3GPP TSG-RAN WG2 Meeting #117 electronic R2-2203512

Online, Feb 21st - Mar 3rd, 2022

**Agenda item: 10.2**

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

**Title: Report from Break-out session on R17 NTN, REDCAP and CE**

**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 [AT117-e][000]

Organizational

1. All organization emails and notes will be shared over the following email discussion throughout the meeting:

* [AT117-e][100] ****Organizational - NTN, REDCAP and CE session (RAN2 VC)****

Scope:

* + - Share plans for the meeting and list of ongoing email discussions for the sessions related to NTN, REDCAP and CE
    - Share meetings notes and agreements for review and endorsement

Schedule/Plan

WEEK 1:

|  |  |  |  |
| --- | --- | --- | --- |
| **Time Zone UTC** | **Web Conference R2 - Main** | **Web Conference R2 - BO1** | **Web Conference R2 - BO2** |
| **Monday** |  |  |  |
| 12:50-13:00 | R2 117-e planning Q&A |
| 13:00-13:45 | NR17 IoT NTN (Johan) | NR17 Multi-SIM (Tero) | NR17 SL enh (Kyeongin) |
| 13:45-14:30 | NR17 IoT NTN (Johan) | NR17 Small Data Enh (Diana) | NR17 SL enh (Kyeongin) |
| 14:30-15:15 | NR17 feMIMO (Johan) | NR17 Small Data Enh (Diana) | NR17 SL Relay (Nathan) |
| 15:15-16:00 | NR17 MGE (Johan) | NR17 RACH indication / partitioning (Diana) | NR17 SL Relay (Nathan) |
| **Tuesday** |  |  |  |
| 13:00-13:45 | NR17 eIAB (Johan) | NR17 SONMDT (HuNan) | LTE17 IoT (Brian) |
| 13:45-14:30 | NR17 eIAB (Johan) | NR17 IIOT (Diana) | **NR17 NTN (Sergio)**  **[8.10.1]**  **[8.10.2] offline 103**  **[8.10.3] offline 101, 102, 108**  **[8.10.4] offline 104** |
| 14:30-15:15 | NR17 ePowSav (Johan) | NR17 Pos (Nathan) |
| 15:15-16:00 | NR17 Other (Johan) | NR17 Pos (Nathan) | **NR17 CovEnh (Sergio)**  **[8.19.1]**  **[8.19.2]** |
| **Wednesd** |  |  |  |
| 05:00-06:00 | NR17 ePowSav (Johan) *TBD (or feMIMO or MGE or NR17 Other)* | NR17 up to 71 GHz (Tero) | NR17 Pos or SL Relay (Nathan) |
| **Thursday** |  |  |  |
| 04:30-05:30 | NR17 QoE (Johan) | NR17 Multi-SIM (Tero) | **NR17 RedCap (Sergio)**  **[8.12.1]**  **[8.12.2] offline 105**  **[8.12.4]**  **[8.12.3] offline 106**  **[8.12.5] offline 107** |
| 05:30-06:30 | NR17 MBS (Johan) | LTE17 UPIP (Tero)  TBD Other (Tero) |
| **Friday** |  |  |  |
| 04:30-05:30 | NR17 MBS (Johan) | NR17 RAN Slicing (Tero) | NR17 SL Relay (Nathan) |
| 05:30-06:30 | MR17 MBS, UP (Johan) | NR17 DCCA (Tero) | EUTRA legacy IoT (Emre/Brian) |

WEEK 2:

|  |  |  |  |
| --- | --- | --- | --- |
| **Time Zone UTC** | **Web Conference R2 - Main** | **Web Conference R2 - BO1** | **Web Conference R2 - BO2** |
| **Monday** |  |  |  |
| 13:00-13:45 | NR17 UDC (Johan)  NR17 eNPN (Johan) | NR17 SONMDT (HuNan) | LTE17 IoT (Brian) |
| 13:45-14:30 | NR17 AI 8.0.x (Johan) | NR17 IIOT (Diana) | NR17 Pos (Nathan) |
| 14:30-15:15 | NR17 TEI (Johan) | NR17 RACH indication / partitioning (Diana) | CB Nathan |
| 15:15-16:00 | NR15 NR16 CB (Johan) | CB Diana | CB Nathan |
| **Tuesday** |  |  |  |
| 13:00-13:45 | CB MGE Johan | **CB NR NTN (Sergio)**  **- UE location aspects (based on reply LSs)**  **- offline 103, 102**  **- offline 101, 104** | NR17 SL enh (Kyeongin) |
| 13:45-14:30 | CB MBS Johan | NR17 SL enh (Kyeongin) |
| 14:30-15:15 | CB IoT NTN Johan | CB Tero | **CB RedCap (Sergio)**  **- offline 107, 113, 114** |
| 15:15-16:00 | CB ePowSav Johan | CB Tero | CB Kyeongin |
| **Wednesday** |  |  |  |
| 13:00-13:45 | NR17 feMIMO | CB HuNan | CB Brian Emre |
| 13:45-14:30 | NR17 feMIMO | CB Diana | CB Nathan |
| 14:30-15:15 | CB Johan | **CB RedCap (Sergio)**  **- offline 105** | CB Nathan |
| 15:15-16:00 | CB Johan | CB Tero | CB or Other Kyeongin |
| **Thursday** |  |  |  |
| 04:30-05:30 | CB Johan | CB Tero | CB Nathan |
| 05:30-06:30 | CB Johan | **CB NR NTN (Sergio)**  **CB RedCap (Sergio)** | CB Diana |

List and status of offline email discussions

NOTE: No offline email discussions will be kicked off before Sunday Feb 20th, 19:00 UTC

* [AT117-e][101][NTN] RRC open issues (Ericsson)

Final scope:

1. Continue the discussion on remaining RRC open issues and FFS (including those from UP discussion - offline 103)
2. Update the RRC CR

Final intended outcome: Summary of the offline discussion with list of proposals and updated RRC CR

Deadline (for companies' feedback): Wednesday 2022-03-02 2000 UTC

Deadline (for rapporteur's summary in R2-2204031): Thursday 2022-03-03 0500 UTC

Deadline (for RRC CR in R2-2203549): Thursday 2022-03-03 1000 UTC

Status: Ongoing

* [AT117-e][102][NTN] Idle mode open issues (ZTE)

Final scope:

1. Continue the discussion on FFS for signalling details for SMTC adjustments and remaining open issues marked "continue offline"
2. Update the 38.304 CR

Final intended outcome: Summary of the offline discussion with list of proposals and updated 38.304 CR

Deadline (for companies' feedback): Thursday 2022-03-03 0200 UTC

Deadline (for rapporteur's summary in R2-2204032): Thursday 2022-03-03 0400 UTC

Deadline (for 38.304 CR in R2-2203548): Thursday 2022-03-03 1000 UTC

Status: Ongoing

* [AT117-e][103][NTN] MAC open issues (Interdigital)

Final scope: Update the MAC CR

Final intended outcome: Updated MAC CR

Deadline (for MAC CR in R2-2203547): Thursday 2022-03-03 1000 UTC

Status: Ongoing

* [AT117-e][104][NTN] UE caps open issues (Intel)

Final scope: Update the 38.306 and 38.331 CRs

Final intended outcome: Updated 38.306 and 38.331 CRs

Deadline (for CRs in R2-2203550 and R2-2203551): Thursday 2022-03-03 1000 UTC

Status: Ongoing

* [AT117-e][105][RedCap] CP open issues (Ericsson)

Final scope: Continue the discussion on remaining CP open issues

Final intended outcome: Summary of the offline discussion

Deadline (for companies' feedback): Thursday 2022-03-03 0300 UTC

Deadline (for rapporteur's summary in R2-2204035): Thursday 2022-03-03 0500 UTC

Status: Ongoing

* [AT117-e][106][RedCap] MAC open issues (vivo)

Updated scope: Update the MAC CR

Updated intended outcome: Agreed MAC CR

Updated deadline (for companies' feedback): Thursday 2022-03-03 0600 UTC

Updated deadline (for updated MAC CR): Thursday 2022-03-03 1000 UTC

Status: Ongoing

* [AT117-e][107][RedCap] UE caps open issues (Intel)

Final scope: Update the RRC and 38.306 CRs

Final intended outcome: Updated RRC and 38.306 CRs

Deadline (for RRC and 38.306 CRs): Thursday 2022-03-03 1000 UTC

Status: Ongoing

* [AT117-e][108][NTN] CHO open issues (Nokia)

Updated scope: Continue the discussion on CHO open issues

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): Thursday 2022-02-24 1600 UTC

Initial deadline (for rapporteur's summary in R2-2203545): Thursday 2022-02-24 1800 UTC

Status: Closed

* [AT117-e][109][NTN] Stage 2 CR (Thales)

Scope: Update the Stage 2 CR

Intended outcome: Agreed Stage 2 CR

Initial deadline (for companies' feedback): Monday 2022-02-28 1800 UTC

Initial deadline (for summary in R2-2203552 and Stage 2 CR in R2-2203537): Tuesday 2022-03-01 1000 UTC

Status: Ongoing

* [AT117-e][110][RedCap] Stage 2 CR (Nokia)

Scope: Update the Stage 2 CR

Intended outcome: Agreed Stage 2 CR

Initial deadline (for companies' feedback): Tuesday 2022-03-01 1800 UTC

Initial deadline (for Stage 2 CR in R2-2203541): Wednesday 2022-03-02 1000 UTC

Status: Ongoing

* [AT117-e][111][CovEnh] MAC CR (ZTE)

Scope: Update the MAC CR

Intended outcome: Agreed MAC CR

Initial deadline (for companies' feedback): Tuesday 2022-03-01 1800 UTC

Initial deadline (for MAC CR in R2-2203553): Wednesday 2022-03-02 1000 UTC

Status: Ongoing

* [AT117-e][112][CovEnh] RRC CR (Huawei)

Scope: Update the RRC CR

Intended outcome: Agreed RRC CR

Initial deadline (for companies' feedback): Tuesday 2022-03-01 1800 UTC

Initial deadline (for RRC CR in R2-2203554): Wednesday 2022-03-02 1000 UTC

Status: Ongoing

* [AT117-e][113][RedCap] RRM relaxation (vivo)

Final scope: draft reply LS to RAN4 on RRM relaxation

Final intended outcome: Reply LS

Deadline (for companies' feedback): Thursday 2022-03-03 0800 UTC

Deadline (for reply LS): Thursday 2022-03-03 1000 UTC

Status: Ongoing

* [AT117-e][114][RedCap] inter-RAT HO (Apple)

Scope: Discuss inter-RAT HO from LTE to NR aspects

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)

Deadline (for companies' feedback): Tuesday 2022-03-01 1200 UTC

Deadline (for rapporteur's summary in R2-2203564): Tuesday 2022-03-01 1800 UTC

Status: Closed

* [AT117-e][115][NTN] UE location in connected mode (Thales)

Scope: Discuss offline whether, in connected mode, coarse UE location info can be sent without user consent

Intended outcome: Summary of the offline discussion

Deadline (for companies' feedback): Wednesday 2022-03-02 2000 UTC

Deadline (for rapporteur's summary in R2-2203570): Wednesday 2022-03-02 2100 UTC

Status: Ongoing

* [AT117-e][116][NTN] Measurement gaps (Intel)

Scope: Discuss measurement gaps for NTN based on e.g. [R2-2202455](file:///C:\Data\3GPP\Extracts\R2-2202455%20Discussion%20on%20NR%20NTN%20measurement%20gaps.docx)

Intended outcome: Summary of the offline discussion

Deadline (for companies' feedback): Thursday 2022-03-03 0200 UTC

Deadline (for rapporteur's summary in R2-2204033): Thursday 2022-03-03 0400 UTC

Status: Ongoing

## 8.10 NR Non-Terrestrial Networks (NTN)

(NR\_NTN\_solutions-Core; leading WG: RAN2; REL-17; WID: [RP-211557](file:///C:\Data\3GPP\archive\RAN\RAN%2392\Tdocs\RP-211557.zip))

Time budget: 1.5 TU

Tdoc Limitation: 4 tdocs

### 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.

#### 8.10.1.1 LS in

For LSes that need action: one tdoc by contact company to address the LS and potential reply is considered.

Rapporteur input may be provided.

[R2-2202131](file:///C:\Data\3GPP\Extracts\R2-2202131_R3-221370.docx) Reply LS on LS on TAC reporting in ULI and support of SAs and FAs for NR Satellite Access (R3-220121/S2-2109337) (R3-221370; contact: Qualcomm) RAN3 LS in Rel-17 To:SA2 Cc:RAN2, CT1

* Noted

[R2-2202132](file:///C:\Data\3GPP\Extracts\R2-2202132_R3-221379.docx) LS on RAN Initiated Release due to out-of-PLMN area condition (R3-221379; contact: Qualcomm) RAN3 LS in Rel-17 To:SA2 Cc:CT1, RAN2

* Noted

[R2-2203829](file:///C:\Data\3GPP\Extracts\R2-2203829_S2-2201540.docx)  LS Response to LS on UE location during initial access in NTN (S2-2201540; contact: Qualcomm) SA2 LS in Rel-17 To:RAN2, RAN3 Cc:CT1, SA3, SA3-LI

* QC indicates that SA2 thinks that sending UE location in initial access is not essential in Rel-17 but we need to do something in connected mode. Thales agrees
* In Rel-17, RAN2 does not work on a solution to provide (fine/coarse) UE location information during initial access

[R2-2203932](file:///C:\Data\3GPP\Extracts\R2-2203932_S2-2201834.docx) LS on Reply LS on UE location aspects in NTN (S2-2201834; contact: Huawei) SA2 LS in Rel-17 To:RAN2, RAN3 Cc:CT1

* Noted

[R2-2203956](file:///C:\Data\3GPP\Extracts\R2-2203956_S2-2201539.docx) Reply LS on UE Location Aspects in NTN (S2-2201539; contact: Ericsson) RAN3 LS in Rel-17 To: RAN3 Cc:RAN2, CT1

* Noted

Agreements:

1. In Rel-17, RAN2 does not work on a solution to provide (fine/coarse) UE location information during initial access

#### 8.10.1.2 CRs

CR Rapporteurs to provide running CRs, potentially updated.

[R2-2202233](file:///C:\Data\3GPP\Extracts\R2-2202233_NR-NTN%20Stg2%20Running%20CR_with%20RAN3%20v12.docx) Stg2 running CR - NTN THALES draftCR Rel-17 38.300 16.8.0 NR\_NTN\_solutions

* Discussed in offline 109

[R2-2202234](file:///C:\Data\3GPP\RAN2\Docs\R2-2202234.zip) NTN RAN3's stg2 BL CR THALES draftCR Rel-17 38.300 16.8.0 NR\_NTN\_solutions

* [AT117-e][109][NTN] Stage 2 CR (Thales)

Scope: Update the Stage 2 CR

Intended outcome: Agreed Stage 2 CR

Initial deadline (for companies' feedback): Monday 2022-02-28 1800 UTC

Initial deadline (for summary in R2-2203552 and Stage 2 CR in R2-2203537): Tuesday 2022-03-01 1000 UTC

[R2-2203552](file:///C:\Data\3GPP\RAN2\Inbox\R2-2203552.zip) [offline-109] NR NTN Stage 2 CR Thales discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2203537](file:///C:\Data\3GPP\RAN2\Inbox\R2-2203537.zip) Introduction of NTN Thales CR Rel-17 38.300 16.8.0 XXXX - B NR\_NTN\_solutions-Core

[R2-2202456](file:///C:\Data\3GPP\Extracts\R2-2202456%20Draft%20331%20CR%20for%20NR%20NTN%20UE%20capabilities.docx) Draft 331 CR for NR NTN UE capabilities Intel Corporation draftCR Rel-17 38.331 16.7.0 B NR\_NTN\_solutions-Core

* Noted
* Revised in R2-2203550
* Continue in offline 104

R2-2203550 Draft 331 CR for NR NTN UE capabilities Intel Corporation draftCR Rel-17 38.331 16.7.0 B NR\_NTN\_solutions-Core

[R2-2202457](file:///C:\Data\3GPP\Extracts\R2-2202457%20Draft%20306%20CR%20for%20NR%20NTN%20UE%20capabilities.docx) Draft 306 CR for NR NTN UE capabilities Intel Corporation draftCR Rel-17 38.306 16.7.0 B NR\_NTN\_solutions-Core

* Noted
* Revised in R2-2203551
* Continue in offline 104

R2-2203551 Draft 306 CR for NR NTN UE capabilities Intel Corporation draftCR Rel-17 38.306 16.7.0 B NR\_NTN\_solutions-Core

[R2-2203157](file:///C:\Data\3GPP\Extracts\R2-2203157%20Introduction%20of%20Release17%20NTN%2038331.docx) Introduction of Release-17 NTN Ericsson CR Rel-17 38.331 16.7.0 2930 - B NR\_NTN\_enh-Core

* Noted
* Revised in R2-2203549
* Continue in offline 101

R2-2203549 Introduction of Release-17 NTN Ericsson CR Rel-17 38.331 16.7.0 2930 1 B NR\_NTN\_enh-Core

[R2-2203385](file:///C:\Data\3GPP\Extracts\R2-2203385_Introduction%20of%20NTN.docx) Introduction of NTN ZTE corporation,Sanechips CR Rel-17 38.304 16.7.0 0233 - B NR\_NTN\_solutions-Core

* Noted
* Revised in R2-2203548
* Continue in offline 102

R2-2203548 Introduction of NTN ZTE corporation,Sanechips CR Rel-17 38.304 16.7.0 0233 1 B NR\_NTN\_solutions-Core

[R2-2203425](file:///C:\Data\3GPP\Extracts\R2-2203425%20MAC%20running%20CR_117e.docx) Stage 3 NTN running CR for 38.321 - RAN2#117 InterDigital CR Rel-17 38.321 16.7.0 1215 - B NR\_NTN\_solutions-Core

* Noted
* Revised in R2-2203547
* Continue in offline 103

R2-2203547 Stage 3 NTN running CR for 38.321 - RAN2#117 InterDigital CR Rel-17 38.321 16.7.0 1215 1 B NR\_NTN\_solutions-Core

### 8.10.2 User Plane

#### 8.10.2.1 MAC aspects

##### 8.10.2.1.1 Open issues

Contributions on open issues listed in [R2-2201900](file:///C:\Data\3GPP\archive\RAN2\RAN2%23116bis\Tdocs\R2-2201900.zip). For some aspects the discussion will happen in Pre117 email discussion [103]. For the others, company contributions can be submitted.

Including report of [Pre117-e][103][NTN] MAC open issues (Interdigital)

[R2-2203424](file:///C:\Data\3GPP\Extracts\R2-2203424%20Report%20of%20%5bPre117-e%5d%5b103%5d%5bNTN%5d%20MAC%20open%20issues.docx) Summary of [Pre117-e][NTN][103] MAC open issues InterDigital discussion Rel-17 NR\_NTN\_solutions-Core Late

* Discussed in offline 103
* [AT117-e][103][NTN] MAC open issues (Interdigital)

Initial scope: Discuss MAC open issues based on the report in [R2-2203424](file:///C:\Data\3GPP\Extracts\R2-2203424%20Report%20of%20%5bPre117-e%5d%5b103%5d%5bNTN%5d%20MAC%20open%20issues.docx) and other company contributions in AI 8.10.2.1.1

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 2022-02-21 1700 UTC

Initial deadline (for rapporteur's summary in R2-2203532): Monday 2022-02-21 2000 UTC

Updated scope:

1. Continue the discussion on MAC open issues
2. Update the MAC CR

Updated 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)
    - Updated MAC CR

Updated deadline (for companies' feedback): Thursday 2022-02-24 1800 UTC

Updated deadline (for rapporteur's summary in R2-2203542): Thursday 2022-02-24 2000 UTC

Deadline (for MAC CR in R2-2203547): Thursday 2022-03-03 1000 UTC

Updated scope:

1. Continue the discussion on MAC open issues
2. Update the MAC CR

Updated 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)
    - Updated MAC CR

Updated deadline (for companies' feedback): Monday 2022-02-28 1800 UTC

Updated deadline (for rapporteur's summary in R2-2203567): Monday 2022-02-28 2000 UTC

Deadline (for MAC CR in R2-2203547): Thursday 2022-03-03 1000 UTC

Final scope: Update the MAC CR

Final intended outcome: Updated MAC CR

Deadline (for MAC CR in R2-2203547): Thursday 2022-03-03 1000 UTC

[R2-2203532](file:///C:\Data\3GPP\Extracts\R2-2203532%20Report%20of%20%5bAT117-e%5d%5b103%5d%5bNTN%5d%20MAC%20open%20issues.docx) [offline-103] MAC open issues Interdigital discussion Rel-17 NR\_NTN\_solutions-Core

For email agreement

From [Pre117-e] Discussion:

Proposal 1.1: During RA procedure for RRC re-establishment procedure, the UE should trigger TA report if an indication is broadcasted by the target cell’s SI.

* Agreed

Proposal 1.2: During RA procedure for handover, the UE should trigger TA report if the target cell indicates this in the handover command.

* Agreed

Proposal 1.3: Other than re-establishment and handover procedure, TA reporting in connected mode is not controlled by enabling/disabling indication in SI.

* Samsung thinks that according to proposal 1.3 it seems that for HO procedure, TA reporting in connected mode is controlled by “enabling/disabling indication in SI”, which is not aligned with proposal 1.2 “in the handover command”. It's understood that handover command may include same information as target cell’s system information, but still it is considered controlled by “handover command” not considered by target cell’s system information acquisition.
* Agreed as "Other than re-establishment (TA reporting controlled by target cell's SI) and handover procedure (TA reporting controlled by HO command), TA reporting in connected mode is not controlled by enabling/disabling indication in SI."

Proposal 1.11: RAN2 confirms ra-ResponseWindow and msgB-ReponseWindow are not extended in NTN.

* Agreed

Proposal 1.13: Existing parameter names are updated to: uplinkHARQ-mode, allowedHARQ-mode, and HARQ mode A/B.

* Agreed

Proposal 1.17: A NOTE is added to MAC CR clarifying that prior to starting drx-HARQ-RTT-TimerUL/DL, latest UE-gNB RTT is used to set timer length.

* Agreed

Proposal 1.19: MAC does not specify how UE detects a cell originates from a non-terrestrial network.

