Introducing Extended DRX for RRC Inactive and/or Idle Samsung discussion FS\_NR\_redcap

[R2-2010580](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010580%20RRM%20relaxation%20for%20stationary%20RedCap%20UEs.doc) RRM relaxation for stationary RedCap Ues LG Electronics Inc. discussion Rel-17 FS\_NR\_redcap

[R2-2010592](file:///C%3A%5CData%5C3GPP%5CExtracts%5CR2-2010592.doc) RRM relaxation for RedCap devices Samsung Electronics discussion Rel-17

## Summary

TBD