* Agreed

From contributions:

Proposal 2.2: Repetition transmission based HARQ retransmission is always allowed and is explicitly indicated via DCI or semi-statically via RRC signalling (as in legacy). This revises the agreement from RAN2#114e (consensus)

* Agreed

Proposal 2.3: DL MAC CE execution delay is not captured in MAC specification (consensus)

* Agreed

Agreements via email - from offline 103:

1. During RA procedure for RRC re-establishment procedure, the UE should trigger TA report if an indication is broadcasted by the target cell’s SI.
2. During RA procedure for handover, the UE should trigger TA report if the target cell indicates this in the handover command.
3. Other than re-establishment (TA reporting controlled by target cell's SI) and handover procedure (TA reporting controlled by HO command), TA reporting in connected mode is not controlled by enabling/disabling indication in SI.
4. RAN2 confirms ra-ResponseWindow and msgB-ReponseWindow are not extended in NTN.
5. Existing parameter names are updated to: uplinkHARQ-mode, allowedHARQ-mode, and HARQ mode A/B.
6. A NOTE is added to MAC CR clarifying that prior to starting drx-HARQ-RTT-TimerUL/DL, latest UE-gNB RTT is used to set timer length.
7. MAC does not specify how UE detects a cell originates from a non-terrestrial network.
8. Repetition transmission based HARQ retransmission is always allowed and is explicitly indicated via DCI or semi-statically via RRC signalling (as in legacy). This revises the agreement from RAN2#114e
9. DL MAC CE execution delay is not captured in MAC specification

For online discussion

From [Pre117-e] Discussion

Proposal 1.7a: RAN2 understanding: UE failing to acquire sufficiently accurate UE location to be used in the calculation of the UE’s Timing Advance value (see TS 38.211 [Y] clause 4.3.1) should not perform any UL transmission until UE location is within accuracy limits. No RAN2 specification impact. (consensus)

[AT117e] Discussion:

- Qualcomm is not clear on what the “accuracy limit is”

- Ericsson clarifies that RAN4 specifies a minimum accuracy of UE UL transmission timing error and UE location is part of it. Also that “full TA” should be replaced with a reference to TA in RAN1.

- QC thinks we should remove "until UE location is within accuracy limits"

- IDC and Ericsson are fine

* Agreed as: "RAN2 understanding: UE failing to acquire sufficiently accurate UE location to be used in the calculation of the UE’s Timing Advance value (see TS 38.211 [Y] clause 4.3.1) should not perform any UL transmission. No RAN2 specification impact."

Proposal 1.8: RAN2 confirms UE-specific TA MAC CE consists of only one field with length 16 bits, which contains the UE estimate of full UE-specific TA. (19/21)

[AT117e] Discussion:

- Vivo has a preference to have Reserved bits, but can accept majority.

- Ericsson is also fine to consider if not all 16 bits are needed.

- Samsung prefers to have reserved bits (2) both for p1.8 and 1.9. Ericsson agrees

* "UE-specific TA MAC CE" consists of only one field with length 14 bits (+ 2 reserved bits), which contains the UE estimate of full UE-specific TA

Proposal 1.9: RAN2 confirms Differential UE-Specific K\_Offset MAC CE consists of only one field with length 8 bits, which contains the Differential UE-Specific K\_Offset. (consensus)

[AT117e] Discussion:

- Ericsson thinks that to align with RAN1 agreements, the field length should be 6 bits, with 2 reserved bits.

* "Differential UE-Specific K\_Offset MAC CE" consists of only one field with length 6 bits (+2 reserved bits), which contains the Differential UE-Specific K\_Offset

Proposal 1.12: UE stops ra-ContentionResolutionTimer upon receiving PDCCH indicating Msg3 retransmission and then starts ra-ContentionResolutionTimer after the end of the Msg3 retransmission plus UE-gNB RTT. Impact to coverage and possible enhancements (e.g. to support MSG3 blind retransmission) can be considered in the Rel-18 NTN coverage enhancement SI.

[AT117e] Discussion:

- Nokia has strong concerns with P12 as it brings NW restrictions without gain as current proposal will limit blind retransmission (a legacy function). Furthermore, there is an NTN CovEnh study item in Rel-18, so it makes no sense to disable a function in Rel-17 and bring it back in Rel-18. A better option is UE does not consider the Contention Resolution unsuccessful. If ra-ContentionResolutionTimer expires during UE-gNB RTT.

- ZTE has sympathy for Nokia’s comments, and think it can be compromised by making it configurable.

- LG would also prefer to have this as a note, but is okay to go with majority

- Ericsson doesn’t think this prohibits coverage enhancement as multiple Msg 3 retransmissions can be scheduled, just not blindly. Also Nokia’s proposal has a problem that UE never declares CR unsuccessful.

- Nokia thinks that for their new proposal (P12a), it is not true UE never declares the CR unsuccessful.

Case1: If there is a new CR timer triggered, CR timer expired during the UE-gNB RTT (to wait for the new CR timer restart) will not cause the UE declare CR failure.

Case2: If there is NO new CR timer triggered, CR timer expired will cause the UE declare CR failure (just as legacy)

For case1, we understand it is a correct UE behavior since there is a future CR timer which will be run by UE later, of course UE should not declare CR failure when it waits for the timer running to resolve the Contention Resolution.

* IDC thinks we can further work on this and find a solution, e.g. make it configurable
* Ericsson also thinks Nokia proposal has some merit and are ok to further discuss this
* QC thinks there could be some issues if we don't support blind reTX
* Oppo thinks that making this configurable could be good compromise
* Further discuss offline to see whether it's possible to make it configurable

Proposal 1.15: uplinkHARQ-DRX-LCP-mode and allowedHARQ-DRX-LCP, if configured, also apply for SRB1 to SRB3.

[AT117e] Discussion:

- QC thinks it is not clear if this is also true for RRC release message

- QC wonders what is the case for the very first and very last RRC messages: is the assumption that feedback is enabled / disabled or what

- Samsung that at least for RRC release message the NW could also repeat the message multiple times. IDC agrees. HW also agrees. Oppo does not see the issue.

- Ericsson thinks this can be handled by the network

- QC wonders if for msg4 the assumption is that HARQ feedback is enabled

- HW thinks we can change the parameters' names according to p13

* Agreed as: "uplinkHARQ-mode and allowedHARQ-mode, if configured, also apply for SRB1 to SRB3"

From Contributions

Proposal 2.1: RAN2 to clarify the previous agreement as: Upon reception of configuration or reconfiguration of TA reporting trigger event, if UE has not reported TA to current serving cell during this connection before, the UE triggers a TA reporting

- Rapporteur would like to confirm that “during this connection” is the correct interpretation.

- Oppo agrees with rapporteur clarification

* Agreed as: "Upon reception of configuration or reconfiguration of TA reporting trigger event, if connected mode UE has not reported TA to current serving cell before (during this connection), the UE triggers a TA reporting" (can further check this during the implementation in the MAC CR).

From R2-2203424 (Summary of [Pre117-e][NTN][103]):

Proposal 4: RAN2 to further discuss if SR can be triggered when a TA report is triggered and no UL-SCH resources are available, or if RACH can be triggered if SR is triggered but there are no available PUCCH resources.

Proposal 10: RAN2 to further discuss naming of UE-specific TA MAC CE and Differential UE-Specific K\_Offset MAC CE to ensure alignment with RAN1 specification.

Proposal 14: RAN2 to further discuss “HARQ process 0 carries PUSCH transmission scheduled by RAR or PUSCH payload of MsgA, configuration of HARQ mode and allowedHARQ-DRX-LCP is up to NW implementation, and UE always follows it (no specification impact).”

Proposal 16: RAN2 to further discuss implementation HARQ RTT timer extension.

Proposal 18: RAN2 to further discuss method of configuredGrantTimer extension.

* configuredGrantTimer length shall be extended with higher values (FFS on the actual values)
* Continue the discussion in offline 101

Postponed

Discussion on offset for SR and CFRA (i.e., Questions 4a, 4b, 5a, and 5b) will be continued in subsequent [AT117e] discussion phase

Agreements online:

1. RAN2 understanding: UE failing to acquire sufficiently accurate UE location to be used in the calculation of the UE’s Timing Advance value (see TS 38.211 [Y] clause 4.3.1) should not perform any UL transmission. No RAN2 specification impact.
2. "UE-specific TA MAC CE" consists of only one field with length 14 bits (+ 2 reserved bits), which contains the UE estimate of full UE-specific TA
3. "Differential UE-Specific K\_Offset MAC CE" consists of only one field with length 6 bits (+2 reserved bits), which contains the Differential UE-Specific K\_Offset
4. uplinkHARQ-mode and allowedHARQ-mode, if configured, also apply for SRB1 to SRB3
5. Upon reception of configuration or reconfiguration of TA reporting trigger event, if connected mode UE has not reported TA to current serving cell before (during this connection), the UE triggers a TA reporting (can further check this during the implementation in the MAC CR)
6. configuredGrantTimer length shall be extended with higher values (FFS on the actual values)

[R2-2203542](file:///C:\Data\3GPP\Extracts\R2-2203542%20Report%20of%20%5bAT117-e%5d%5b103%5d%5bNTN%5d%20MAC%20open%20issues%20R2.docx) [offline-103] MAC open issues - second round Interdigital discussion Rel-17 NR\_NTN\_solutions-Core

For agreement:

Proposal 2: RAN2 will no longer discuss reporting UE location information for purposes of TA report in MAC discussion. UE will transmit the UE specific TA via MAC CE when triggered according to TA reporting procedure in MAC CR, and the MAC TA reporting procedure has no impact on when UE can transmit UE location information. Any additional event(s)/modification to existing events for triggering UE location information reporting can be discussed in RRC.

* vivo thinks the last sentence ought to be removed. Tthe intention would be that the TA reporting and UE location reporting will not have impact to each other, not only MAC TA reporting not impacting UE location reporting, but also in the other way around. Suggests to reword as: "RAN2 will no longer discuss reporting UE location information for purposes of TA report in ~~MAC discussion~~ this release. UE will transmit the UE specific TA via MAC CE when triggered according to TA reporting procedure in MAC CR, and the MAC TA reporting procedure and UE location reporting has no impact on each other ~~when UE can transmit UE location information. Any additional event(s)/modification to existing events for triggering UE location information reporting can be discussed in RRC~~."
* IDC suggests: "RAN2 will no longer discuss reporting UE location information for purposes of TA report in MAC discussion. UE will transmit the UE specific TA via MAC CE when triggered according to TA reporting procedure in MAC CR, and the MAC TA reporting procedure has no impact on when UE can transmit UE location information.". vivo is fine with this. Oppo wonders if it is realistic to leave new event configurations of location reporting for TA purpose to RRC given this is the last meeting: the most feasible and realistic way is to reuse the TA reporting event and introduce some MAC-RRC interaction.
* Xiaomi suggest to clarify "RAN2 user plane will no longer…"
* Nokia agrees with OPPO that how to trigger location reporting event for TA purpose should be discussed in MAC discussion. Since SA3 is working on NTN user consent issue, UE location for TA purpose can be supported in this release if user consent is available. Based on the framework of UE location report for Control plane, we don’t see other issue need to be discussed for UE location for TA purpose except how to trigger the UE location reporting event. We propose that: RAN2 to discuss how to trigger location reporting event for TA purpose online or via email discussion.
* Ericsson thinks this is needed to be discussed in the user plane discussions as control plane did not consider location reporting for TA purposes. The user consent discussion in SA3 has not concluded, and when it does, user consent from RAN2 point of view will be handled by the gNB implementation, that is user consent will not affect the RAN2 specified protocols. Therefore, RAN2 can specify UE location reporting controlled by the gNB. If UE location is allowed, gNB can configure it, and if it is not allowed by the user consent or local jurisdiction, then gNB will not configure it (and reasons to control this are outside the RAN2 scope).
* Continue offline

Proposal 3: The name “UE-Specific TA MAC CE” is revised to “Timing Advance Report MAC CE”. (13/18)

* Agreed

Proposal 4: Revise the field description of “UE-Specific MAC CE” as follows: (consensus)

- Timing Advance: In FR1, the Timing Advance field indicates the least integer number of slots greater than or equal to the Timing Advance value (see TS 38.211 section 4.3.1). The length of the field is 14 bits.

* Agreed

Proposal 5: The name “Differential UE-Specific K\_Offset MAC CE” is revised to “Differential Koffset MAC CE”. (12/18)

* Agreed

Proposal 6: When HARQ process 0 carries PUSCH transmission scheduled by RAR or PUSCH payload of MsgA, configuration of HARQ mode and allowedHARQ-DRX-LCP is up to NW implementation, and UE always follows it (no specification impact). (15/18)

* Samsung suggests to replace “allowedHARQ-DRX-LCP” by “allowedHARQ-mode” as agreed about the parameter name.
* Agreed as "When HARQ process 0 carries PUSCH transmission scheduled by RAR or PUSCH payload of MsgA, configuration of HARQ mode and allowedHARQ-mode is up to NW implementation, and UE always follows it (no specification impact)."

Proposal 7: HARQ RTT Timer extension is implemented in MAC CR as per Implementation 2 (i.e., via use of helper variables). (9/18)

* Huawei suggests to keep the original implementation in the running CR (with minor update if needed).
* QC thinks for TN UEs, there should not have been any need to look at the whole new change made by NTN. In that sense, the current text in the running CR is acceptable.
* Ericsson notes that the legacy is not affected by the change, and this is very similar to the introduction of R16 REPETITION\_NUMBER in the MAC spec for bundling, that was different in R15. Thus the proposal is fine.
* Continue online (in week2 CB session)

Proposal 10: Rel-17 NTN session will not further discuss clarification on UE DRX behaviour when PDCCH indicates a UL/DL transmission where drx-HARQ-RTT-TimerUL/DL for the corresponding HARQ process has already been running. (15/17)

* Agreed

Proposal 11: In NTN, the UE enters Active Time at the first SR transmission + UE-gNB RTT. The Active Time will continue until no pending SR, and the SR retransmission has no impact on the Active Time. Note: This does not impact UE entering Active Time during UE-gNB RTT offset if triggered due to other reasons (e.g. DRX timers). (12/17)

* Agreed

Proposal 12: In CFRA case, DRX Active Time follows legacy behaviour (i.e. UE enters DRX Active Time after successful reception of RAR, and remains in DRX Active Time until a PDCCH indicating a new transmission addressed to the C-RNTI of MAC entity has been received). (14/17)

* Agreed

Proposal 13a: Upon validity timer expiry, UE shall suspend uplink transmission and re-acquire SI without flushing HARQ buffer.

* Samsung thinks “without flushing HARQ buffer” can be removed. Nokia/Ericsson agree
* Agreed as "Upon validity timer expiry, UE shall suspend uplink transmission and re-acquire SI (FFS whether or not UE needs to flush HARQ buffer)"

Proposal 13b: Upon validity timer expiry, the UE may flush HARQ buffers, release resource configurations, trigger RACH, and/or declare RLF if triggered by legacy mechanisms (e.g. if TAT expires, or UE fails to acquire SI due to radio link issue).

* vivo thinks the “may” used in the proposal seems a bit misleading. The understanding is that “if triggered by legacy mechanisms” as in the proposal, the UE shall perform those indicated procedures as per the current Spec, instead of “may” perform them. To avoid such an ambiguity, maybe it is better to avoid using “may” with a suggested change as follows: "Upon validity timer expiry, the UE ~~may~~ shall flush HARQ buffers, release resource configurations, trigger RACH, and/or declare RLF as in the current Spec, if triggered by legacy mechanisms (e.g. if TAT expires, or UE fails to acquire SI due to radio link issue)."
* Intel agrees with vivo that UE behaviour in p13a and p13b is contradictory

- IDC thinks P13a captures the UE behaviour which is directly triggered due to validity timer expiry. However, while the UE is attempting to re-acquire SIB, other legacy events may happen. Some examples could be the TAT may expire (which leads to flushing HARQ buffers) or RLF may be triggered due to radio link issues. The intention of P13b is to say that these other events can occur and UE will act upon them as in legacy, however the validity time expiry does not trigger them directly. Suggests to reword the proposal as:

"Proposal 13b.2: While attempting to re-acquire SI due to validity timer expiry, the UE can perform additional recovery actions if triggered via legacy mechanisms (i.e. flush HARQ buffers, release resource configurations, trigger RACH, and/or declare RLF)."

* HW suggests to remove Proposal 13b which are all legacy behavior.
* vivo is fine with IDC formulation (adding "as in the current Spec") or to remove the proposal.

- Xiaomi cannot accept P13b: we should not rely on TAT expiry to trigger flushing HARQ buffers, releasing resources

- Nokia agrees with companies that while attempting to re-acquire SI due to validity timer expiry, the TAT expire or RLF trigger should follow legacy behavior. We are fine to capture that as baseline for further discussion. However, it does not address the case when the UE read the new SIB (ephemeris) successfully before TAT expiry and RLF. (i.e. should UE trigger RACH at least for TA alignment? otherwise, RAN2 should ask RAN1 to confirm that UE can send PUSCH/PUCCH (instead of RACH) correctly with TA estimated by UE based on the new acquired ephemeris data. This is because in legacy the TA used by PUSCH/PUCCH transmission should be the one adjusted by NW instead of UE’s self-estimation alone). So, we propose to add "FFS how to handle the case when the UE read the new SIB (ephemeris) successfully before TAT expiry and RLF."

- Ericsson thinks this is not needed

* Not pursued

Agreements via email - from offline 103 - second round:

1. The name “UE-Specific TA MAC CE” is revised to “Timing Advance Report MAC CE”
2. Revise the field description of “UE-Specific MAC CE” as follows: Timing Advance: In FR1, the Timing Advance field indicates the least integer number of slots greater than or equal to the Timing Advance value (see TS 38.211 section 4.3.1). The length of the field is 14 bits.
3. The name “Differential UE-Specific K\_Offset MAC CE” is revised to “Differential Koffset MAC CE”.
4. When HARQ process 0 carries PUSCH transmission scheduled by RAR or PUSCH payload of MsgA, configuration of HARQ mode and allowedHARQ-mode is up to NW implementation, and UE always follows it (no specification impact)
5. Rel-17 NTN session will not further discuss clarification on UE DRX behaviour when PDCCH indicates a UL/DL transmission where drx-HARQ-RTT-TimerUL/DL for the corresponding HARQ process has already been running.
6. In NTN, the UE enters Active Time at the first SR transmission + UE-gNB RTT. The Active Time will continue until no pending SR, and the SR retransmission has no impact on the Active Time. Note: This does not impact UE entering Active Time during UE-gNB RTT offset if triggered due to other reasons (e.g. DRX timers).
7. In CFRA case, DRX Active Time follows legacy behaviour (i.e. UE enters DRX Active Time after successful reception of RAR, and remains in DRX Active Time until a PDCCH indicating a new transmission addressed to the C-RNTI of MAC entity has been received).
8. Upon validity timer expiry, UE shall suspend uplink transmission and re-acquire SI (FFS whether or not UE needs to flush HARQ buffer)

[R2-2203567](file:///C:\Data\3GPP\Extracts\R2-2203567%20Report%20of%20%5bAT117-e%5d%5b103%5d%5bNTN%5d%20MAC%20open%20issues%20R3.docx) [offline-103] MAC open issues - third round Interdigital discussion Rel-17 NR\_NTN\_solutions-Core

For agreement:

Proposal 2: Specific UE location reporting procedures only for purposes of TA report is not supported in Rel-17 NTN.

* Nokia thinks that if the solution on how to report UE location for CP purpose (e.g. cell id mapping and AMF selection) can be agreed in Rel-17, we understand the only open issue for TA purpose is how to trigger the location report event. Since the framework of UE location reporting can be re-used for any purpose, we don’t think much effort is needed to clarify the way-forward. Hence we think RAN2 can keep it as open issue for now and ask for company contributions to address it in a simple way. Huawei agrees.
* Continue online
* QC agrees with the proposal. Apple/Intel/Thales agree
* Nokia has a different preference but is ok to go with the majority
* Agreed as: "Specific UE location reporting procedures only for TA report purposes are not supported in Rel-17 NTN."

Proposal 3: Blind Msg3 retransmission is supported in Rel-17 NTN. FFS whether this is enabled by a NOTE (P4), or explicit configuration (P5a and P5b).

* Agreed

Proposal 6: Upon validity timer expiry, UE suspends UL transmission and re-aquires SI. No additional actions are needed. FFS whether this is captured in MAC specification (e.g. Section 5.2) or RRC specification (e.g. Section 5.2.2.x) (11/16)

* Xiaomi is not ready to accept this: think HARQ buffer has to be flushed. if HARQ buffer is not flushed, network doesn’t know the NDI status of the HARQ buffer when UE comes back from un-synchronized and may set a wrong NDI for new transmission. From UE side, UE thinks the NDI is not toggled and wrongly retransmit the HARQ buffer.
* Oppo is ok with p6 and p7, but would like to clarify how UE should re-acquire SI when the active BWP does not configure common search space for SI. In this case, does it mean that UE should switch to the initial BWP?
* Nokia thinks this is also under discussion for IoT NTN at [AT117-e][012][IoT-NTN]. About “No additional actions are needed ", Nokia has the similar comments as IoT NTN on whether RACH is needed when UE recovers from out of sync. Nokia is fine to go with majority view (i.e. no RACH) if the TA jump issue can be handled by UE but think it should be confirmed by RAN4.
* Continue online
* IDC reports that in IoT-NTN there is a proposal to flush HARQ buffers in this case.
* Ericsson thinks we should have some RLF type behaviour.
* Nokia think we don’t need RLF here.
* UE behaviour upon validity timer expiry will be covered in RRC (Can further discuss how interaction with MAC works). FFS which/whether any specific actions are taken
* Continue on the FFS in offline 101

Proposal 7: The following NOTE is captured: “UE should attempt to re-aquire SIBxx prior to validity timer expiry by UE implementation.” FFS whether this is captured in MAC specification (e.g. Section 5.2), RRC specification (e.g. Section 5.2.2.x), or Stage 2 (13/16)

* CATT is ok with the description for Rel-17, but wonders whether we need another point like: it is network implementation when to broadcast the updated SIBxx. Suggests to update as: "The following NOTE is captured: “UE should attempt to re-aquire SIBxx prior to validity timer expiry by UE implementation in Rel-17. it is network implementation when to broadcast the updated SIBxx in Rel-17.” FFS whether this is captured in MAC specification (e.g. Section 5.2), RRC specification (e.g. Section 5.2.2.x), or Stage 2"
* IDC suggests to update as: "The following NOTE is captured: “UE should attempt to re-aquire SIBxx prior to validity timer expiry by UE implementation.” Details of NOTE (potentially including additional clarification if needed) may be finalized in Stage 3. FFS whether this is captured in MAC specification (e.g. Section 5.2), RRC specification (e.g. Section 5.2.2.x), or Stage 2 (13/16)"
* To address OPPO’s comments, IDC thinks there are scenarios where it is impractical for the UE to re-acquire SI prior to validity timer expiry (which is why this is captured as a NOTE using words like “should”). This particular scenario could be interpreted similar to IoT NTN case, where it was agreed “when SI used for UL synch (pre-compensation) is no longer valid, the UE autonomously tunes away and re-acquires the required SI, and then comes back.” Here it seems the UE would not attempt to re-acquire SI prior to validity timer expiry, and would instead perform actions in P6. If there is a wish for further clarification on this, we may update the proposal noting that additional clarification may be considered in Stage 3.
* Agreed as: "The following NOTE is captured: “UE should attempt to re-aquire SIBxx prior to validity timer expiry by UE implementation.” Details of NOTE (potentially including additional clarification if needed) may be finalized in Stage 3. FFS whether this is captured in MAC specification (e.g. Section 5.2), RRC specification (e.g. Section 5.2.2.x), or Stage 2"
* Update from online discussion: The note above is captured in RRC.
* Continue on the details of the Note in offline 101

For further discussion

Proposal 1: If a TA report is triggered and there are no available UL-SCH resources, the network may optionally configure UE to trigger an SR. (12/16)

* Oppo thinks this has more support than other proposals for agreement
* Huawei prefer the original proposal "If a TA report is triggered and there are no available UL-SCH resources, UE triggers an SR."
* Continue online
* Mediatek/Ericsson think we don't need to send SR at all.
* If a TA report is triggered and there are no available UL-SCH resources, the network may optionally configure UE to trigger an SR. A UE capability is introduced for this.

If companies agree blind Msg3 retransmission is supported via Note:

Proposal 4: To enable blind Msg3 retransmission in NTN, the following NOTE is captured in MAC specification:

NOTE: If ra-ContentionResolutionTimer expires during the UE-gNB RTT after Msg3 retransmission, the UE does not consider the Contention Resolution unsuccessful.

* Oppo has concerns that some UEs may not implement it and may cause mismatch between UE and network; wonders whether this is the intention and can be acceptable.
* Continue online
* Nokia agrees a note is not enough. QC agrees.
* Introduce some procedural text to enable blind msg3 retransmission in NTN. FFS on the detailed text
* Continue the discussion in the CR drafting.

If companies agree blind Msg3 retransmission is supported via configuration:

Proposal 5a: When [blind Msg3 retransmission] is configured, if ra-ContentionResolutionTimer expires during the UE-gNB RTT after Msg3 retransmission, (to wait for new CR timer restart) the UE does not consider the Contention Resolution unsuccessful. (9/12)

Proposal 5b: When [blind Msg3 retransmission] is not configured, UE stops ra-ContentionResolutionTimer upon receiving PDCCH indicating Msg3 retransmission and then starts ra-ContentionResolutionTimer after the end of the Msg3 retransmission plus UE-gNB RTT. (consensus)

* Continue online
* Oppo could accept this
* Continue the discussion in the CR drafting.

For Online discussion from previous round:

Proposal 8:           HARQ RTT Timer extension is implemented in MAC CR as per Implementation 2 (i.e., via use of helper variables). (9/18)

* QC still doesn't see where the problem is. HW agrees.
* Continue the discussion in the CR drafting

Agreements via email - from offline 103 - third round:

1. Blind Msg3 retransmission is supported in Rel-17 NTN. FFS whether this is enabled by a NOTE (P4), or explicit configuration (P5a and P5b).
2. The following NOTE is captured: “UE should attempt to re-aquire SIBxx prior to validity timer expiry by UE implementation.” Details of NOTE (potentially including additional clarification if needed) may be finalized in Stage 3. This is captured in RRC specification (e.g. Section 5.2.2.x)

Agreements online:

1. Specific UE location reporting procedures only for TA report purposes are not supported in Rel-17 NTN
2. UE behaviour upon validity timer expiry will be covered in RRC (can further discuss how interaction with MAC works). FFS which/whether any specific actions are taken
3. If a TA report is triggered and there are no available UL-SCH resources, the network may optionally configure UE to trigger an SR. A UE capability is introduced for this.
4. Introduce some procedural text to enable blind msg3 retransmission in NTN. FFS on the detailed text

[R2-2202302](file:///C:\Data\3GPP\Extracts\R2-2202302%20Discussion%20on%20MAC%20open%20issues.doc) Discussion on MAC open issues Huawei, HiSilicon discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2202420](file:///C:\Data\3GPP\Extracts\R2-2202420%20Remaining%20issues%20on%20HARQ%20process%20in%20NTN.doc) Remaining issues on HARQ process in NTN Spreadtrum Communications discussion Rel-17

[R2-2202546](file:///C:\Data\3GPP\Extracts\R2-2202546%20UL%20synchronization%20and%20validity%20timer%20expiry.docx) UL synchronization and validity timer expiry Apple discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2202547](file:///C:\Data\3GPP\Extracts\R2-2202547%20UE%20location%20and%20TA%20reporting.docx) UE location and TA reporting Apple discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2202563](file:///C:\Data\3GPP\Extracts\R2-2202563%20UL%20sync.doc) UL synchronization failure in RRC\_CONNECTED Qualcomm Incorporated discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2202613](file:///C:\Data\3GPP\Extracts\R2-2202613%20Considerations%20on%20MAC%20open%20issues.docx) Considerations on MAC open issues CMCC discussion Rel-17 NR\_NTN\_solutions-Core

moved from 8.10.2.1

[R2-2202773](file:///C:\Data\3GPP\Extracts\R2-2202773%20Remaining%20MAC%20Open%20Issues%20for%20NR%20NTN.docx) Remaining MAC Open Issues for NR NTN vivo discussion

[R2-2202972](file:///C:\Data\3GPP\Extracts\R2-2202972%20Consideration%20on%20MAC%20open%20issues.doc) Consideration on MAC open issues ZTE Corporation, Sanechips discussion Rel-17

[R2-2202999](file:///C:\Data\3GPP\Extracts\R2-2202999%20-%20Discussion%20on%20MAC%20open%20issues%20in%20NTN.doc) Discussion on MAC open issues in NTN OPPO discussion Rel-17 NR\_NTN\_solutions-Core

moved from 8.10.2.1

[R2-2203076](file:///C:\Data\3GPP\Extracts\R2-2203076%20Discussion%20on%20Left%20Open%20Issues%20of%20Other%20MAC%20Aspects.docx) Discussion on Left Open Issues of Other MAC Aspects CATT discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2203151](file:///C:\Data\3GPP\Extracts\R2-2203151.docx) Discussion on TA reporting ITL discussion Rel-17

[R2-2203165](file:///C:\Data\3GPP\Extracts\R2-2203165_Discussion%20on%20open%20issues%20for%20MAC%20aspects.docx) Discussion on open issues for MAC aspects LG Electronics Inc. discussion NR\_NTN\_solutions-Core

moved from 8.10.2.1

[R2-2203194](file:///C:\Data\3GPP\Extracts\R2-2203194%20Remaining%20MAC%20issues%20of%20NR%20NTN.doc) Remaining MAC issues of NR NTN Xiaomi discussion Rel-17

[R2-2203256](file:///C:\Data\3GPP\Extracts\R2-2203256%20On%20left%20open%20issues%20for%20MAC%20aspects.docx) On left open issues for MAC aspects Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2203257](file:///C:\Data\3GPP\Extracts\R2-2203257%20Discussion%20on%20Validity%20timer%20expiry%20and%20restart.docx) Discussion on Validity timer expiry and restart Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2203298](file:///C:\Data\3GPP\Extracts\R2-2203298%208.10.2.1.1%20MAC%20aspects.docx) Open issues on MAC aspects Samsung Research America discussion NR\_NTN\_solutions-Core

[R2-2203423](file:///C:\Data\3GPP\Extracts\R2-2203423%20(R17%20NTN%20WI%20AI%208.10.2.1.1)%20MAC%20Open%20issues.docx) Remaining MAC open issues in NTN InterDigital discussion Rel-17 NR\_NTN\_solutions-Core

moved from 8.10.2.1

[R2-2203482](file:///C:\Data\3GPP\Extracts\R2-2203482%20-%20Remaining%20MAC%20issues%20in%20NTNs.docx) Remaining MAC issues in NTNs Ericsson discussion Rel-17 NR\_NTN\_solutions-Core

##### 8.10.2.1.2 Other RACH aspects

Contributions on other RACH issues.

[R2-2202303](file:///C:\Data\3GPP\Extracts\R2-2202303%20Discussion%20on%20remaining%20MAC%20issues.DOC) Discussion on remaining MAC issues Huawei, HiSilicon discussion Rel-17 NR\_NTN\_solutions-Core

##### 8.10.2.1.3 Other MAC aspects

Contributions on other (non RACH) MAC issues.

[R2-2202421](file:///C:\Data\3GPP\Extracts\R2-2202421%20MAC%20operations%20about%20the%20validity%20timer%20expiry.doc) MAC operation about the validity timer expiry Spreadtrum Communications discussion Rel-17

[R2-2203203](file:///C:\Data\3GPP\Extracts\R2-2203203.doc) CG enhancements in NTN Sony discussion Rel-17 NR\_NTN\_solutions-Core [R2-2200911](file:///C:\Data\3GPP\Extracts\R2-2200911.doc)

#### 8.10.2.2 RLC and PDCP aspects

[R2-2203481](file:///C:\Data\3GPP\Extracts\R2-2203481%20-%20Remaining%20issues%20for%20RLC%20and%20PDCP%20in%20NTNs.docx) Remaining issues for RLC and PDCP in NTNs Ericsson discussion Rel-17 NR\_NTN\_solutions-Core

Proposal 1 Introduce the RLC t-ReassemblyExt field as an 8-bit integer with a step size of 10 ms from 210 ms, 220 ms, and so on up to a maximum of 2760 ms.

Proposal 2 RAN2 to discuss whether higher values than the agreed 2000 ms is needed for PDCP discard timer, for example higher than 2200 ms as that is the maximum RLC t-Reassembly agreed in NTNs or if infinity is sufficient for those cases.

Proposal 3 Introduce PDCP discardTimerExt with values {2000 2500 3000 3500 4000 4500 spare2 spare1}

Proposal 4 Introduce the new PDCP t-Reordering values 3500 4000 4500 5000 5500 6000 6500 7000 7500 8000 8500 9000 using some of the spare values.

* Discuss all proposals above in offline 101

### 8.10.3 Control Plane

#### 8.10.3.1 Idle/inactive mode aspects

##### 8.10.3.1.1 Open issues

Contributions on open issues listed in [R2-2201898](file:///C:\Data\3GPP\archive\RAN2\RAN2%23116bis\Tdocs\R2-2201898.zip). For some aspects the discussion will happen in Pre117 email discussion [102]. For the others, company contributions can be submitted.

Including report of [Pre117-e][102][NTN] Idle mode open issues (ZTE)

[R2-2203386](file:///C:\Data\3GPP\Extracts\R2-2203386_%5bPre117-e%5d%5b102%5d%5bNTN%5d%20Idle%20mode%20open%20issues%20(ZTE)_v25_Rapporteur.docx) Report of [Pre117-e][102][NTN] Idle mode open issues (ZTE) ZTE corporation,Sanechips discussion Rel-17 NR\_NTN\_solutions-Core Late

* Discussed in offline 102
* [AT117-e][102][NTN] Idle mode open issues (ZTE)

Initial scope: Discuss Idle open issues based on the report in [R2-2203386](file:///C:\Data\3GPP\Extracts\R2-2203386_%5bPre117-e%5d%5b102%5d%5bNTN%5d%20Idle%20mode%20open%20issues%20(ZTE)_v25_Rapporteur.docx)

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 2022-02-21 1700 UTC

Initial deadline (for rapporteur's summary in R2-2203533): Monday 2022-02-21 2000 UTC

Updated scope:

1. Continue the discussion on idle mode open issues
2. Update the 38.304 CR

Updated 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)
    - Updated 38.304 CR

Updated deadline (for companies' feedback): Thursday 2022-02-24 1400 UTC

Updated deadline (for rapporteur's summary in R2-2203543): Thursday 2022-02-24 1600 UTC

Deadline (for 38.304 CR in R2-2203548): Thursday 2022-03-03 1000 UTC

Updated scope:

1. Continue the discussion on idle mode open issues
2. Update the 38.304 CR

Updated 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)
    - Updated 38.304 CR

Updated deadline (for companies' feedback): Monday 2022-02-28 1600 UTC

Updated deadline (for rapporteur's summary in R2-2203566): Monday 2022-02-28 1800 UTC

Deadline (for 38.304 CR in R2-2203548): Thursday 2022-03-03 1000 UTC

Final scope:

1. Continue the discussion on FFS for signalling details for SMTC adjustments and remaining open issues marked "continue offline"
2. Update the 38.304 CR

Final intended outcome: Summary of the offline discussion with list of proposals and updated RRC CR

Deadline (for companies' feedback): Thursday 2022-03-03 0200 UTC

Deadline (for rapporteur's summary in R2-2204032): Thursday 2022-03-03 0400 UTC

Deadline (for 38.304 CR in R2-2203548): Thursday 2022-03-03 1000 UTC

[R2-2203533](file:///C:\Data\3GPP\Extracts\R2-2203533_%5bAT117-e%5d%5b102%5d%5bNTN%5d%20Idle%20mode%20open%20issues_v21_Summary.docx) [offline-102] Idle mode open issues ZTE corporation discussion Rel-17 NR\_NTN\_solutions-Core

Proposals for agreement:

Proposal 2: Satellite ephemeris based cell reselection is represented by time and location based cell reselection. No further enhancement in this release for ephemeris based cell reselection.

* Agreed

Proposal 4: No further enhancement on cell reselection priority in NTN. Remove the corresponding FFS from 38.304 CR.

* Agreed

Proposal 5: No need to provide the timing information about the new upcoming cell for either earth fixed scenario or earth moving scenario in Rel-17.

* Agreed

Proposal 8: No further enhancement on cell reselection procedure to support TN prioritization over NTN in Rel-17.

* QC wonders if we need to consider NTN prioritization over TN
* ZTE thinks we can agree the proposal as it is for now and discuss more about NTN prioritization over TN if needed
* Agreed

Proposals require further discussion:

Proposal 1: A threshold of the distance between UE and the cell reference location should be introduced and only neighbor cells with distance shorter than this threshold will be evaluated by UE during cell reselection.

* ZTE thinks the target cell would be selected using legacy criteria
* Oppo thinks this would not work for cell reselection among different constellations. VC thinks this might not be a realistic scenario in Rel-17
* Continue offline

[Revised] Proposal 3: Simultaneous configuration of location-based and time based reselection is not supported.

* HW thinks there is no problem with simultaneous configuration
* Samsung thinks there is, at least we need to have more specification effort, e.g. to specify the UE behaviour.
* Continue offline

[Revised] Proposal 6: In addition to the ephemeris information, to discusss whether assistance information is needed for UE-based SMTC adjustment in idle and inactive mode. If Yes, down select from the following options:

Option 1: feeder link delay of neighbor cells

Option 2: Common TA paramaters of neighbor cells

Option 3: SMTC offset or change rate of neighbor cells

Option 4: Reference time of the SMTC of neighbor cells

Option 5: Delay difference between the serving and neighbor cell

* RAN2 assumes that in addition to the ephemeris information, assistance information is needed for UE-based SMTC adjustment in idle and inactive mode. (FFS on the option to enable this)
* Continue offline to discuss the specific option

Proposal 7: No further enhancement on the SMTC broadcast for measurements in idle and inactive mode.

Proposal 9: No need to define a mechanism in RAN2 to prevent non-NTN capable UE from accessing an NTN cell in Rel-17 for NR-NTN.

* ZTE indicates this proposal is based on slight majority. One alternative is to go for the IoT-NTN approach
* Samsung thinks we should discuss the scenario first and whether this is an issue in Rel-17
* VC thinks it would be good to adopt a solution that avoids future compatibility issues
* WA: We follow a similar solution as in IoT-NTN for this (FFS on the details and whether this is always needed or not).
* Continue offline

[12/23] Proposal 10: No explicit indication to show whether a cell is earth fixed or earth moving.

* Continue offline

Proposal 11: No specific enhancement to provide the PCI of the incoming cell, can be provided as one element in the existing intraFreqWhiteCellList or interFreqWhiteCellList.

* Continue offline

Proposal 12: Broadcasting the list of orbital parameters and timing drift parameters of the neighbor satellites as delta to the orbital parameters of the serving satellite is not supported.

* Continue offline

Proposal 13: No need to provide the geographic tag associated with a set of cell reselection information or asscociation between the frequency and the neighbour satellite in Rel-17.

* Continue offline

Proposal 14: Adopt the text proposal in R2-2203725 to capture the location based cell reselection agreements in 38.304.

* Agreed

Agreements:

1. Satellite ephemeris based cell reselection is represented by time and location based cell reselection. No further enhancement in this release for ephemeris based cell reselection.
2. No further enhancement on cell reselection priority in NTN. Remove the corresponding FFS from 38.304 CR.
3. No need to provide the timing information about the new upcoming cell for either earth fixed scenario or earth moving scenario in Rel-17.
4. No further enhancement on cell reselection procedure to support TN prioritization over NTN in Rel-17.
5. RAN2 assumes that in addition to the ephemeris information, assistance information is needed for UE-based SMTC adjustment in idle and inactive mode. (FFS on the option to enable this)
6. Adopt the text proposal in R2-2203725 to capture the location based cell reselection agreements in 38.304.

Working Assumption:

1. To prevent non-NTN capable UE from accessing an NTN cell in Rel-17, for NR-NTN RAN2 follows a similar solution as in IoT-NTN (FFS on the details and whether this is always needed or not).

[R2-2203543](file:///C:\Data\3GPP\Extracts\R2-2203543_%5bAT117-e%5d%5b102%5d%5bNTN%5d%20Idle%20mode_2nd%20round_v26_Summary.docx) [offline-102] Idle mode open issues - second round ZTE corporation discussion Rel-17 NR\_NTN\_solutions-Core

Proposals for email agreement

[15/21] Proposal 1a: The introduction of a distance threshold for cell reselection would not impact the cell reselection priority determination in inter-frequency and inter-RAT cell reselection criteria.

* Agreed

[15/21] Proposal 2: UE applies both of the t-service and the distance threshold for measurements in idle and inactive mode if they are configured simultaneously.

* Samsung still does not understand on the need of proposal 2. As Nokia mentioned, simultaneous configuration of time- and location-based evaluation is excluded for CONNECTED mode this meeting (in CHO discussion). Then why we need different conclusion for idle mode?
* Continue offline

[17/21] Proposal 5: No need to indicate to UE whether a cell (serving cell and/or neighour cell) is earth moving or earth fixed.

* HW still wonders how the location-based CHO works. In fixed cell, the reference location is fixed, whereas in moving cell, UE needs to predict the trajectory of the reference location based on the ephemeris. If, according to P5, UE does not know whether the cell is fixed or moving, it can only assume the reference location is not changed, then how location-based CHO works in moving cell scenario?
* Intel thinks that first the UE can know whether one cell is earth fixed (GEO) or not by ephemeris data. Then if the reference location of one cell is broadcast, it is a quasi-earth fixed cell. Otherwise it’s moving cell.
* vivo wonders whether such a restriction to configuration (that quasi-earth fixed cell has to broadcast the reference point) needs to be specified in related field description in RRC.
* Continue offline

Agreements via email - from offline 102 - second round:

1. The introduction of a distance threshold for cell reselection would not impact the cell reselection priority determination in inter-frequency and inter-RAT cell reselection criteria.

[R2-2203566](file:///C:\Data\3GPP\Extracts\R2-2203566_%5bAT117-e%5d%5b102%5d%5bNTN%5d%20Idle%20mode_3rd%20round_v15_Rapporteur.docx) [offline-102] Idle mode open issues - third round ZTE corporation discussion Rel-17 NR\_NTN\_solutions-Core

Proposals for agreement

[8/13] Proposal 1a: Introduce a threshold for the distance between UE and the cell reference location to down scope the candidate cells for cell reselection .

* CATT thinks we should discuss online.
* Oppo challenges p1a and p1b
* Xiaomi would like to discuss p1c first
* ZTE (Rapporteur) suggests that P1a-1c are updated as follows:

Proposal 1rev: Down select from the following options on how to enhance the cell reselection procedure with distance between UE and the cell reference location considered:

Option 1:Introduce a distance threshold. Cell ranked on R-criterion first and then the distance threshold applies to down scope the candidate cells for reselection.

- Step 1: UE perform cell ranking based on the R-criterion.

- Step 2: Among the highest ranked N cells:

- For cells provided with reference location: only those whose distance to UE shorter than the distance threshold will be considered by UE as candidate cells.

- For cells not provided with reference location:

Alt.1: Not considered as candidate cell for reselection

Alt.2: Considered as candidate cell for reselection

- Step 3: Among all the candidate cells decided by on the distance threshold in step 2, UE reselect to the highest ranked cell based on R-criterion.

Option 2: Introduce a distance threshold. Distance threshold applies to decide the candidate cells and then rank the candidate cells based on R-criterion to decide the target cel for reselection.

- Step 1:

- For cells provided with reference location: UE evaluate the distance to neighbor cell reference location and only consider cells whose distance to UE are shorter than the threshold to be candidate cells for cell ranking

- For cells not provided with reference location:

Alt.1: Not considered as candidate cell for reselection

Alt.2: Considered as candidate cell for reselection

- Step 2: UE perform cell ranking on candidate cells decided in step 1 according to R-criterion.

- Step 3: UE reselect to the highest ranked cell.

Option 3: Cell ranked on R-criterion first and then the distance criteria applies to decide the target cell for reselection.

- Step 1: UE perform cell ranking based on the R-criterion.

- Step 2: Among the highest ranked N cells:

- For cells provided with reference location, UE reselect to the cell with the smallest distance to the cell’s reference location.

- For cells not provided with reference location, UE reselect to the highest ranked cell based on R-criterion.

* Continue online (in final CB session on Thursday)

[10/11] Proposal 1b: For the case when the distance threshold is broadcast but UE is unable to evaluate the distance to the reference location, e.g. due to no available UE location at its own side, UE does not estimate the distance to neighbour cells and the legacy behaviour applies.

* Continue online (in final CB session on Thursday)

[8/12] Proposal 3: Introduce SMTC offset and change rate in system information to assist UE -based SMTC adjustment in idle and inactive mode.

* Mediatek thinks that only SMTC Offset is enough and change-rate is not needed. After all this is Idle Mode applying positive or negative change rate depending on whether the satellite is coming towards the UE or moving away from the UE will incur an additional overhead for the UE.
* Samsung suggests to clarify the SMTC offset is used by UE to compensate feeder link delay difference and the change rate if provided is used by UE to track the feeder link delay change. Since the SMTC offset for UE in idle mode is different from that in connected mode.
* Intel thinks p3 means all idle/inactive UE shares the common parameters for SMTC adjustment. But these should be per-UE parameters, so can’t be broadcast as common parameters.
* ZTE (Rapporteur) suggests to update as follows:

Proposal 3rev: Downselect from the following options on introduction of the assistance information in system information for UE-based SMTC adjustment in idle and inactive mode:

Option 1:SMTC offset to compensate the feederlink delay diference

Option 2: change rate to track the feederlink linl delay change

Option 3: both SMTC offset and the change rate

* Continue online
* QC agrees and thinks the intention is not to provide UE specific information. SMTC offset means providing feeder link delay
* HW wonders what the feeder link delay difference is. Among with cells? Will there be multiple values for different cells?
* SMTC offset and change rate is needed to assist UE-based SMTC adjustment in idle and inactive mode (FFS on the signalling details, e.g. whether to broadcast feeder link delay difference or something different)

[7/11] Proposal 4: Confirm the working assumption that new bit, e.g. cellBarred-NTN, is introduced in SIB1 for NR-NTN.

* Samsung thinks it’s not clear what the new bit is about? We’re ok if P4 actually means: i) legacy barring bit is used to bar TN UEs (including legacy and Rel-17 TN UEs) from accessing an NTN cell, ii) no barring mechanism to bar NTN UEs from accessing TN cell, and iii) a new bit is introduced to bar NTN UEs from accessing NTN cells.
* CATT agrees that we need make the intention of the new bit clearer, even we may have had a common understanding that: iii) a new bit is introduced to bar NTN UEs from accessing NTN cells. And as we have always suggested that, if we defined this new bit, it should be optional to avoid unnecessary signaling overhead, so we suggest the following modification: "Confirm the working assumption that new bit, e.g. cellBarred-NTN, is introduced in SIB1 for NR-NTN. FFS on the condition of present" or "Confirm the working assumption that new bit, e.g. cellBarred-NTN, is introduced in SIB1 for NR-NTN. This new bit is absent for NTN-specific frequency/cell."
* QC is still not convinced on the need of a new bit in SIB1. For NR, existing barring mechanism is via MIB. Even receiving SSBs, a UE can figure out barring status of the cell. Solution could be using existing barring bit in MIB in combination with some other parameter in MIB to bar NTN UEs. Of course, existing barring bit in MIB is for TN UEs as today. Then if everybody wants to go with SIB1 solutions (i.e., which means NTN UE has to read SIB1 to figure out barring status), then better solution is to use already existing mechanism which can bar the UEs. There is nothing new needs to be done, if the UE is forced to read SIB1.
* ZTE (Rapporteur) suggests to update p4 to further clarify how this new bit is used:

Proposal 4rev: Confirm the working assumption that new bit, e.g. cellBarred-NTN, is introduced in SIB1 for NR-NTN:

cellBarred-NTN="barred": The serving cell is barred to NTN UEs.

cellBarred-NTN="not barred" while cellBarred="barred": The serving cell is barred to non-NTN UEs but not barred to NTN UEs.

* Continue online
* QC agrees something is needed but wonders if this the right way. Wonders what the problem is with the implicit way.
* Nokia is confused about the second part.
* Continue offline

[9/12] Proposal 5: There is no need to indicate to UE whether a cell (serving cell and/or neighour cell) is earth moving or quasi-earth fixed.

* HW wonders if Is it acceptable to add “in Idle/Inactive mode” to the proposal
* Continue online
* Agreed as "There is no need to indicate to UE in idle/inactive mode whether a cell (serving cell and/or neighbour cell) is earth moving or quasi-earth fixed."

[10/12] Proposal 6: The validity timer information for neighbour cell’s ephemeris information should be introduced in system information and it can be the same as or different from the validity timer of the serving cell.

* Agreed

[7/11] Proposal 7: Support delta configuration of neighbour cell ephemeris information based on the ephemeris information of the serving cell.

* Mediatek thinks this is an unnecessary optimization
* Oppo does not know whether this is feasible or not and suggests to wait for RAN1.
* Continue online
* Re-discuss this after RAN1 feedback.

Proposals for online discussion

[7/13] Proposal 1c: For the case distance threshold and the reference location for neighbour cell(s) are broadcast and UE is able to evaluate the distance to the reference location to compare it with the threshold, the distance threshold applies to decide the candidate cells and then UE rank the candidate cells based on R-criterion:

n Step 1: For cells provided with reference location: UE evaluate the distance to neighbour cell reference location and only consider cells whose distance to UE are shorter than the threshold to be candidate cells for cell ranking. Cells not provided with reference location will also be considered as candidate cell for reselection.

n Step 2: UE perform cell ranking on candidate cells decided in step 1 according to R-criterion.

n Step 3: UE reselect to the highest ranked cell.

* Samsung thinks we should consider the other options as well. Oppo agrees
* Continue online (in final CB session on Thursday)

[7/13] Proposal 2: It is up to NW implementation to broadcast t-service or the distance threshold for measurement or both and UE applies both of the t-service and the distance threshold for measurements in idle and inactive mode if they are configured simultaneously.

* Continue offline

Agreements via email - from offline 102 - third round:

1. The validity timer information for neighbour cell’s ephemeris information should be introduced in system information and it can be the same as or different from the validity timer of the serving cell.

Agreements online:

1. SMTC offset and change rate is needed to assist UE-based SMTC adjustment in idle and inactive mode (FFS on the signalling details, e.g. whether to broadcast feeder link delay difference or something different)
2. There is no need to indicate to UE in idle/inactive mode whether a cell (serving cell and/or neighbour cell) is earth moving or quasi-earth fixed.

R2-2204032 [offline-102] Idle mode open issues - final round ZTE corporation discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2202235](file:///C:\Data\3GPP\Extracts\R2-2202235_UE%20location%20during%20initial%20access_v04.doc) WF for UE location during initial access in NTN THALES, Leonardo, Avanti, ESA, Sateliot, Omnispace, Novamint, Hispasat, Gatehouse, Hughes network systems, Inmarsat, Viasat, CTTC, Intelsat, Kepler, Ligado, Magister solutions, SES, Airbus discussion Rel-17 NR\_NTN\_solutions

* Revised in R2-2203569

[R2-2203569](file:///C:\Data\3GPP\Extracts\R2-2203569_UE%20location%20during%20initial%20access_v06.doc) WF for UE location during initial access in NTN THALES, Leonardo, Avanti, ESA, Sateliot, Omnispace, Novamint, Hispasat, Gatehouse, Hughes network systems, Inmarsat, Viasat, CTTC, Intelsat, Kepler, Ligado, Magister solutions, SES, Airbus discussion Rel-17 NR\_NTN\_solutions

Observation 1: A solution at RAN level is needed enabling NG-RAN to determine in which country the UE is located in order to select the appropriate AMF to prevent unacceptable delay for the connection set-up especially for NTN with large radio cells that may cover several countries.

Proposal 1 UE to report its coarse GNSS coordinates immediately after AS security/connected mode is established.

* Thales clarifies that the proposal is to send the coarse UE location information.
* Apple thinks we still need user consent and the UE location info from the UE cannot be trusted. Mediatek agrees
* QC thinks the user consent in sending the coarse UE location could be implicit
* RAN2 reconfirms that, in connected mode, UE location information can be sent to the NG-RAN. FFS if full UE location information based on user consent or coarse UE location information.
* Discuss in offline 115 whether, in connected mode, coarse UE location info can be sent without user consent

Proposal 2: Define the exact format of the UE coarse location information (FFS on the details, e.g. X MSB bits out of 24 bits of longitude/latitude or GNSS coordinates with ~2km accuracy)

Proposal 3: Specify that reporting of UE coarse GNSS coordinates can be enabled/disabled by the operator by RRC dedicated configuration on a per-UE basis.

Proposal 4: Inform SA2/SA3 to take into account the above and consider appropriate actions if needed as part of release 18 (e.g. protection mechanism before AS security is activated)

Agreements:

1. RAN2 reconfirms that, in connected mode, UE location information can be sent to the NG-RAN. FFS if full UE location information based on user consent or coarse UE location information.

* [AT117-e][115][NTN] UE location in connected mode (Thales)

Scope: Discuss offline whether, in connected mode, coarse UE location info can be sent without user consent

Intended outcome: Summary of the offline discussion

Deadline (for companies' feedback): Wednesday 2022-03-02 2000 UTC

Deadline (for rapporteur's summary in R2-2203570): Wednesday 2022-03-02 2100 UTC

R2-2203570 [offline-115]UE location in connected mode Thales discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2202422](file:///C:\Data\3GPP\Extracts\R2-2202422%20Discussion%20on%20SIB%20X%20acquiring%20procedure.doc) Discussion on the SIBX acquiring procedure Spreadtrum Communications discussion Rel-17

[R2-2202423](file:///C:\Data\3GPP\Extracts\R2-2202423%20Acquiring%20the%20ephemeris%20of%20neighbour%20cell.doc) Acquiring the ephemeris of neighbour cell Spreadtrum Communications discussion Rel-17

[R2-2202466](file:///C:\Data\3GPP\Extracts\R2-2202466%20Remaining%20Rel-17%20NTN%20open%20issues%20for%20IDLE%20mode.docx) Remaining Rel-17 NTN open issues for IDLE mode Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2202548](file:///C:\Data\3GPP\Extracts\R2-2202548%20NTN-TN%20idle%20mode%20mobility.docx) NTN-TN idle mode mobility Apple discussion Rel-17 NR\_NTN\_solutions-Core [R2-2201179](file:///C:\Data\3GPP\Extracts\R2-2201179%20NTN-TN%20idle%20mode%20mobility.docx)

[R2-2203049](file:///C:\Data\3GPP\Extracts\R2-2203049.docx) Measurements and cell reselection Samsung Research America discussion

Withdrawn

R2-2202394 On reporting of UE location information ZTE corporation, Sanechips discussion Rel-17 NR\_NTN\_solutions-Core Withdrawn

##### 8.10.3.1.2 Other

Contributions on any other issues.

[R2-2202566](file:///C:\Data\3GPP\Extracts\R2-2202566%20Idle%20mode.docx) Assistance information for IDLE mode measurements Qualcomm Incorporated discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2202586](file:///C:\Data\3GPP\Extracts\R2-2202586%20Epoch%20time%20and%20validity%20time%20for%20neighbour%20satellite%20ephemeris.docx) Epoch time and validity time for neighbour satellite ephemeris Lenovo, Motorola Mobility discussion Rel-17

[R2-2202774](file:///C:\Data\3GPP\Extracts\R2-2202774%20Remaining%20issues%20on%20location-based%20cell%20reselection.docx) Remaining issues on location-based cell reselection vivo discussion

[R2-2203004](file:///C:\Data\3GPP\Extracts\R2-2203004%20-%20Discussion%20on%20measurement%20rules%20for%20cell%20re-selection%20in%20NTN.doc) Discussion on measurement rules for cell re-selection in NTN OPPO discussion Rel-17 NR\_NTN\_solutions-Core

* revised in [R2-2203725](file:///C:\Data\3GPP\RAN2\Inbox\R2-2203725.zip)

[R2-2203725](file:///C:\Data\3GPP\RAN2\Inbox\R2-2203725.zip) Discussion on measurement rules for cell re-selection in NTN OPPO discussion Rel-17 NR\_NTN\_solutions-Core

#### 8.10.3.2 RRC aspects

##### 8.10.3.2.1 Open issues

Contributions on open issues listed in [R2-2201896](file:///C:\Data\3GPP\archive\RAN2\RAN2%23116bis\Tdocs\R2-2201896.zip). For some aspects the discussion will happen in Pre117 email discussion [101]. For the others, company contributions can be submitted.

Including report of [Pre117-e][101][NTN] RRC open issues (Ericsson))

[R2-2203154](file:///C:\Data\3GPP\Extracts\R2-2203154%20Report%20NTN%20open%20issues%20RRC_Rapp.docx) [Pre117-e][NTN][101] RRC open issues Ericsson report NR\_NTN\_enh-Core Late

* Discussed in offline 101
* [AT117-e][101][NTN] RRC open issues (Ericsson)

Initial scope: Discuss RRC open issues based on the report in [R2-2203154](file:///C:\Data\3GPP\Extracts\R2-2203154%20Report%20NTN%20open%20issues%20RRC_Rapp.docx)

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 2022-02-21 1700 UTC

Initial deadline (for rapporteur's summary in R2-2203534): Monday 2022-02-21 2000 UTC

Updated scope:

1. Continue the discussion on RRC open issues
2. Update the RRC CR

Updated 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)
    - Updated RRC CR

Updated deadline (for companies' feedback): Thursday 2022-02-24 1600 UTC

Updated deadline (for rapporteur's summary in R2-2203544): Thursday 2022-02-24 1800 UTC

Deadline (for RRC CR in R2-2203549): Thursday 2022-03-03 1000 UTC

Updated scope:

1. Continue the discussion on remaining RRC open issues and FFS
2. Update the RRC CR

Updated 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)
    - Updated RRC CR

Updated deadline (for companies' feedback): Monday 2022-02-28 1600 UTC

Updated deadline (for rapporteur's summary in R2-2203565): Monday 2022-02-28 1800 UTC

Deadline (for RRC CR in R2-2203549): Thursday 2022-03-03 1000 UTC

Final scope:

1. Continue the discussion on remaining RRC open issues and FFS (including those from UP discussion - offline 103)
2. Update the RRC CR

Final intended outcome: Summary of the offline discussion with list of proposals and updated RRC CR

Deadline (for companies' feedback): Wednesday 2022-03-02 2000 UTC

Deadline (for rapporteur's summary in R2-2204031): Thursday 2022-03-03 0500 UTC

Deadline (for RRC CR in R2-2203549): Thursday 2022-03-03 1000 UTC

[R2-2203534](file:///C:\Data\3GPP\Extracts\R2-2203534%20%5bAT117-e%5d%5b101%5d%5bNTN%5d%20RRC%20open%20issues%20(Ericsson)_Conclusions.docx) [offline-101] RRC open issues Ericsson discussion Rel-17 NR\_NTN\_solutions-Core

List of proposals for agreement

Proposal 1 use CommonLocationInfo from 38.331 for NTN location reporting

* Agreed

Proposal 2 The ellipsoid-Point IE specified in TS 36.331, TS 37.355 (and TS 23.032) is reused for definitions of reference locations in NR NTN. FFS if ellipsoidPointWithAltitude-r10

* Agreed

Proposal 3 RAN2 to agree for value range for parameter distanceThresFromReferencex-r17 “Option 2 X bits to cover (0, z km) with linear granularity”.

* Agreed

Proposal 4 RAN2 to adopt for HysteresisLocation-r17 ”INTEGER (0..32768)” with a granularity of 10 meters, i.e. the actual value is the field value \* 10 meters.

* Agreed

Proposal 6a Configure a parameter OffsetThresholdTA in IE MAC-CellGroupConfig. FFS name of parameter

* Agreed

Proposal 8 RAN2 to adopt as values for sr-ProhibitTimerExt-r17: {ms192, ms256, ms320, ms384, ms448, ms512, ms576, ms640}. FFS to add 2xRTT, 2x542 ms.

* Agreed

Proposal 9 RRC processing delay is not impacted

* Agreed

Proposal 10 the HARQ-feedbackEnablingforSPSactive-r17 is per BWP.

* Agreed

Proposal 11 RAN2 should wait RAN1 response before progressing on discussing SIB1 NTN specific content.

* Agreed

Proposal 12 Current SIBxx serving cell content can be adopted as baseline and RAN2 should wait RAN1 response before progressing on discussing further SIBxx NTN specific content.

* Agreed as "Current SIBxx serving cell content can be adopted as baseline and RAN2 should wait RAN1 response before progressing on discussing further SIBxx NTN specific content"

Proposal 13 The following information to be broadcasted about neighbor cells:

- Neighbour cell Ephemeris information.

- Validity timer information for neighbour cell’s ephemeris information.

- reference location information of neighbour cells

FFS any other information

* Mediatek thinks this is related to p12. Ericsson thinks p12 is about SIBxx only, some information can go in other SIBs
* HW wonders about the validity timer: is this the same as for the serving cell or a different one? Nokia, Apple have the same question
* At least neighbour cell Ephemeris information shall be broadcast. FFS on other information about neighbour cells
* Continue in offline 102. Also discuss in which SI the information is sent

Proposal 15 ntnUlSyncValidityDuration applies only to connected mode or also to idle mode.

* Nokia thinks "or" should be replaced by "and"
* Agreed as "ntnUlSyncValidityDuration applies both to connected mode and idle mode"

Agreements:

1. use CommonLocationInfo from 38.331 for NTN location reporting
2. The ellipsoid-Point IE specified in TS 36.331, TS 37.355 (and TS 23.032) is reused for definitions of reference locations in NR NTN. FFS if ellipsoidPointWithAltitude-r10
3. RAN2 to agree for value range for parameter distanceThresFromReferencex-r17 “Option 2 X bits to cover (0, z km) with linear granularity”.
4. RAN2 to adopt for HysteresisLocation-r17 ”INTEGER (0..32768)” with a granularity of 10 meters, i.e. the actual value is the field value \* 10 meters.
5. Configure a parameter OffsetThresholdTA in IE MAC-CellGroupConfig. FFS name of parameter
6. RAN2 to adopt as values for sr-ProhibitTimerExt-r17: {ms192, ms256, ms320, ms384, ms448, ms512, ms576, ms640}. FFS to add 2xRTT, 2x542 ms.
7. RRC processing delay is not impacted
8. The HARQ-feedbackEnablingforSPSactive-r17 is per BWP.
9. RAN2 should wait RAN1 response before progressing on discussing SIB1 NTN specific content.
10. Current SIBxx serving cell content can be adopted as baseline and RAN2 should wait RAN1 response before progressing on discussing further SIBxx NTN specific content.
11. At least neighbour cell Ephemeris information shall be broadcast. FFS on other information about neighbour cells
12. ntnUlSyncValidityDuration applies both to connected mode and idle mode

List of proposals that require online discussions

Proposal 5 Agree the following for entering and leaving conditions:

Inequality D1-1 (Entering condition 1)

Ml1-Hys>Thresh1

Option 2

1> consider the leaving condition for this event to be satisfied when condition D2-1 or D2-2 is fulfilled;

Inequality D2-1 (Leaving condition 1)

Ml1+Hys<Thresh1

Inequality D2-2 (Leaving condition 2)

Ml2-Hys>Thresh2

* Oppo thinks one condition is missing. Ericsson clarifies this is showing just the change with respect to the existing spec
* Continue offline

Proposal 6b RAN2 to discuss range for a parameter OffsetThresholdTA

Option 1 Follow K\_offset defined by RAN1 is “0 ...1023 ms”

Option 2 Include values smaller than 1ms

Option 3 Largest value should not be larger than 16 ms

* Continue offline

Proposal 7 RAN2 to discuss further about options

Option 1 DiscardTimerExt2 should have value 2000ms and 2-3 spare values

Option 2 DiscardTimerExt2 should have values 2000 2500 3000 3500 4000 4500 spare2 spare1

Option 3 DiscardTimerExt2 should have values 2000, 2400, 2800, 3200, 3600,4000, 4400, spare2, spare1

* Continue offline (also on other proposals in [R2-2203481](file:///C:\Data\3GPP\Extracts\R2-2203481%20-%20Remaining%20issues%20for%20RLC%20and%20PDCP%20in%20NTNs.docx))

Proposal 14 RAN2 to agree to capture the following:

For SIBxx field description for ephemeris and common TA:

“This field is excluded when determining changes in system information, i.e. changes of XXX should neither result in system information change notifications nor in a modification of valueTag in SIB1.”

* Continue offline

[R2-2203544](file:///C:\Data\3GPP\Extracts\R2-2203544%20Report%20of%20%5bAT117-e%5d%5b101%5d%5bNTN%5d%20RRC%20open%20issues%20(Ericsson)_phase2.docx) [offline-101] RRC open issues - second round Ericsson discussion Rel-17 NR\_NTN\_solutions-Core

Proposal 2 The ellipsoid-Point IE specified in TS 36.331, TS 37.355 (and TS 23.032) is reused for definitions of reference locations in NR NTN.

* Agreed

Proposal 5 Agree the following for entering and leaving conditions:

Inequality D1-1 (Entering condition 1)

Ml1-Hys>Thresh1

Inequality D1-2 (Entering condition 2)

Ml2+Hys>Thresh2

Option 2

1> consider the leaving condition for this event to be satisfied when condition D1-3 or D1-4 is fulfilled;

Inequality D1-3 (Leaving condition 1)

Ml1+Hys<Thresh1

Inequality D1-4 (Leaving condition 2)

Ml2-Hys>Thresh2

* Agreed

Proposal 6 Largest value for OffsetThresholdTA should not be larger than 16 ms FFS Include values smaller than 1ms

* Agreed

Proposal 7 RAN2 to agree DiscardTimerExt2 has value 2000ms and 2-3 spare values

* Agreed

Proposal 8 1. RAN2 to adopt as values for sr-ProhibitTimerExt-r17: {ms192, ms256, ms320, ms384, ms448, ms512, ms576, ms640, ms1082}.

* Agreed

Proposal 9 Introduce the RLC t-ReassemblyExt field with values {ms210, ms220, ms340, ms350, ms550, ms1100, ms1650, ms2200}.

* Agreed

Proposal X Introduce an OPTIONAL field configuredGrantTimer-r17 with 8 bits representing values 66, 68, …, 574, 576.

* Agreed

Proposal XX Add “The network does not configure the configuredGrantTimer-r17 simultaneously with configuredGrantTimer (without suffix).” to the field description of configuredGrantTimer.

* Agreed

Proposal 11 RAN2 to agree to capture the following:

For SIBxx field description for ephemeris and common TA:

“This field is excluded when determining changes in system information, i.e. changes of XXX should neither result in system information change notifications nor in a modification of valueTag in SIB1.”

* Agreed

List of proposals that require online discussions

Proposal 3 RAN2 to discuss values X and Z for parameter distanceThresFromReferencex-r17 expressed as X bits to cover (0, z km) with linear granularity

* Continue offline

List of proposals not pursued

Proposal 10 Introduce the new PDCP t-Reordering values 3500 4000 4500 5000 5500 6000 6500 7000 7500 8000 8500 9000 using some of the spare values.

* Not pursued

Agreements via email - from offline 101 - second round:

1. The ellipsoid-Point IE specified in TS 36.331, TS 37.355 (and TS 23.032) is reused for definitions of reference locations in NR NTN.
2. The following for entering and leaving conditions are agreed:

Inequality D1-1 (Entering condition 1)

Ml1-Hys>Thresh1

Inequality D1-2 (Entering condition 2)

Ml2+Hys>Thresh2

1> consider the leaving condition for this event to be satisfied when condition D1-3 or D1-4 is fulfilled;

Inequality D1-3 (Leaving condition 1)

Ml1+Hys<Thresh1

Inequality D1-4 (Leaving condition 2)

Ml2-Hys>Thresh2

1. Largest value for OffsetThresholdTA should not be larger than 16 ms. FFS Include values smaller than 1ms
2. DiscardTimerExt2 has value 2000ms and 2-3 spare values
3. Values for sr-ProhibitTimerExt-r17: {ms192, ms256, ms320, ms384, ms448, ms512, ms576, ms640, ms1082}.
4. Introduce the RLC t-ReassemblyExt field with values {ms210, ms220, ms340, ms350, ms550, ms1100, ms1650, ms2200}.

7. Introduce an OPTIONAL field configuredGrantTimer-r17 with 8 bits representing values 66, 68, …, 574, 576.

8. Add “The network does not configure the configuredGrantTimer-r17 simultaneously with configuredGrantTimer (without suffix).” to the field description of configuredGrantTimer.

9. Capture the following: For SIBxx field description for ephemeris and common TA:

“This field is excluded when determining changes in system information, i.e. changes of XXX should neither result in system information change notifications nor in a modification of valueTag in SIB1.”

[R2-2203565](file:///C:\Data\3GPP\Extracts\R2-2203565%20%5bAT117-e%5d%5b101%5d%5bNTN%5d%20RRC%20open%20issues%20(Ericsson)_phase3_conclusions.docx) [offline-101] RRC open issues - third round Ericsson discussion Rel-17 NR\_NTN\_solutions-Core

List of proposals for agreement

Proposal 1 remove FFS from field description condExecutionCond and revise the added sentence as below.

If network configures condEventD1 or condEventT1 for a candidate cell network shall configure a second triggering event condEventA3, condEventA4 or condEventA5.

* Agreed

Proposal 2 Z = 3000 km, X = 16 bits if integer with linear granularity

* Agreed

Proposal 3 Range for OffsetThresholdTA is 0.5ms to 15ms

* Agreed, adding spare bits

New open item:

For the agreement “The ntnUlSyncValidityDuration applies to the whole SIBX”, one issue is that: since the start time of ntnUlSyncValidityDuration is indicated by epochTime, does it means that epochTime is also applied to the whole SIBX? In current running CR, in the field description of epochTime, it says that “ Indicate the epoch time for assistance information (i.e. Serving satellite ephemeris in IE ephemerisInfo and Common TA parameters)”, i.e. epochTime applies to only ephemerisInfo and Common TA. Then the question is what is the epoch time of other parameters?

* QC is not sure there is an issue here.
* Continue offline

Agreements via email - from offline 101 - third round:

1. remove FFS from field description condExecutionCond and revise the added sentence as: "If network configures condEventD1 or condEventT1 for a candidate cell network shall configure a second triggering event condEventA3, condEventA4 or condEventA5."
2. Z = 3000 km, X = 16 bits if integer with linear granularity
3. Range for OffsetThresholdTA is 0.5ms to 15ms, with spare bits

R2-2204031 [offline-101] RRC open issues - final round Ericsson discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2202467](file:///C:\Data\3GPP\Extracts\R2-2202467%20Remaining%20Rel-17%20NTN%20open%20issues%20for%20CONNECTED%20mode.docx) Remaining Rel-17 NTN open issues for CONNECTED mode Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_NTN\_solutions-Core

* [AT117-e][108][NTN] CHO open issues (Nokia)

Initial scope: Discuss open issues for CHO based on company contributions in AI 8.10.3.2.1

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): Tuesday 2022-02-22 0800 UTC

Initial deadline (for rapporteur's summary in R2-2203536): Tuesday 2022-02-22 1000 UTC

Updated scope: Continue the discussion on CHO open issues

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): Thursday 2022-02-24 1600 UTC

Initial deadline (for rapporteur's summary in R2-2203545): Thursday 2022-02-24 1800 UTC

Proposals marked "for agreement" in R2-2203545 not challenged until Friday 2022-02-25 1000 UTC will be declared as agreed via email by the session chair (for the rest the discussion will continue offline).

[R2-2203536](file:///C:\Data\3GPP\Extracts\R2-2203536_Report%20from%20%5b108%5d%5bNTN%5d%20CHO%20open%20issues%20(Nokia)_summary.docx) [offline-108] CHO open issues Nokia discussion Rel-17 NR\_NTN\_solutions-Core

Proposals for agreement:

Proposal 1: Joint time-based and location-based CHO execution triggering for the same candidate cell is not supported in Rel-17 NTN.

* Agreed

Proposal 2: If the CHO is not executed at T2 (timer associated with this candidate CHO cell) the UE continues to operate in the source cell and evaluates other CHO execution conditions (if configured).

* Agreed

Proposal 5: It is up to UE implementation how the UE evaluates the time- or location-based condition jointly with the RRM event Ax as long as the UE has RRM measurement results within the time window [T1, T2] or when the location condition is met.

* Oppo thinks it's not clear what is up to UE implementation. Nokia thinks the time when the UE evaluates is up to UE implementation.
* HW thinks we can reword as "how the UE evaluates the RRM condition is independent on whether the time or location-based condition is met". Oppo is not sure.
* Continue offline

Proposal 6: T2 timer is defined as an INTEGER (1..6000), where each step represents 100 ms. Its maximum value corresponds to 10 minutes (600 seconds).

* QC thinks this should be aligned to the cell stop time, is 10 min max sufficient?
* Agreed as a WA. FFS whether the maximum value needs to be aligned to the cell stop time
* Continue online (on the FFS part)

Proposal 7: The maximum number of MeasIDs to be used for CHO execution triggering in NTN is not increased from 2 to 3.

* Continue offline

Agreements:

1. Joint time-based and location-based CHO execution triggering for the same candidate cell is not supported in Rel-17 NTN.
2. If the CHO is not executed at T2 (timer associated with this candidate CHO cell) the UE continues to operate in the source cell and evaluates other CHO execution conditions (if configured).

Working assumption:

1. T2 timer is defined as an INTEGER (1..6000), where each step represents 100 ms. Its maximum value corresponds to 10 minutes (600 seconds). FFS whether the maximum value needs to be aligned to the cell stop time

Proposals for discussion:

Proposal 3: Discuss further what happens with the CHO configuration after T2 expiry:

a) UE releases the configuration

b) UE maintains the configuration for potential failure recovery.

Proposal 4: CHO Recovery is supported in Rel-17 NTN. FFS if the CHO configuration can be used only before T2 expiry.

[R2-2203545](file:///C:\Data\3GPP\Extracts\R2-2203545_Report%20from%20%5b108%5d%5bNTN%5d%20CHO%20open%20issues%20(Nokia)_second_round_summary.docx) [offline-108] CHO open issues - second round Nokia discussion Rel-17 NR\_NTN\_solutions-Core

Proposals for agreement:

Proposal 5-1: The maximum supported value for timer T2 is 10 minutes (600 seconds).

* Agreed

Proposal 5-2: It is up to UE implementation how the UE evaluates the time- or location-based condition jointly with the RRM event Ax, as long as the UE has RRM measurement results within the time window [T1, T2] or when the location condition is met.

* Agreed

Proposal 5-3: The maximum number of MeasIDs to be used for CHO execution triggering in NTN is not increased from 2 to 3.

Proposals for discussion:

* Agreed

Proposal 5-5: Discuss further what happens with the CHO configuration after T2 expiry (i.e. UE releases the configuration or maintains the configuration for potential failure recovery). Discuss if the UE can use also the CHO configuration for which T2 has expired.

* Continue online (in week2 CB session)
* VC suggests to attempt the following proposal: "The UE can also use the CHO configuration for which T2 has expired, e.g. when the CHO execution was triggered before T2 and subsequent CHO Recovery is done after T2"
* Nokia thinks this is aligned to legacy behaviour.
* Come back online in the final CB session on Thursday

Agreements via email - from offline 108:

1. The maximum supported value for timer T2 is 10 minutes (600 seconds).
2. It is up to UE implementation how the UE evaluates the time- or location-based condition jointly with the RRM event Ax, as long as the UE has RRM measurement results within the time window [T1, T2] or when the location condition is met.
3. The maximum number of MeasIDs to be used for CHO execution triggering in NTN is not increased from 2 to 3.

[R2-2202424](file:///C:\Data\3GPP\Extracts\R2-2202424%20Discussion%20on%20SIB%20X.doc) Discussion on SIB X Spreadtrum Communications discussion Rel-17

[R2-2202565](file:///C:\Data\3GPP\Extracts\R2-2202565%20CHO%20open%20issues.doc) Open issues in CHO Qualcomm Incorporated discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2202587](file:///C:\Data\3GPP\Extracts\R2-2202587%20Consideration%20on%20open%20issues%20for%20CHO%20v1.0.doc) Consideration on open issues for CHO Lenovo, Motorola Mobility discussion Rel-17

[R2-2202775](file:///C:\Data\3GPP\Extracts\R2-2202775%20Open%20issues%20on%20CHO%20for%20R17%20NR%20NTN.docx) Open issues on CHO for R17 NR NTN vivo discussion

[R2-2202886](file:///C:\Data\3GPP\Extracts\R2-2202886%20Remaining%20issues%20on%20CHO.doc) Remaining issues on CHO Huawei, HiSilicon discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2203005](file:///C:\Data\3GPP\Extracts\R2-2203005%20-%20%20Discussion%20on%20the%20RRC%20open%20issues%20in%20NTN.doc) Discussion on the RRC open issues in NTN OPPO discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2203051](file:///C:\Data\3GPP\Extracts\R2-2203051%20Remaining%20NTN%20CHO%20issues.DOC) Remaining NTN CHO issues LG Electronics France discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2203067](file:///C:\Data\3GPP\Extracts\R2-2203067%20Discussion%20on%20RRC%20open%20issues%20for%20NTN.docx) Discussion on RRC open issues for NTN Xiaomi Communications discussion

[R2-2203077](file:///C:\Data\3GPP\Extracts\R2-2203077%20Further%20Discussion%20on%20the%20Open%20Issues%20of%20CHO.docx) Further Discussion on the Open Issues of CHO CATT discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2203153](file:///C:\Data\3GPP\Extracts\R2-2203153%20Connected%20mode%20aspects%20for%20NTN.docx) Remaining connected mode aspects for NTN Ericsson discussion

[R2-2203236](file:///C:\Data\3GPP\Extracts\R2-2203236_%20%20Remaining%20open%20issues%20of%20CHO.docx) Remaining open issues of CHO NEC Telecom MODUS Ltd. discussion

[R2-2203301](file:///C:\Data\3GPP\Extracts\R2-2203301%208.10.3.2.1%20RRC%20aspects.docx) Open issues on RRC aspects Samsung Research America discussion NR\_NTN\_solutions-Core

[R2-2203422](file:///C:\Data\3GPP\Extracts\R2-2203422%20(R17%20NTN%20WI%20AI%208.10.3.2.1)%20RRC%20Open%20issues.docx) Remaining RRC open issues in NTN InterDigital discussion Rel-17 NR\_NTN\_solutions-Core

##### 8.10.3.2.2 Other

Contributions on any other issues.

[R2-2202455](file:///C:\Data\3GPP\Extracts\R2-2202455%20Discussion%20on%20NR%20NTN%20measurement%20gaps.docx) Discussion on NR NTN measurement gaps Intel Corporation discussion Rel-17 NR\_NTN\_solutions-Core

Observation 1: there is restriction in MGE WI that one frequency layer can be associated with only one of the concurrent gaps when introducing multiple measurement gaps.

Observation 2: RAN4 confirms that one UE can support at most 2 per-UE measurement gaps, or at most 2 measurement gaps for each FR.

Proposal 1: In NR NTN, RAN2 confirms the support of at most 2 per-UE measurement gaps or at most 2 per-FR measurement gaps (which is aligned to RAN4’s input in their LS R2-2200126).

Proposal 2: If proposal 1 is agreed, for NR NTN those two measurement gaps need to be associated with one frequency layer.

Proposal 3: it’s up to network implementation to guarantee that the measurement gaps can cover all SMTCs configured for one frequency layer in gap-assisted scenarios.

* [AT117-e][116][NTN] Measurement gaps (Intel)

Scope: Discuss measurement gaps for NTN based on e.g. [R2-2202455](file:///C:\Data\3GPP\Extracts\R2-2202455%20Discussion%20on%20NR%20NTN%20measurement%20gaps.docx)

Intended outcome: Summary of the offline discussion

Deadline (for companies' feedback): Thursday 2022-03-03 0200 UTC

Deadline (for rapporteur's summary in R2-2204033): Thursday 2022-03-03 0400 UTC

R2-2204033 [offline-116] Measurement gaps Intel discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2202564](file:///C:\Data\3GPP\Extracts\R2-2202564%20SMTC%20and%20MG.doc) SMTC and MG configuration Qualcomm Incorporated discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2202588](file:///C:\Data\3GPP\Extracts\R2-2202588%20Contents%20of%20UE%20assistance%20for%20measurement%20window%20and%20gap%20configuration%20in%20NTN.docx) Contents of UE assistance for measurement window and gap configuration in NTN Lenovo, Motorola Mobility discussion Rel-17

[R2-2202614](file:///C:\Data\3GPP\Extracts\R2-2202614%20Further%20discussion%20on%20intra-NTN%20mobility.docx) Further discussion on intra-NTN mobility CMCC discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2202776](file:///C:\Data\3GPP\Extracts\R2-2202776%20Discussion%20on%20the%20signaling%20design%20for%20NTN%20specific%20information.docx) Discussion on the signaling design for NTN specific information vivo discussion

[R2-2202840](file:///C:\Data\3GPP\Extracts\R2-2202840%20Network-Based%20SMTC%20Configuration%20in%20NTN.docx) Network-Based SMTC Configuration in NTN Google Inc. discussion

[R2-2202850](file:///C:\Data\3GPP\Extracts\R2-2202850%20Discussion%20on%20assistance%20information%20for%20SMTC.docx) Discussion on assistance information for SMTC ASUSTeK discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2202853](file:///C:\Data\3GPP\Extracts\R2-2202853%20Measurement%20Gap%20Issues%20in%20NTN.docx) Measurement Gap Issues in NTN Google Inc. discussion

[R2-2203006](file:///C:\Data\3GPP\Extracts\R2-2203006%20NTN%20CP%20open%20issues.doc) Discussion on remaining open issues in connected mode OPPO discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2203066](file:///C:\Data\3GPP\Extracts\R2-2203066.docx) Further consideration of initial access Samsung Research America discussion

[R2-2203190](file:///C:\Data\3GPP\Extracts\R2-2203190%20%20Location%20report%20for%20TA%20and%20LCS.doc) Location report for TA report and LCS support in connected mode Xiaomi discussion Rel-17

[R2-2203191](file:///C:\Data\3GPP\Extracts\R2-2203191%20Remaining%20issues%20relating%20to%20SIBxx%20and%20the%20RRC%20delay%20for%20RRC%20Release.doc) Remaining issues relating to SIBxx and the RRC delay for RRC Release Xiaomi discussion Rel-17

### 8.10.4 UE capabilities

[R2-2203485](file:///C:\Data\3GPP\Extracts\R2-2203485%20-%20NR%20NTN%20UE%20capabilities.docx) NR NTN UE capabilities Ericsson discussion Rel-17 NR\_NTN\_solutions-Core

#### 8.10.4.1 Open issues

Contributions on open issues listed in [R2-2201962](file:///C:\Data\3GPP\archive\RAN2\RAN2%23116bis\Tdocs\R2-2201962.zip). For some aspects the discussion will happen in Pre117 email discussion [104]. For the others, company contributions can be submitted.

Including report of [Pre117-e][104][NTN] UE caps open issues (Intel)

[R2-2202454](file:///C:\Data\3GPP\Extracts\R2-2202454%20Report%20of%20email%20discussion%20%5bPre117-e%5d%5b104%5d%5bNTN%5d%20UE%20caps%20open%20issues%20(Intel).docx) Report of email discussion [Pre117-e][104][NTN] UE caps open issues (Intel) Intel Corporation discussion Rel-17 NR\_NTN\_solutions-Core Late

* Discussed in offline 104
* [AT117-e][104][NTN] UE caps open issues (Intel)

Initial scope: Discuss UE caps open issues based on the report in [R2-2202454](file:///C:\Data\3GPP\Extracts\R2-2202454%20Report%20of%20email%20discussion%20%5bPre117-e%5d%5b104%5d%5bNTN%5d%20UE%20caps%20open%20issues%20(Intel).docx) and other company contributions in AI 8.10.4

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 2022-02-21 1700 UTC

Initial deadline (for rapporteur's summary in R2-2203535): Monday 2022-02-21 2000 UTC

Updated scope:

1. Continue the discussion on UE caps open issues
2. Update the 38.306 and 38.331 CRs

Updated 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)
    - Updated 38.306 and 38.331 CRs

Updated deadline (for companies' feedback): Thursday 2022-02-24 1400 UTC

Updated deadline (for rapporteur's summary in R2-2203546): Thursday 2022-02-24 1600 UTC

Deadline (for CRs in R2-2203550 and R2-2203551): Thursday 2022-03-03 1000 UTC

Updated scope:

1. Continue the discussion on idle mode open issues
2. Update the 38.306 and 38.331 CRs

Updated 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)
    - Updated 38.306 and 38.331 CRs

Updated deadline (for companies' feedback): Monday 2022-02-28 1600 UTC

Updated deadline (for rapporteur's summary in R2-2203568): Monday 2022-02-28 1800 UTC

Deadline (for CRs in R2-2203550 and R2-2203551): Thursday 2022-03-03 1000 UTC

Final scope: Update the 38.306 and 38.331 CRs

Final intended outcome: Updated 38.306 and 38.331 CRs

Deadline (for CRs in R2-2203550 and R2-2203551): Thursday 2022-03-03 1000 UTC

[R2-2203535](file:///C:\Data\3GPP\Extracts\R2-2203535%20Report%20of%20email%20discussion%20%5bAT117-e%5d%5b104%5d%5bNTN%5d%20UE%20caps%20open%20issues%20(Intel).docx) [offline-104] UE caps open issues Intel discussion Rel-17 NR\_NTN\_solutions-Core

List of proposals for agreement:

Proposal 1: The SMTC enhancements (event-triggered assistance information reporting, 2 SMTC in parallel) are essential for NGSO capable UEs.

* Agreed

Proposal 4: Incorporate event-triggered TA reporting feature into TA reporting UE capability defined in RAN1 feature list.

* Agreed

Proposal 5: Specify single UE capability to represent the support of both UL HARQ state B and the new LCP restriction.

* Agreed

Proposal 9: For NTN, network may need to restrict data throughput based on the actual RTT to avoid UE buffer overflow. FFS if a note in 38.306 is needed.

* Qualcomm wonders why it is important to say what network needs to do here. Network may just disable HARQ feedback which may not mean restricting the data throughput. We think it is sufficient just to have something like “In NTN, RTT values are assumed to be longer in the calculation of L2 buffer”.
* Continue online
* Samsung and Ericsson support QC view
* RAN2 understands that in NTN, RTT values are assumed to be longer in the calculation of L2 buffer. No spec change

Proposal 10: Postpone the discussion on NTN SMTC UE capabilities, and if the updated RAN1/4 feature lists during this meeting don’t include NTN SMTC related UE capabilities, RAN2 sends an LS to RAN1/4 for triggering this discussion.

* Agreed

Agreements via email - from offline 104:

1. The SMTC enhancements (event-triggered assistance information reporting, 2 SMTC in parallel) are essential for NGSO capable UEs.
2. Incorporate event-triggered TA reporting feature into TA reporting UE capability defined in RAN1 feature list.
3. Specify single UE capability to represent the support of both UL HARQ state B and the new LCP restriction.
4. Postpone the discussion on NTN SMTC UE capabilities, and if the updated RAN1/4 feature lists during this meeting don’t include NTN SMTC related UE capabilities, RAN2 sends an LS to RAN1/4 for triggering this discussion.

Agreements online:

1. RAN2 understands that in NTN, RTT values are assumed to be longer in the calculation of L2 buffer. No spec change

List of proposals that require online discussions:

Proposal 2: RAN2 to further discuss whether the SMTC enhancements (event-triggered assistance information reporting, 2 SMTC in parallel) are also essential for GSO capable UEs, considering except GEO satellites in general other GSO satellites are also moving.

Proposal 3: CHO enhancements (time based and Event A4 based CHO) are optional to support for NTN capable UEs.

Proposal 6: Since it should not be assumed that every NTN capable UE has been tested to support both GSO and NGSO, define IoT bits for the support of {GSO, NGSO, both} and this indication means all NTN essential features and optional features UE indicates have been tested in the corresponding scenario(s).

Proposal 7: RAN2 to discuss whether we plan to check case by case if a TN optional UE capability needs a separate IoT bit for NTN.

Proposal 8: If there is no plan to check case by case, RAN2 to further discuss how to support separate UE capability reporting for TN and NTN:

Option 1: IoT bits for NTN are reported together with TN features, e.g., have an embedded ASN.1 structure as below:

UE-NR-Capability ::= SEQUENCE {

<Unnecessary parts omitted>

iotBitsNTN UE-NR-Capability OPTIONAL,

<Unnecessary parts omitted>

}

Option 2: Existing capability signalling is used but only valid in the network type it is reported to (e.g. when UE reports to NTN network the capability refers to NTN and not TN).

Option 3: Add nr-ntn as a new RAT-type for UE capability reporting, in this case NTN source gNB can get UE TN capabilities to support handover preparation from NTN to TN.

* Huawei thinks we could go for a case by case check. Samsung agrees
* Oppo thinks option2 would not work (VC tends to agree) and option 1 would be the best and less time consuming
* QC assume that option 1 is only for "per-UE" capabilities and is then the simplest

Proposal 11: RAN2 to discuss whether IoT bit for the support of {both GSO and NGSO} means UE also supports mobility between GSO and NGSO.

[R2-2203546](file:///C:\Data\3GPP\Extracts\R2-2203546%20Report%20of%20email%20discussion%20%5bAT117-e%5d%5b104%5d%5bNTN%5d%20UE%20caps%20open%20issues%20(Intel)%202nd%20round.docx) [offline-104] UE caps open issues - second round Intel discussion Rel-17 NR\_NTN\_solutions-Core

List of proposals for agreement:

Proposal 1: the UE capabilities for time based CHO and Event A4 based CHO are optional with capability signalling.

* Agreed

Proposal 4: RAN2 confirms that, if UE supports both GSO and NGSO, it means UE also supports mobility between GSO and NGSO.

* Agreed

Agreements via email - from offline 104 - second round:

1. the UE capabilities for time based CHO and Event A4 based CHO are optional with capability signalling.
2. RAN2 confirms that, if UE supports both GSO and NGSO, it means UE also supports mobility between GSO and NGSO.

[R2-2203568](file:///C:\Data\3GPP\Extracts\R2-2203568%20Report%20of%20email%20discussion%20%5bAT117-e%5d%5b104%5d%5bNTN%5d%20UE%20caps%20open%20issues%20(Intel)%203rd%20round.docx) [offline-104] UE caps open issues - third round Intel discussion Rel-17 NR\_NTN\_solutions-Core

List of proposals for agreement:

Proposal 1: Postpone the discussion on IoT bits for existing TN UE capabilities to next meeting, and companies are encouraged to bring up papers with the list of existing UE capabilities which need separate NTN IoT bits.

* The discussion on IoT bits for existing TN UE capabilities is postponed to next meeting. Companies are encouraged to bring up papers with the list of existing UE capabilities which need separate NTN IoT bits.

List of proposals that require online discussions:

Proposal 2: RAN2 to discuss, regarding IoT bits for different NTN scenarios, whether the following approach is agreeable:

Define IoT bit for the support of {GSO, NGSO, both}, and this indication means all NTN essential features and optional features UE indicates have been tested in the corresponding scenario(s). The exemplary spec change may be like:

ntn-ScenarioSupport-r17 ENUMERATED {GSO, NGSO, both} OPTIONAL,

nonTerrestrialNetwork-r17 ENUMERATED {supported} OPTIONAL,

* Discuss online in the final CB session on Thursday (if time allows)

[R2-2202725](file:///C:\Data\3GPP\Extracts\R2-2202725%20Remaining%20Issues%20of%20Set2%20on%20NR%20NTN%20UE%20Capabilities.docx) Remaining Issues of Set2 on NR NTN UE Capabilities CMCC discussion Rel-17 NR\_NTN\_solutions-Core

#### 8.10.4.2 Other

Contributions on any other issues.

[R2-2202459](file:///C:\Data\3GPP\Extracts\R2-2202459%20Discussion%20on%20the%20difference%20between%20GSO%20and%20GEO.docx) Discussion on the difference between GSO and GEO Intel Corporation discussion Rel-17 NR\_NTN\_solutions-Core

[R2-2202887](file:///C:\Data\3GPP\Extracts\R2-2202887%20Discussion%20on%20capabilities%20for%20gaps%20and%20HARQ.doc) Discussion on capabilities for gaps and HARQ Huawei, HiSilicon discussion Rel-17 NR\_NTN\_solutions-Core

## 8.12 Reduced Capability

(NR\_redcap-Core; leading WG: RAN1; REL-17; WID: [RP-211574](file:///C:\Data\3GPP\archive\RAN\RAN%2392\Tdocs\RP-211574.zip))

Time budget: 1 TU

Tdoc Limitation: 3 tdocs

### 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.

#### 8.12.1.1 LS in

For LSes that need action: one tdoc by contact company to address the LS and potential reply is considered.

Rapporteur input may be provided.

[R2-2202134](file:///C:\Data\3GPP\Extracts\R2-2202134_R3-221396.docx) LS reply on the coordination between gNBs supporting RedCap UEs (R3-221396; contact: Ericsson) RAN3 LS in Rel-17 To:RAN2

* Noted

[R2-2202162](file:///C:\Data\3GPP\Extracts\R2-2202162_R4-2202674.docx) Reply LS on use of NCD-SSB for RedCap UE (R4-2202674; contact: ZTE) RAN4 LS in Rel-17 To:RAN1 Cc:RAN2

* Noted

[R2-2202163](file:///C:\Data\3GPP\Extracts\R2-2202163_R4-2202675.docx) LS on RRM relaxation for Redcap (R4-2202675; contact: vivo) RAN4 LS in Rel-17 To:RAN2

* vivo thinks we don't need to answer on the TBDs. HW agrees.
* Provide a reply LS in R2-2203555
* Continue the discussion in offline 113

[R2-2202313](file:///C:\Data\3GPP\Extracts\R2-2202313_%5bDraft%5d%20Reply%20LS%20to%20RAN4%20on%20RRM%20relaxation.doc) [Draft] Reply LS to RAN4 on RRM relaxation vivo LS out Rel-17 NR\_redcap-Core To:RAN4

* Revised in R2-2203555

R2-2203555 Reply LS on RRM relaxation vivo LS out Rel-17 NR\_redcap-Core To:RAN4

#### 8.12.1.2 CRs

CR Rapporteurs to provide running CRs, potentially updated.

[R2-2203421](file:///C:\Data\3GPP\Extracts\R2-2203421%20-%20Introduction%20of%20RedCap%20in%20TS%2038300.docx) Introduction of RedCap in TS 38.300 Nokia, Nokia Shanghai Bell CR Rel-17 38.300 16.8.0 0421 - B NR\_redcap-Core

* Discussed in offline 110

[R2-2203473](file:///C:\Data\3GPP\Extracts\R2-2203473%20Stage%202%20Corrections%20for%20RedCap.docx) Stage 2 Corrections for RedCap Futurewei Technologies draftCR Rel-17 38.300 16.8.0 NR\_redcap-Core

* [AT117-e][110][RedCap] Stage 2 CR (Nokia)

Scope: Update the Stage 2 CR

Intended outcome: Agreed Stage 2 CR

Initial deadline (for companies' feedback): Tuesday 2022-03-01 1800 UTC

Initial deadline (for Stage 2 CR in R2-2203541): Wednesday 2022-03-02 1000 UTC

R2-2203541 Introduction of RedCap in TS 38.300 Nokia, Nokia Shanghai Bell CR Rel-17 38.300 16.8.0 0421 1 B NR\_redcap-Core

[R2-2202314](file:///C:\Data\3GPP\Extracts\38.321_CR1186_(Rel-17)_R2-2202314_Introduction%20of%20RedCap%20in%20TS%2038.321.docx) Introduction of RedCap in TS 38.321 vivo (Rapporteur) CR Rel-17 38.321 16.7.0 1186 - B NR\_redcap-Core

* Noted
* Revised in R2-2203556
* Continue in offline 106

R2-2203556 Introduction of RedCap in TS 38.321 vivo (Rapporteur) CR Rel-17 38.321 16.7.0 1186 1 B NR\_redcap-Core

[R2-2203497](file:///C:\Data\3GPP\RAN2\Docs\R2-2203497.zip) Introduction of RedCap UEs Ericsson CR Rel-17 38.304 16.7.0 0234 - B NR\_redcap-Core Late

* Noted
* Revised in R2-2203557
* Continue in offline 105

R2-2203557 Introduction of RedCap UEs Ericsson CR Rel-17 38.304 16.7.0 0234 1 B NR\_redcap-Core

[R2-2203354](file:///C:\Data\3GPP\RAN2\Docs\R2-2203354.zip) Introduction of RedCap Ericsson CR Rel-17 38.331 16.7.0 2950 - B NR\_redcap-Core Late

* Noted
* Revised in R2-2203558
* Continue in offline 105

R2-2203558 Introduction of RedCap Ericsson CR Rel-17 38.331 16.7.0 2950 1 B NR\_redcap-Core

moved from 8.12.1

[R2-2202500](file:///C:\Data\3GPP\Extracts\R2-2202500%20-%20Running%2038.306%20CR%20on%20Capbilities-v03.docx) Running 38.306 CR for the RedCap capablities Intel Corporation draftCR Rel-17 38.306 16.7.0 B NR\_redcap

[R2-2202501](file:///C:\Data\3GPP\Extracts\R2-2202501%20-%20Running%2038.331%20CR%20on%20Capbilities-v01.docx) Running 38.331 CR for the RedCap capablities Intel Corporation draftCR Rel-17 38.331 16.7.0 B NR\_redcap

moved from 8.12.5.1

[R2-2202498](file:///C:\Data\3GPP\Extracts\R2-2202498%20-%20Running%2038.306%20CR%20on%20Capbilities-v03-107.docx) Updated Running 38.306 CR for the RedCap capablities Intel Corporation draftCR Rel-17 38.306 16.7.0 B NR\_redcap Late

* Noted
* Revised in R2-2203559
* Continue in offline 107

R2-2203559 Running 38.306 CR for the RedCap capablities Intel Corporation draftCR Rel-17 38.306 16.7.0 B NR\_redcap Late

[R2-2202499](file:///C:\Data\3GPP\Extracts\R2-2202499%20-%20Running%2038.331%20CR%20on%20Capbilities-v01-107.docx) Updated Running 38.331 CR for the RedCap capablities Intel Corporation draftCR Rel-17 38.331 16.7.0 B NR\_redcap Late

* Noted
* Revised in R2-2203560
* Continue in offline 107

R2-2203560 Updated Running 38.331 CR for the RedCap capablities Intel Corporation draftCR Rel-17 38.331 16.7.0 B NR\_redcap Late

### 8.12.2 Control Plane

#### 8.12.2.1 Idle/inactive mode aspects

##### 8.12.2.1.1 Open issues

Contributions on open issues listed in [R2-2201889](file:///C:\Data\3GPP\archive\RAN2\RAN2%23116bis\Tdocs\R2-2201889.zip). For some aspects the discussion will happen in Pre117 email discussion [105]. For the others, company contributions can be submitted.

[R2-2202266](file:///C:\Data\3GPP\Extracts\R2-2202266%20-%20Details%20on%20RRM%20relaxation.docx) Details on RRM relaxation Ericsson discussion Rel-17 NR\_redcap-Core

Proposal 1 Reuse the specification approach from Rel-16 for combined relaxed measurement condition.

* Discussed in offline 113

[R2-2202315](file:///C:\Data\3GPP\Extracts\R2-2202315_Discussion%20on%20RAN4%20LS%20and%20remaining%20issues%20on%20RRM%20relaxation.docx) Discussion on RAN4 LS and remaining issues on RRM relaxation vivo, Guangdong Genius discussion Rel-17 NR\_redcap-Core

Proposal 1: An indication (e.g. highPriorityMeasRelax-r17), similar as highPriorityMeasRelax in Rel-16, is introduced in R17, to control the relaxation of higher priority frequency measurement.

Proposal 2: If highPriorityMeasRelax-r17 is configured and set to True, and the corresponding criteria (i.e. when only Rel-17 stationarity criterion is satisfied and Srxlev > SnonIntraSearchP and Squal > SnonIntraSearchQ or both Rel-17 criteria are satisfied) is fulfilled:

- the UE can perform relaxed measurement for higher priority frequency. How to relax measurement for higher priority frequency is up to the conclusion of RAN4;

Otherwise:

- the UE cannot perform relaxed measurement for higher priority frequency, i.e. legacy measurement requirement for higher priority frequency should be applied.

Proposal 3: From RAN2 point of view, the following 3 coexistence cases of Rel-16 and Rel-17 configurations listed in RAN4 LS should be supported:

9 Rel-16 low mobility & Rel-16 not-at-cell-edge Rel-17 stationary Yes

11 Rel-16 not-at-cell-edge Rel-17 stationary & Rel-17 not-at-cell-edge Yes

12 Rel-16 low mobility & Rel-16 not-at-cell-edge Rel-17 stationary & Rel-17 not-at-cell-edge Yes

Proposal 4: It is up to RAN4 to decide which option (i.e. UE performs Rel-17 RRM relaxation method or up to UE implementation) to be adopted when both Rel-16 and Rel-17 criteria are fulfilled.

Proposal 5: To relax RRM measurement in RRC\_CONNECTED, in addition to reconfigure measurement with the existing mechanism (e.g. reduce MO number, include white/black cell list), other RRM measurement relaxation methods (e.g. relaxed measurements with longer intervals, i.e. scaling factor, or stop measurement for a period) should be supported. Details of the relaxation methods is up to RAN4 discussion.

* Discussed in offline 113

[R2-2202989](file:///C:\Data\3GPP\Extracts\R2-2202989.doc) UE behavior on combineRelaxedMeasCondition2 Samsung discussion Rel-17

Proposal 1. When both stationary and not-at-cell-edge criteria are configured,

- 1) if both criteria are fulfilled, UE performs RRM relaxation 1.

- 2) if stationary criterion is fulfilled but not-at-cell-edge is not fulfilled and combineRelaxedMeasCondition2 is not configured, UE performs RRM relaxation 2.

- 3) if stationary criterion is fulfilled but not-at-cell-edge is not fulfilled and combineRelaxedMeasCondition2 is configured, UE does not perform RRM relaxation.

Proposal 2. Update 38.304 CR based on the proposed TP in R2-2202989.

* Discussed in offline 113
* [AT117-e][113][RedCap] RRM relaxation (vivo)

Scope: Discuss RRM relaxation aspects in [R2-2202266](file:///C:\Data\3GPP\Extracts\R2-2202266%20-%20Details%20on%20RRM%20relaxation.docx), [R2-2202315](file:///C:\Data\3GPP\Extracts\R2-2202315_Discussion%20on%20RAN4%20LS%20and%20remaining%20issues%20on%20RRM%20relaxation.docx) and [R2-2202989](file:///C:\Data\3GPP\Extracts\R2-2202989.doc) and also draft reply LS to RAN4 on RRM relaxation

Intended outcome: Reply LS and 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)

Deadline (for companies' feedback): Tuesday 2022-03-01 1200 UTC

Deadline (for rapporteur's summary in R2-2203562): Tuesday 2022-03-01 1800 UTC

Deadline (for reply LS): Wednesday 2022-03-02 1000 UTC

Final scope: draft reply LS to RAN4 on RRM relaxation

Final intended outcome: Reply LS

Deadline (for companies' feedback): Thursday 2022-03-03 0800 UTC

Deadline (for reply LS): Thursday 2022-03-03 1000 UTC

[R2-2203562](file:///C:\Data\3GPP\RAN2\Inbox\R2-2203562.zip) [offline-113] RRM relaxation vivo discussion Rel-17 NR\_redcap-Core

Proposals for easy agreement

Proposal 1: [To agree] [18/18] Reuse the specification approach from Rel-16 for combined relaxed measurement condition in Rel-17, i.e.

when both stationary and not-at-cell-edge criteria are configured,

- 1) if both criteria are fulfilled, UE performs RRM relaxation 1.

- 2) if stationary criterion is fulfilled but not-at-cell-edge is not fulfilled and combineRelaxedMeasCondition2 is not configured, UE performs RRM relaxation 2.

- 3) if stationary criterion is fulfilled but not-at-cell-edge is not fulfilled and combineRelaxedMeasCondition2 is configured, UE does not perform RRM relaxation.

where RRM relaxation method 1 and 2 correspond to the methods agreed in RAN4.

* Agreed

Proposal 2: [To agree] [18/18] The TP on combineRelaxedMeasCondition2 in R2-2202989 is agreed, and included in the TS 38.304 running CR.

* Agreed

Proposal 3: [To agree] [16/18] Indication (e.g. highPriorityMeasRelax-r17), similar as highPriorityMeasRelax in Rel-16, is introduced in R17, to control the RRM relaxation of higher priority frequency.

* Mediatek has concerns on p3, (and therefore related proposals 4, 5 and 6), as no one has provided justification for the introduction of this ‘high priority relaxation’ flag. The responses all indicate that because we have done so in Rel-16, we must repeat ourselves for Rel-17. This is not valid justification to introduce a new feature at this very late stage of the release.
* vivo thinks it's up to the NW to control whether the UE is allowed to measure high priority frequency with or without relaxation. It provides the flexibility to NW side. vivo agrees it is a new feature and we are close to the end of this WI. But majority companies’ understanding is: the spec impact is clear and Rel-16 mechanism could be simply reused. So there may be no risk for this “new” feature.
* Mediatek thinks there was a valid justification for Rel-16 UEs, i.e. because we addressed UEs with low mobility there still remains the case where new high priority neighbour cells can be found. This justification is not valid for stationary UEs in Rel-17.
* vivo thinks that, if companies agreed that measurement on high priority frequency layer could be always relaxed for the stationary UE when the criteria are satisfied, then there would be no motivation.
* Continue online
* Mediatek thinks there is no need for this for completely stationary UEs
* Oppo thinks this is good to have from NW point of view and the reasoning does not change from R16
* Ericsson thinks we can live without this.
* HW thinks this could be only for idle/inactive. Ericcson thinks this was never discussed for connected.
* Apple supports but are ok to limit to idle/inactive
* Intel supported this but agree we can live without.
* Not pursued

Proposal 6: [To agree] [16/18] If highPriorityMeasRelax-r17 is configured and set to True, only Rel-17 stationarity criterion is configured and satisfied, and Srxlev > SnonIntraSearchP and Squal > SnonIntraSearchQ:

the UE can perform relaxed measurement for higher priority frequency. How to relax measurement for higher priority frequency is up to the conclusion of RAN4;

Otherwise:

the UE cannot perform relaxed measurement for higher priority frequency, i.e. legacy measurement requirement for higher priority frequency should be applied.

* Huawei suggests to remove the last part "Otherwise: …". vivo agrees
* Continue online
* Not pursued

Proposal 7: [To agree] [18/18] The following information should be included in the reply LS to RAN4 on RRM relaxation:

- A[18]: conclusion on RAN4 question about the RRM relaxation methodology on higher priority frequency;

- B [18]: conclusion on UE behavior on combineRelaxedMeasCondition2;

- C [14]: RAN2 conclusion “RAN2 assume that the existing RRM measurement framework can be used as baseline for enabling and disabling RRM relaxations for UEs in RRC Connected. Other methods can be considered too based on relaxation methods agreed by RAN4”;

- D [2] ask RAN4 to define the relaxation methods for higher priority frequency.

* Huawei thinks C is not needed
* Continue online
* HW thinks D is not applicable anymore and also C is not needed (already agreed a few meetings ago). Intel agrees.
* Include A and B above and new conclusions in the LS to RAN4

Proposals need further online discussion:

Proposal 4: [To discuss] Separate indications (i.e. highPriorityMeasRelax-r17) are introduced in R17 for RRM relaxation in idle/inactive mode and RRM relaxation in connected mode, respectively.

* Not pursued

Proposal 5: [To discuss] If proposal 3 is agreeable, RAN2 to discuss or conform with RAN4 whether highPriorityMeasRelax is also applied to the following case (for both Rel-16 and Rel-17): both stationary and not-at-cell-edge criterion are configured, but only stationary criterion is fulfilled, combineRelaxedMeasCondition is not configured, and Srxlev > SnonIntraSearchP and Squal > SnonIntraSearchQ.

* Not pursued

Agreements via email - from offline 113:

1. Reuse the specification approach from Rel-16 for combined relaxed measurement condition in Rel-17, i.e. when both stationary and not-at-cell-edge criteria are configured,

1) if both criteria are fulfilled, UE performs RRM relaxation 1.

2) if stationary criterion is fulfilled but not-at-cell-edge is not fulfilled and combineRelaxedMeasCondition2 is not configured, UE performs RRM relaxation 2.

3) if stationary criterion is fulfilled but not-at-cell-edge is not fulfilled and combineRelaxedMeasCondition2 is configured, UE does not perform RRM relaxation.

where RRM relaxation method 1 and 2 correspond to the methods agreed in RAN4.

1. The TP on combineRelaxedMeasCondition2 in R2-2202989 is agreed, and included in the TS 38.304 running CR.

[R2-2202996](file:///C:\Data\3GPP\Extracts\R2-2202996%20-%20Left%20open%20issue%20on%20SI%20change%20mechanism%20for%20eDRX.doc) Left open issue on SI change mechanism for eDRX OPPO discussion Rel-17 NR\_redcap-Core

Moved from 8.12.2.1.2

[R2-2203350](file:///C:\Data\3GPP\Extracts\R2-2203350%20On%20RRM%20relaxation%20for%20REDCAP%20UE.docx) On RedCap RRM relaxations in IDLE/INACTIVE Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_redcap-Core

##### 8.12.2.1.2 Other

Contributions on any other issues.

[R2-2202347](file:///C:\Data\3GPP\Extracts\R2-2202347%20Cell%20(re)selection%20parameters%20of%20RedCap%20UE.doc) Cell (re)selection parameters of RedCap UE Fujitsu discussion Rel-17 NR\_redcap-Core

[R2-2202937](file:///C:\Data\3GPP\Extracts\R2-2202937.docx) Cell selection criterion for a RedCap UE with 1 Rx branch Samsung discussion Rel-17 NR\_redcap-Core

[R2-2203352](file:///C:\Data\3GPP\Extracts\R2-2203352%20eDRX%20and%20system%20information.docx) eDRX and system information Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_redcap-Core

#### 8.12.2.2 RRC aspects

##### 8.12.2.2.1 Open issues

Contributions on open issues listed in [R2-2201887](file:///C:\Data\3GPP\archive\RAN2\RAN2%23116bis\Tdocs\R2-2201887.zip). For some aspects the discussion will happen in Pre117 email discussion [105]. For the others, company contributions can be submitted.

Including report of [Pre117-e][105][RedCap] CP open issues (Ericsson)

[R2-2203502](file:///C:\Data\3GPP\Extracts\R2-2203502%20-%20Report%20for%20%5bPre117-e%5d%5b105%5d%5bRedCap%5d%20CP%20open%20issues.docx) Report for [Pre117-e][105][RedCap] CP open issues Ericsson discussion NR\_redcap-Core Late

* [AT117-e][105][RedCap] CP open issues (Ericsson)

Initial scope: Discuss CP open issues based on the report in [R2-2203502](file:///C:\Data\3GPP\RAN2\Docs\R2-2203502.zip) and the company contributions in AI 8.12.4

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): Wednesday 2022-02-23 0600 UTC

Initial deadline (for rapporteur's summary in R2-2203538): Wednesday 2022-02-23 1000 UTC

Updated scope:

1. Continue the discussion on CP open issues
2. Update the RRC and 38.304 CRs

Updated intended outcome: Updated RRC and 38.304 CRs and 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)

Deadline (for companies' feedback): Tuesday 2022-03-01 1600 UTC

Deadline (for rapporteur's summary in R2-2203561): Tuesday 2022-03-01 2000 UTC

Deadline (for RRC and 38.304 CRs): Thursday 2022-03-03 1000 UTC

Final scope: Continue the discussion on remaining CP open issues

Final intended outcome: Summary of the offline discussion

Deadline (for companies' feedback): Thursday 2022-03-03 0300 UTC

Deadline (for rapporteur's summary in R2-2204035): Thursday 2022-03-03 0500 UTC

[R2-2203538](file:///C:\Data\3GPP\Extracts\R2-2203538%20-%20Email%20discussion%20report%20for%20%5bAT117-e%5d%5b105%5d%5bRedCap%5d%20CP%20open%20issues.docx) [offline-105] CP open issues Ericsson discussion Rel-17 NR\_redcap-Core

Proposals for agreement:

Proposal 1 The following working assumption is confirmed: “System information can provide information on which frequencies accept RedCap UE access (e.g., by considering whether supporting RedCap)”

* Apple would like to add "/cells"
* Ericsson thinks this was already discussed in the last meeting and we are now trying to confirm the WA.
* Agreed

Proposal 2 The invalid configuration where INACTIVE eDRX cycle is configured but IDLE eDRX cycle is not configured, is captured in the field description of the parameter ran-ExtendedPagingCycle.

* Agreed

Proposal 3 The invalid configuration where INACTIVE eDRX cycle is longer than IDLE eDRX cycle, is captured in the field description of the parameter ran-ExtendedPagingCycle.

* Agreed

Proposal 4 In Rel-17, one spare value is sufficient for the parameter ran-ExtendedPagingCycle-r17.

* Agreed

Proposal 5 For the handover case, if the target gNB does not configure RRM relaxation for a UE, the UE shall not perform the evaluation of the relaxed measurement criterion for a stationary UE, i.e. the UE shall not perform the procedural text of 5.7.4.X.

* Agreed

Proposal 6 When network configures both R16/R17 relaxation criteria and the UE fulfills both, it is up to UE implementation to perform either Rel-16 or Rel-17 relaxation method based on the “allowed” cases RAN4 specifies.

* Samsung thinks that according to LS from RAN4 (i.e., R2-2202163), they are discussing which cases are allowed when both Rel-16 and Rel-17 relaxation criteria are configured. Besides, after checking with RAN4 colleague, RAN4 is discussing on relaxation methods for these allowed cases. As relaxation method is RAN4 scope, Samsung would like RAN2 to avoid decision on P6.
* Continue online
* Ericsson wonders if the LS will be received soon.
* ZTE/Oppo think we can wait for RAN4.
* Ericsson thinks it is up to RAN2 to decide the UE behaviour
* Samsung is fine to discuss but thinks we should clarify the UE behaviour. Mediatek thinks we already had this discussion
* ZTE thinks this discussion is not so critical, it's basically up to UE implementation also in R16
* When network configures both R16/R17 relaxation criteria and the UE fulfils both, RAN2 assumes it is up to UE implementation to perform either Rel-16 or Rel-17 relaxation method based on the “allowed” cases RAN4 specifies, unless we receive different view from RAN4

Proposal 7 It is up to UE implementation when to start the RRM relaxation if multiple methods are configured.

* Nokia thinks this is not fully up to UE implementation, e.g. for the impact on reporting
* Ericsson thinks the UE should report when it has made the decision.
* HW thinks it's UE implementation on whether to wait for measurement of the 2nd criterion to conclude, after 1st criterion is fulfilled.
* QC thinks this is unnecessary and think this is only for Idle/Inactive
* It is up to UE implementation when to start the RRM relaxation in RRC Idle/Inactive if multiple methods are configured.

Proposal 8 RAN2 confirms that it is up to network implementation to configure MO on CD-SSB (in addition to configuring a MO on NCD-SSB) even if the network does not expect the UE to perform neighbor cell measurements thereon.

* HW suggests "RAN2 confirms that it is up to network implementation to configure MO on CD-SSB (in addition to configuring a MO on NCD-SSB) even if the network does not expect the UE to perform neighbor cell measurements thereon, when all neighbour cells send SSBs on UE’s NCD-SSB frequency."
* ZTE wonders why the network can only configure MO for neighbour cell measurements when "all neighbour cells sends SSBs on that frequency"? Even for Rel-15/Rel-16, we don't specify such strong restriction to network implementation? UE performs measurements based on configured MOs. It is up to network to decide whether neighbour cell measurements are performed on CD-SSB or NCD-SSB or both. So don't fully understand the reason to highlight the case that "the UE only performs serving cell measurement on NCD-SSB, but neighbour cells measurements on CD-SSB", is any spec change to the legacy UE measurement behavior described in section 5.5 in TS 38.331?
* Continue online
* Not needed anymore

Proposal 9 RAN2 confirms that it is up to network implementation, but it is expected that the network configures a MO on the NCD-SSB frequency if it wants the UE to use it only for serving cell measurements when some neighbor cells do not send an SSB on UE’s NCD-SSB frequency.

* HW suggests "RAN2 confirms that it is up to network implementation, but it is expected that the network configures a MO on the NCD-SSB frequency if it wants the UE to use it only for serving cell measurements (but using CD-SSB frequency for neighbor ell measurement), when some neighbor cells do not send an SSB on UE’s NCD-SSB frequency."
* Continue online
* Agreed

Proposal 10 RAN2 confirms that it is up to network implementation, but it is expected that network refers to MO on NCD-SSB explicitly from within the ServingCell configuration (similarly to servingCellMO) when some neighbor cells do not send an SSB on UE’s NCD-SSB frequency.

* ZTE has comments on p10, p12, p15: in general, these proposals are related to how network configures the servingCellMO field, but somehow they are duplicated or conflicted. For P10, it is provided on top of P9 that if the network wants to perform serving cell measurement on NCD-SSB, the network can indicate the MO on NCD-SSB in servingCellMO, but using "similar to" is misleading, because according to P15, there is only one ServingCellMO. Similarly, the "at least" in P12 is confusing. And servingCellMO is per serving cell configured, not per UE or per-BWP. It is suggested to merge these proposals into one (remove P10,P12 and modify P15), as "Proposal 15. One servingCellMO is configured per serving cell, the UE performs serving cell measurement according to the MO indicated in servingCellMO (as in legacy), it is up to network implementation to refer to the MO on CD-SSB or NCD-SSB in servingCellMO."
* Continue offline (consider merging with p12 and p15)

Proposal 11 RAN2 confirms that It is possible for the network to configure a UE with multiple NCD-SSBs.

* ZTE thinks p11 and p16 are literally the same, but for the new addition to P16, the intention seems to be that one BWP can contain up to one SSB in frequency domain, right? But the wording may cause misunderstanding that NCD-SSB is per-BWP configured. Same as CD-SSB, NCD-SSB should be per-cell configured, and multiple BWPs can contain the same SSB in frequency domain, so P11 can be removed, and update P16 as "Proposal 16. A RedCap UE may be configured with multiple NCD-SSBs, but only one is contained in one ~~per~~ BWP ~~in frequency domain~~. (This does not imply the NCD-SSB configuration is provided per-BWP)"
* Continue offline (together with the discussion on FFS for p16)

Proposal 12 RAN2 confirms that it is sufficient to configure at least one of the MOs configured on CD-SSB or NCD-SSB in the current active BWP, if contained, in servingCellMO.

* Continue offline (consider merging with p10 and p15)

Proposal 13 A MO is configured on the NCD-SSB for the UE to perform neighbor cell measurement (as in legacy).

* HW suggests: "A MO is configured on the NCD-SSB for the UE to perform neighbor cell measurement (as in legacy), when all neighbour cells send SSBs on UE’s NCD-SSB frequency."
* Continue online
* ZTE suggests "For neighbour cell measurements, it is up to network to configure MO on CD-SSB or NCD-SSB or both (same in legacy, no spec impact)". Oppo/QC/vivo/Mediatek agree
* HW thinks we could add "the network should ensure there is no missing neighbour cells." and has some concerns if this is not captured.
* ZTE thinks in current implementations the network doesn't need to ensure there is no missing neighbour cells.
* Agreed as "For neighbour cell measurements, it is up to network to configure MO on CD-SSB or NCD-SSB or both (same in legacy, no spec impact)."

Proposal 14 servingCellMO is configured to the MO on the CD-SSB when RedCap specific BWP of a UE contains neither CD-SSB nor NCD-SSB.

* Agreed

Proposal 15 One servingCellMO is configured per UE regardless of whether RedCap specific BWP of a UE contains CD-SSB, NCD-SSB or neither (requires retuning).

* HW thinks this seems not discussed in any question during the email discussion. Have different understanding with ZTE’s comments. One MO will be configured per BWP. The IE servingCellMO will be a different thing.
* ZTE suggests: "One servingCellMO is configured per serving cell, the UE performs serving cell measurement according to the MO indicated in servingCellMO (as in legacy), it is up to network implementation to refer to the MO on CD-SSB or NCD-SSB in servingCellMO."
* Continue online
* HW wonders if the UE switches to another BWP. Does it switch MO without NW reconfiguration?
* ZTE thinks that if the NW switches the UE to a different BWP then the network needs to reconfigure. QC support ZTE's proposal but agree with HW we need to clarify UE behavior when it switches BWP. Mediatek wonders about the ZTE comment.
* Continue offline (consider merging with p10 and p12)

Proposal 16 A RedCap UE may be configured with multiple NCD-SSBs, but only one per BWP.

* Continue online
* ZTE suggests "A RedCap UE may be configured with multiple NCD-SSBs, but only one is contained in one per BWP in frequency domain. (This does not imply the NCD-SSB configuration is provided per-BWP)"
* A RedCap UE may be configured with multiple NCD-SSBs, but only one per BWP (FFS on what "only one per BWP" means).
* continue offline

Proposal 17 The working assumption “The periodicity of NCD-SSB shall be not less than the periodicity of serving cell’s CD-SSB.” is confirmed.

* Agreed

Proposal 18 NCD-SSB should not be indicated in the handover command, i.e., network sets ServingCellConfigCommon => downlinkConfigCommon => frequencyInfoDL => absoluteFrequencySSB to the frequency of the CD-SSB (not the NCD-SSB)

* Agreed

Proposal 19 The discussion on whether a non-RedCap UE should be able to use NCD-SSB instead of CD-SSB is deprioritized in Rel-17.

* Agreed

Proposal 20 The number of most significant bits used for UE\_ID\_H is 13.

* HW thinks RAN3 might be impacted. Mediatek/ZTE think there is no impact
* Agreed

Proposal 21 In connected mode if RA occasions are not configured on the active BWP, RedCap UEs should use the RedCap-specific initial UL BWP, if configured.

* QC suggests that RAN2 reserve the term “RedCap-specific initial BWP” specifically for the initial BWP configured by common signaling, as this initial BWP is shared by all RedCap UEs. Initial BWP configured by dedicated signaling should be called “UE-specific initial BWP” as in legacy, because it is specific to an individual UE and may not be shared by all RedCap UEs. Suggests to reword the proposal as: "In connected mode if RA occasions are not configured on the active BWP and UE does not have an initial UL BWP configured by RRC, RedCap UEs should use the RedCap-specific initial UL BWP, if configured."
* Ericsson thinks “and UE does not have an initial UL BWP configured by RRC” should be replaced with “and UE does not have a UE-specific initial UL BWP”
* Denso thinks "UE does not have an initial UL BWP configured by RRC” means option 1) or 2) that is configured for the non-RedCap UE as today. In this case, the RedCap-Specific initial UL BWP has to be configured, right? Otherwise, it is regarded as misconfiguration. If so, the last phrase, “if configured” is not needed?
* Continue offline

Proposal 22 For RedCap-specific BWP, both common and dedicated configurations are provided using full configuration, i.e., delta configuration is not supported.

* Agreed

Proposal 23 In case RedCap-specific initial DL BWP contains CD-SSB, PDCCH-ConfigCommon includes common search space configurations for paging, RAR, SIB1 and OSI when RedCap-specific initial DL BWP and the legacy initial DL BWP does not overlap sharing the CD-SSB.

* ZTE thinks that it seems most companies agree the PDCCH-ConfigCommon in RedCap-specific initial DL BWP should include search space configurations for Paging, RAR, SIB and OSI when it contains CD-SSB. The intention is to ensure the UE does not need to follow the configuration from two BWPs. (note that, when the UE enters RRC\_Connected and active BWP is RedCap-specific initial BWP, the UE can also read SIB1/OSI/Paging if the common search space configuration is included in PDCCH-ConfigCommon, there is no need to limit network to configure the fields in legacy initial BWP.). So the last sentence is not aligned with the scenario and should be removed. And "Coreset#0" should be added based on the comment from CATT.
* ZTE suggests to revise as: "Proposal 23. In case RedCap-specific initial DL BWP contains CD-SSB and CORESET#0, PDCCH-ConfigCommon of RedCap-specific initial DL BWP includes common search space configurations for paging, RAR, SIB1 and OSI~~. when RedCap-specific initial DL BWP and the legacy initial DL BWP does not overlap sharing the CD-SSB~~."
* HW thinks “does not overlap sharing the CD-SSB” is not clear. Whether the two BWPs share CD-SSB or not? HW believe if they do not share CD-SSB, the RedCap-specific initial DL BWP will not contain CD-SSB. If they share CD-SSB, the PDCCH-ConfigCommon, including common search space configurations for paging, RAR and OSI, have to be same for the RedCap-specific initial DL BWP and legacy initial DL BWP. NW will not transmit DCI for paging, RAR and OSI on both RedCap-specific initial DL BWP and legacy initial DL BWP. PDCCH-ConfigCommon includes common search space configurations will not include SIB1, even for legacy.
* Oppo thinks tthe wording is a bit confusing. Is this for the case where RedCap-specific initial DL BWP contains the CD-SSB which is not the same as the one contained in the legacy initial DL BWP? "In case RedCap-specific initial DL BWP contains CD-SSB, PDCCH-ConfigCommon includes common search space configurations for paging, RAR, SIB1 and OSI when RedCap-specific initial DL BWP and the legacy initial DL BWP does not overlap sharing the CD-SSB."
* continue offline

Proposal 24 For a RedCap UE in connected mode, it is up to network implementation to configure a RedCap-specific initial BWP, i.e., no restrictions on existing possible configurations.

* QC has the same comment on the term “RedCap-specific BWP” as for Proposal 21. The network can use dedicated signaling to configure a UE-specific initial BWP for a RedCap UE, similar to legacy. Suggests the following rewording for this proposal: "For a RedCap UE in connected mode, ~~it is up to~~ network ~~implementation to~~ can configure a ~~RedCap~~ UE-specific initial BWP by dedicated signaling as in legacy, i.e., no restrictions on existing possible configurations.
* Ericsson suggests: "A RedCap UE in connected mode may be configured with a UE-specific initial BWP by dedicated signaling (as in legacy), i.e., no restrictions on existing possible configurations"
* Continue offline

Proposal 26 In Rel-17, no mechanism is introduced for the network to provide SI or SIB6/SIB7/SIB8 to a UE configured with a DL BWP that does not contain CD-SSB after a notification for system information update or ETWS and/or CMAS is transmitted.

* Since majority of companies agree that network can use dedicated signaling to deliver SI to UE in that given scenario, QC would like to suggest the proposal be changed as follows to confirm that common understanding: "~~In Rel-17, no mechanism is introduced for~~ As in legacy, the network uses dedicated signaling to provide SI or SIB6/SIB7/SIB8 to a RedCap UE ~~configured with~~ in an active DL BWP that does not contain CD-SSB after a notification for system information update or ETWS and/or CMAS is transmitted."
* Ericsson suggests: "SI or SIB6/SIB7/SIB8 are provided via dedicated signaling to a RedCap UE in an active DL BWP that does not contain CD-SSB after a notification for system information update or ETWS and/or CMAS is transmitted. (as in legacy)"
* Continue offline

Proposal 27 Upon submitting the RRCSetupRequest/RRCResumeRequest message to the lower layers, if the RedCap UE is in the separate DL BWP where CD-SSB is not present, it is up to the UE to continue cell re-selection related measurements and cell re-selection evaluation (no spec impact).

* HW thinks in the current specification, we have “The UE shall continue cell re-selection related measurements as well as cell re-selection evaluation. If the conditions for cell re-selection are fulfilled, the UE shall perform cell re-selection as specified in 5.3.3.6.” P27 is correct but may need to be clarified as an NOTE in 38.331. Suggest to delete “(no spec impact)”, and further discuss if any clarification is needed in next meeting.
* Continue offline

Proposal 28 RAN2 confirms that upon failure of RRC connection setup/resume, if the RedCap UE is on the RedCap-specific initial DL BWP where CD-SSB is not present, UE switches to the default initial DL BWP (no spec impact)

* Apple agrees with the intention but the wording should be clarified. Also thinks we don't need to take any agreement
* ZTE thinks we can say UE switches to CD-SSB instead of default initial DL BWP? then there is no large BW issue
* Apple/QC think UE switches to the initial BWP in which it monitors paging
* Agreed as: "RAN2 confirms that upon failure of RRC connection setup/resume, UE operates in the initial BWP in which it has been configured to monitor paging (no spec impact)"

Agreements:

1. The following working assumption is confirmed: “System information can provide information on which frequencies accept RedCap UE access (e.g., by considering whether supporting RedCap)”
2. The invalid configuration where INACTIVE eDRX cycle is configured but IDLE eDRX cycle is not configured, is captured in the field description of the parameter ran-ExtendedPagingCycle.
3. The invalid configuration where INACTIVE eDRX cycle is longer than IDLE eDRX cycle, is captured in the field description of the parameter ran-ExtendedPagingCycle.
4. In Rel-17, one spare value is sufficient for the parameter ran-ExtendedPagingCycle-r17.
5. For the handover case, if the target gNB does not configure RRM relaxation for a UE, the UE shall not perform the evaluation of the relaxed measurement criterion for a stationary UE, i.e. the UE shall not perform the procedural text of 5.7.4.X.
6. When network configures both R16/R17 relaxation criteria and the UE fulfils both, RAN2 assumes it is up to UE implementation to perform either Rel-16 or Rel-17 relaxation method based on the “allowed” cases RAN4 specifies, unless we receive different view from RAN4
7. It is up to UE implementation when to start the RRM relaxation in RRC Idle/Inactive if multiple methods are configured
8. RAN2 confirms that it is up to network implementation, but it is expected that the network configures a MO on the NCD-SSB frequency if it wants the UE to use it only for serving cell measurements when some neighbor cells do not send an SSB on UE’s NCD-SSB frequency.
9. For neighbour cell measurements, it is up to network to configure MO on CD-SSB or NCD-SSB or both (same in legacy, no spec impact)
10. servingCellMO is configured to the MO on the CD-SSB when RedCap specific BWP of a UE contains neither CD-SSB nor NCD-SSB.
11. A RedCap UE may be configured with multiple NCD-SSBs, but only one per BWP (FFS on what "only one per BWP" means).
12. The working assumption “The periodicity of NCD-SSB shall be not less than the periodicity of serving cell’s CD-SSB.” is confirmed.
13. NCD-SSB should not be indicated in the handover command, i.e., network sets ServingCellConfigCommon => downlinkConfigCommon => frequencyInfoDL => absoluteFrequencySSB to the frequency of the CD-SSB (not the NCD-SSB)
14. The discussion on whether a non-RedCap UE should be able to use NCD-SSB instead of CD-SSB is deprioritized in Rel-17.
15. The number of most significant bits used for UE\_ID\_H is 13.
16. For RedCap-specific BWP, both common and dedicated configurations are provided using full configuration, i.e., delta configuration is not supported.
17. RAN2 confirms that upon failure of RRC connection setup/resume, UE operates in the initial BWP in which it has been configured to monitor paging (no spec impact)

Proposals for further discussion

Proposal 25 Discuss whether it should be possible for the network to transmit CD-SSB and NCD-SSB(s) at different times by configuring an offset.

* Continue offline or only online in GTW session in week2 (up to offline rapporteur)

Proposal 29 Discuss whether UE should consider IFRI as “allowed” or follows the IFRI in MIB when i) cell does not indicate support for RedCap UEs or ii) Red Cap UE is unable to acquire SIB1.

* Discuss only online in GTW session in week2

Proposal 30 Discuss whether UE should follow legacy IFRI in MIB or acquire SIB1 and follow the RedCap-specific IFRI provided in SIB1 when cellBarred in MIB is set to barred.

* Discuss only online in GTW session in week2

Proposal 31 Support for Half-Duplex FDD RedCap is indicated in SIB1.

* Continue offline or only online in GTW session in week2 (up to offline rapporteur)

Proposal 32 UE should consider the RRC\_IDLE eDRX cycle for comparing with the modification period for both RRC\_IDLE and RRC\_INACTIVE to decide if eDRX acquisition period is used.

* Continue offline or only online in GTW session in week2 (up to offline rapporteur)

Proposal 33 If Proposal 32 is agreed, it is captured with the following change in TS 38.331:

2> if the UE is ~~in RRC\_IDLE,~~ configured with an eDRX cycle longer than the modification period and the systemInfoModification-eDRX bit of Short Message is set:

* Continue offline or only online in GTW session in week2 (up to offline rapporteur)

[R2-2203561](file:///C:\Data\3GPP\RAN2\Inbox\R2-2203561.zip) [offline-105] CP open issues - second round Ericsson discussion Rel-17 NR\_redcap-Core

Proposals for agreement:

Proposal 2 A RedCap UE may be configured with multiple NCD-SSBs provided that each BWP contains at most one NCD-SSB.

* QC would like to continue the discussion on p2
* vivo would like to clarify that each BWP is configured with at most one SSB, to avoid the case mentioned by some companies that a BWP is configured with CD-SSB and NCD-SSB.
* Denso/Mediatek agree with vivo
* Continue online

- Ericsson wonders why this limitation is needed.

- QC thinks that otherwise we would have to specify which SSB the UE needs to use. vivo/Apple/intel share the same concern.

- ZTE thinks the case where the network can configure 2 SSBs in the same BWP would not really happen

* Agreed as "A RedCap UE may be configured with multiple NCD-SSBs provided that each BWP is configured with at most one SSB".

Proposal 3 In connected mode if RA occasions are not configured on the active BWP, RedCap UEs should use the RedCap-specific initial UL BWP, if configured, or else legacy BWP#0 if it has a bandwidth of <=20 MHz for FR1 or <=100 for FR2.

* Samsung would like to the remove the last part ("if it has a bandwidth of <=20 MHz for FR1 or <=100 for FR2."). vivo/Mediatek agree
* Continue online
* Agreed as "In connected mode if RA occasions are not configured on the active BWP, RedCap UEs should use the RedCap-specific initial UL BWP, if configured, or else legacy BWP#0"

Proposal 4 In case RedCap-specific initial DL BWP contains CD-SSB and CORESET#0, PDCCH-ConfigCommon, paging, RAR, SIB1 and OSI are included in the configuration of RedCap-specific initial DL BWP.

* HW thinks there is one typo in the proposal by missing “for”. Also, we still believe the original wording in the question from rapporteur make senses. One key clarification is that whether NW provide PDCCH-ConfigCommon in both RedCap-specific initial DL BWP and the legacy initial DL BWP. If those two are always same, since sharing the same CD-SSB and CORESET#0, why do we need configure this twice? “In case RedCap-specific initial DL BWP contains CD-SSB and CORESET#0, one common search space configuration, i.e., PDCCH-ConfigCommon, for paging, RAR, SIB1 and OSI is enough.”
* Xiaomi has similar concern with Huawei. We are also wondering whether we need to configure PDCCH-ConfigCommon for Redcap. Since RedCap-specific initial DL BWP contains CD-SSB and CORESET#0, we think the SIB1 and OSI can be shared. The NW do not need to send SIB1 and OSI twice. For paging, if we configure the corset or search space for Redcap, I think gNB needs to identify whether the paging is targeted for Redcap UE or legacy UE in order to schedule paging correctly. If we do not want introduce this, it better the configuration for paging can be shared. For RAR, we are not sure whether we need to have separated configuration for Redcap UEs and normal UE. We can discuss further.
* Denso is O.K with the proposed text as it is. Even though PDCCH-ConfigCommon is explicitly configured for the RedCap specific initial DL BWP, the actual physical resource for PDCCH monitoring can be the same as for the non-RedCap UE. Of course, it could be different and how to configure it is eventually up to NW implementation.
* Mediatek agrees with the original proposal: if there’s a RedCap specific BWP configured, it should not be required of the UE to read the legacy BWP
* Continue online
* ZTE thinks the UE only needs to read the configuration from the RedCap specific BWP. Mediatek agrees. vivo/Samsung/Ericsson are fine
* HW can accept this proposal, provided the parameters are the same. ZTE thinks the physical resources should be the same for paging, SIB1 and OSI, but the signalled parameters could be different
* Agreed as: "In case RedCap-specific initial DL BWP contains CD-SSB and CORESET#0, PDCCH-ConfigCommon is included in the configuration of RedCap-specific initial DL BWP. RedCap UEs don't need to read the PDCCH-ConfigCommon configuration from legacy initial BWP if RedCap-specific initial BWP is signalled"

Proposal 6 RAN2 confirms that system information can be provided via dedicated signaling to a RedCap UE in an active DL BWP that does not contain CD-SSB after a notification for system information update or ETWS and/or CMAS is transmitted.

* Agreed as: "in case a notification for system information update or ETWS and/or CMAS is transmitted, RAN2 confirms that system information can be provided via dedicated signaling to a RedCap UE in an active DL BWP that does not contain CD-SSB"

Proposal 7 RAN2 confirms that SIB1 can be provided via dedicated signaling to a RedCap UE in an active DL BWP that does not contain CD-SSB after an handover in which dedicatedSIB1-Delivery IE is not included in the handover command

* Agreed

Proposal 13 In system information broadcast introduce a bit to indicate whether eDRX is allowed for UEs in RRC\_IDLE.

* HW thinks one bit is sufficient for both idle and inactive and "In RRC\_Idle" could be removed
* Nokia thinks "and RRC\_Inactive" should be added
* Continue online
* QC wonders what happens if the NW only supports eDRX for idle. Ericsson thinks we then need two bits.
* HW thinks we still need to discuss the UE capability for this.
* Agreed as: "In system information broadcast introduce 1 bit to indicate whether eDRX is allowed for UEs in RRC\_IDLE and RRC\_Inactive. Come back to this (and potentially introduce 2 bits) if a separate UE capability will be available"

Agreements via email - from offline 105 - second round:

1. In case a notification for system information update or ETWS and/or CMAS is transmitted, RAN2 confirms that system information can be provided via dedicated signaling to a RedCap UE in an active DL BWP that does not contain CD-SSB.
2. RAN2 confirms that SIB1 can be provided via dedicated signaling to a RedCap UE in an active DL BWP that does not contain CD-SSB after an handover in which dedicatedSIB1-Delivery IE is not included in the handover command

Proposals for discussion:

Proposal 1 Discuss how servingCellMO should be configured and how serving cell measurements are performed.

Proposal 5 Discuss whether it should be possible for the network to transmit CD-SSB and NCD-SSB(s) at different times by configuring an offset.

Proposal 8 Discuss whether UE should consider IFRI as “allowed” or follows the IFRI in MIB when i) cell does not indicate support for RedCap UEs or ii) Red Cap UE is unable to acquire SIB1.

Proposal 9 Discuss whether UE should follow legacy IFRI in MIB or acquire SIB1 and follow the RedCap-specific IFRI provided in SIB1 when cellBarred in MIB is set to barred.

Proposal 10 Discus whether support for Half-Duplex FDD RedCap is indicated in SIB1.

Proposal 11 Discuss whether the UE should consider RRC\_IDLE eDRX cycle for comparing with the modification period for both RRC\_IDLE and RRC\_INACTIVE to decide if eDRX acquisition period is used.

Proposal 12 If UE should consider RRC\_IDLE eDRX cycle for comparing with the modification period for both RRC\_IDLE and RRC\_INACTIVE to decide if eDRX acquisition period is used, it is captured with the following change in TS 38.331:

2> if the UE is ~~in RRC\_IDLE,~~ configured with an eDRX cycle longer than the modification period and the systemInfoModification-eDRX bit of Short Message is set:

Proposal 14 Discuss whether capability for support for Rx branches should be included in the UERadioPagingInformation inter-node message

From previous round:

Proposal 29 Discuss whether UE should consider IFRI as “allowed” (13 companies) or follows the IFRI in MIB (10 companies) when i) cell does not indicate support for RedCap UEs or ii) Red Cap UE is unable to acquire SIB1.

* VC suggests: "UE should consider IFRI as “allowed” when i) cell does not indicate support for RedCap UEs or ii) Red Cap UE is unable to acquire SIB1."
* Agreed as "UE should consider IFRI as “allowed” when i) cell does not indicate support for RedCap UEs or ii) Red Cap UE is unable to acquire SIB1"

Proposal 30 Discuss whether UE should follow legacy IFRI in MIB (10 companies) or acquire SIB1 (15 companies) and follow the RedCap-specific IFRI provided in SIB1 when cellBarred in MIB is set to barred.

* VC suggests: "UE should acquire SIB1 and follow the RedCap-specific IFRI provided in SIB1 when cellBarred in MIB is set to barred"
* NEC wonders the UE behaviour if SIB1 is acquired and IFRI is not there.
* Apple wonders if IFRI is always supported in NW supporting RedCap.
* Some companies think that P29 would apply then
* Agreed as: "UE should acquire SIB1 and follow the RedCap-specific IFRI provided in SIB1 when cellBarred in MIB is set to barred"

Additional question from the offline rapporteur:

**Q2.X: Do companies agree that the network may configure a dedicated BWP including an NCD-SSB in an RRCReconfiguration which includes the reconfigurationWithSync? And do companies agree that the UE should then perform its handover directly to that BWP (using the NCD-SSB and the RA resources of that BWP)?**

* ZTE thinks NW can configure a dedicated BWP including NCD-SSB as firstActiveBWP during handover procedure. In this case, NW should provide SIB1 via dedicatedSIB1-Delivery IE either in the same RRC message, or a RRCReconfiguration message right after handover complete. For this scenario, we may need to clarify the "smtc" field included in reconfigurationWithSync is configured for target NCD-SSB or CD-SSB? If it is configured for CD-SSB, then the UE needs to first detect CD-SSB to obtain SFN/subframe, then switch to firstActiveBWP to perform RACH; if it is configured for NCD-SSB, then the UE can directly search NCD-SSB to obtain SFN/subframe, and perform RACH towards the dedicated BWP.

The second approach is simpler, but the drawback is NCD-SSB may be configured with large periodicity, so it might delay the RACH procedure. We would like to hear companies' views. In any case, this should be clarified in our spec.

* QC agrees, if Proposal 7 can be agreed. Regarding ZTE’s question on SMTC, I think it should be configured for whichever SSB indicated in the HO command. Network can decide which SSB is the better one for handover, e.g. if NCD-SSB has a large periodicity (we hope there will not be such a case) and may cause delay in RACH, then network can configure CD-SSB for handover, even if the target BWP has a NCD-SSB.
* HW thinks that with “NCD-SSB should not be indicated in the handover command” is clear that NCD-SSB should not be the direct target.

With the above proposal in the question, it also requires:

1) HO command always includes SIB1, which may not be able to be obtained in the BWP with NCD-SSB;

2) UE has to support DL sync directly on NCD-SSB, which was not discussed.

3) Also, if both the BWPs with CD-SSB and NCD-SSB are configured, it should be clarified how to indicate UE on which one to be used as the target.

The solution/issue from ZTE also needs to be discussed. We are not sure we can achieve consensus in the very last two days, by reverting the agreement.

* vivo shares Ericsson analysis. Of course, UE can perform HO directly to a dedicated BWP using NCD-SSB, if NW configures such BWP for handover, especially for the case that the UE is operating on a BWP with this NCD-SSB in serving cell. It would avoid un-necessary RF retuning from UE side. But anyway, this behaviour is always under NW control, and it is up to NW how to configure.
* Xiaomi agree with Ericsson analysis. We can configure firstActiveBWP includes SSB (CD SSB or NCD-SSB) during handover procedure to help UE sync. If firstActiveBWP is not configured, UE still need to sync with the CD-SSB.
* Denso agrees that UE can handover to the active BWP with NCD-SSB on condition that the ServingCellConfigCommon provides CD-SSB as in legacy. Although it is up to NW configuration, it is only if the first active DL BWP does not contain CD-SSB and CORESET #0. Otherwise, the legacy HO command can work.

Agreements online:

1. A RedCap UE may be configured with multiple NCD-SSBs provided that each BWP is configured with at most one SSB
2. In connected mode if RA occasions are not configured on the active BWP, RedCap UEs should use the RedCap-specific initial UL BWP, if configured, or else legacy BWP#0
3. In case RedCap-specific initial DL BWP contains CD-SSB and CORESET#0, PDCCH-ConfigCommon is included in the configuration of RedCap-specific initial DL BWP. RedCap UEs don't need to read the PDCCH-ConfigCommon configuration from legacy initial BWP if RedCap-specific initial BWP is signalled
4. In system information broadcast introduce 1 bit to indicate whether eDRX is allowed for UEs in RRC\_IDLE and RRC\_Inactive. Come back to this (and potentially introduce 2 bits) if a separate UE capability will be available
5. UE should consider IFRI as “allowed” when i) cell does not indicate support for RedCap UEs or ii) Red Cap UE is unable to acquire SIB1
6. UE should acquire SIB1 and follow the RedCap-specific IFRI provided in SIB1 when cellBarred in MIB is set to barred

R2-2204035 [offline-105] CP open issues - final round Ericsson discussion Rel-17 NR\_redcap-Core

Inter-RAT HO

[R2-2202530](file:///C:\Data\3GPP\Extracts\R2-2202530_lte-handover-redcap.docx) On the EUTRA handover to NR for RedCap UEs Apple discussion Rel-17 NR\_redcap-Core

Observation 1: Specific change discussion revolves around UE informing the NW about the incompatibility of the handoverFromEUTRA message. This is already in a way, done with the failure message.

Observation 2: All of this discussion is likely to inform the LTE NW about it changing it’s implementation to either avoid the HO to NR for this particular target NR unconditionally or conditionally and this requires changing the LTE NW implementation anyway.

Observation 3: Once the LTE NW makes the change, the issue disappears, in other words, LTE NW has to anyway adopt to the NR deployment change, and so it’s just a OM update issue.

Observation 4: Finally, the RedCap UE validates the config provided by the target NR cell in the HandoverFromEUTRA message and very likely will fail the configuration even before attempting to handover. So the benefit from a standards change is even more likely to not bring any benefit.

Proposal 1: RAN2 confirms that no additional discussion will be made to resolve the case where the LTE NW handovers over a RedCap UE to a NR cell which does not support RedCap.

* Discussed in offline 114

[R2-2203055](file:///C:\Data\3GPP\Extracts\R2-2203055%20Inter-RAT%20mobility%20from%20LTE%20to%20NR_v1.doc) Inter-RAT mobility from LTE to NR Huawei, HiSilicon discussion Rel-17 NR\_redcap-Core

* Revised in [R2-2203712](file:///C:\Data\3GPP\Extracts\R2-2203712%20Inter-RAT%20mobility%20from%20LTE%20to%20NR_v1.doc)

[R2-2203712](file:///C:\Data\3GPP\Extracts\R2-2203712%20Inter-RAT%20mobility%20from%20LTE%20to%20NR_v1.doc) Inter-RAT mobility from LTE to NR Huawei, HiSilicon, BT Plc, CATT, Sequans discussion Rel-17 NR\_redcap-Core

Observation 1: For the inter-RAT mobility from LTE to NR, based on the current spec, the RedCap UE will be handed over to a legacy NR cell in the case that the configuration by the target cell can be complied by the UE, which causes problems and should be avoided.

Proposal 1: For the LTE to NR handover to handle the legacy target NR cell, RAN2 to choose between Option 1 and Option 2.

– Option 1: The target NR cell, supporting RedCap and allowing the access of this RedCap UE, adds a new indication in the HO command sent to the RedCap UE. The RedCap UE should trigger RRC re-establishment if the indication is absent. (using TP in section 5)

– Option 2: Add a NOTE in the spec that The UE should trigger RRC re-establishment if the target NR cell does not support RedCap, by considering the configuration (e.g. intraFreqReselectionRedCap-r17) in SIB1 of the target cell. (using TP in section 6)

* Discussed in offline 114
* [AT117-e][114][RedCap] inter-RAT HO (Apple)

Scope: Discuss inter-RAT HO from LTE to NR aspects

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)

Deadline (for companies' feedback): Tuesday 2022-03-01 1200 UTC

Deadline (for rapporteur's summary in R2-2203564): Tuesday 2022-03-01 1800 UTC

Proposals marked "for agreement" in R2-2203564 not challenged until Wednesday 2022-03-02 1000 UTC will be declared as agreed via email by the session chair (for the rest the discussion might continue offline).

[R2-2203564](file:///C:\Data\3GPP\RAN2\Inbox\R2-2203564.zip) [offline-114] inter-RAT HO Apple discussion Rel-17 NR\_redcap-Core

Proposal 1 No specification changes are needed for the case of RedCap UE LTE to NR handover, where the target NR cell is a legacy cell. As per earlier agreement, the RedCap UE should trigger RRC re-establishment procedure and the prevention of failed handover attempts is up to network implementation.

* Vodafone wonders how this would work as the situation could become cyclic. BT agrees
* Apple thinks that in most proposals the UE does something but in any case the NW needs to do something as well, so eventually this can be left to NW implantation.
* Ericsson has similar concerns as VDF on the cyclic behaviour but thinks that something needs to be done on the NW in any case. Mediatek agrees.
* Sequans thinks we need to specify something.
* VDF thinks we could encode the UE RAC so that the legacy target NR base station cannot decode it.
* ZTE thinks we can introduce a solution where for RedCap UE, to trigger legacy NR cell to reject the handover from LTE, we redefine RedCap specific capability container.
* Intel thinks ZTE solution is similar to NB-IoT.
* Continue in the ASN.1 review (next meeting)

Proposal 2 If Proposal 1 is not agreed, option 2 from R2-2203712 is agreed to be added to the specification. (adding a NOTE in the spec that the UE should trigger RRC re-establishment in the source eNB if the target NR cell does not support RedCap (e.g. intraFreqReselectionRedCap-r17) in SIB1 of the target cell)

* Intel thinks this changes the re-establishment procedure completely. Ericsson agrees. IDC agrees
* HW suggests to go for p2 and also consider the second sentence in the p1.

[R2-2202654](file:///C:\Data\3GPP\Extracts\R2-2202654%20On%20inter-RAT%20handover%20for%20RedCap%20UEs.docx) On inter-RAT handover for RedCap UEs ZTE Corporation, Sanechips discussion Rel-17 NR\_redcap-Core

[R2-2202677](file:///C:\Data\3GPP\Extracts\R2-2202677_RRC%20open%20issues%20on%20Rel17%20RedCap%20WI.docx) RRC open issues on Rel17 RedCap WI Intel Corporation discussion Rel-17 NR\_redcap

[R2-2202997](file:///C:\Data\3GPP\Extracts\R2-2202997%20RedCap%20HO.doc) Discussion on remaining RRC open issues OPPO discussion Rel-17 NR\_redcap-Core

[R2-2203355](file:///C:\Data\3GPP\Extracts\R2-2203355%20-%20RedCap%20eNB%20to%20gNB%20handover.docx) Handover from E-UTRA from legacy eNB to legacy gNB Ericsson discussion NR\_redcap-Core

Access restrictions

[R2-2203056](file:///C:\Data\3GPP\Extracts\R2-2203056%20Access%20restriction%20of%20RedCap%20UE.docx) Access restriction of RedCap UE Huawei, HiSilicon discussion Rel-17 NR\_redcap-Core

Paging on separate initial BWP

[R2-2202316](file:///C:\Data\3GPP\Extracts\R2-2202316_Discussion%20on%20remaining%20issues%20on%20RRC%20aspects%20for%20RedCap.doc) Discussion on remaining issues on RRC aspects for RedCap vivo, Guangdong Genius discussion Rel-17 NR\_redcap-Core

NCD-SSB and handover

[R2-2202529](file:///C:\Data\3GPP\Extracts\R2-2202529_ncd-ssb_handover.docx) NCD-SSB and handover related aspects Apple discussion Rel-17 NR\_redcap-Core

[R2-2203140](file:///C:\Data\3GPP\Extracts\R2-2203140%20Further%20discussion%20on%20CD-SSB%20for%20RedCap%20UE.docx) Further discussion on NCD-SSB for RedCap UE China Telecommunications discussion Rel-17

##### 8.12.2.2.2 Other

Contributions on any other issues.

[R2-2202289](file:///C:\Data\3GPP\Extracts\R2-2202289_SI%20Request%20and%20RRM%20relaxation%20for%20Redcap%20UEs.doc) SI Request for Redcap UEs Samsung Electronics Co., Ltd discussion Rel-17 NR\_redcap-Core

[R2-2203030](file:///C:\Data\3GPP\Extracts\R2-2203030%20System%20information%20acquisition%20by%20RedCap%20UEs%20during%20handover.docx) System information acquisition by RedCap UEs during handover Qualcomm Incorporated discussion Rel-17 NR\_redcap-Core Late

[R2-2202734](file:///C:\Data\3GPP\Extracts\R2-2202734%20Discussions%20on%20Redcap-specific%20initial%20BWPs.doc) Discussions on Redcap-specific initial BWPs Xiaomi Communications discussion

[R2-2203351](file:///C:\Data\3GPP\Extracts\R2-2203351%20On%20RRM%20relaxation%20in%20CONNECTED.docx) On RRM relaxations in CONNECTED Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_redcap-Core

### 8.12.3 User Plane

#### 8.12.3.1 MAC aspects

##### 8.12.3.1.1 Open issues

Contributions on open issues listed in [R2-2201891](file:///C:\Data\3GPP\archive\RAN2\RAN2%23116bis\Tdocs\R2-2201891.zip). For some aspects the discussion will happen in Pre117 email discussion [106]. For the others, company contributions can be submitted.

Including report of [Pre117-e][106][RedCap] MAC open issues (vivo)

[R2-2202317](file:///C:\Data\3GPP\RAN2\Docs\R2-2202317.zip) Summary of [Pre117-e][106][RedCap] MAC open issues (vivo) vivo discussion Rel-17 NR\_redcap-Core Late

* [AT117-e][106][RedCap] MAC open issues (vivo)

Initial scope: Discuss MAC open issues based on the report in [R2-2202317](file:///C:\Data\3GPP\RAN2\Docs\R2-2202317.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
    - List of proposals that should not be pursued (if any)

Initial deadline (for companies' feedback): Wednesday 2022-02-23 0600 UTC

Initial deadline (for rapporteur's summary in R2-2203539): Wednesday 2022-02-23 1000 UTC

Updated scope: Update the MAC CR

Updated intended outcome: Agreed MAC CR

Updated deadline (for companies' feedback): Thursday 2022-03-03 0600 UTC

Updated deadline (for updated MAC CR): Thursday 2022-03-03 1000 UTC

[R2-2203539](file:///C:\Data\3GPP\RAN2\Inbox\R2-2203539.zip) [offline-106] MAC open issues vivo discussion Rel-17 NR\_redcap-Core

Proposals for easy agreement

Proposal 1: [To agree][17/17] Dedicated LCID for RedCap is always indicated when CCCH is sent in MsgA by a RedCap UE (i.e. no other precondition).

* Agreed

Proposal 2: [To agree][16/16] Capture the below Note in RACH section in MAC specification as the starting point:

NOTE X1: If a RedCap UE in RRC\_IDLE or RRC\_INACTIVE mode is configured with a BWP indicated by [initialDownlinkBWP-RedCap] which is not associated with any SSB, SS-RSRP measurement is performed based on the SSB associated with the BWP indicated by initialDownlinkBWP.

* Agreed

Proposal 5: [To agree][15/16] There is no new UE behaviour (i.e. no specification impact) for the case where the UE uses the RedCap-specific initial DL/UL BWP for RACH, if the number of preamble transmission is reached to the maximum value and a random access problem is indicated to the upper layer.

* Agreed

Agreements via email - from offline 106;

1. Dedicated LCID for RedCap is always indicated when CCCH is sent in MsgA by a RedCap UE (i.e. no other precondition).
2. Capture the below Note in RACH section in MAC specification as the starting point:

NOTE X1: If a RedCap UE in RRC\_IDLE or RRC\_INACTIVE mode is configured with a BWP indicated by [initialDownlinkBWP-RedCap] which is not associated with any SSB, SS-RSRP measurement is performed based on the SSB associated with the BWP indicated by initialDownlinkBWP.

1. There is no new UE behaviour (i.e. no specification impact) for the case where the UE uses the RedCap-specific initial DL/UL BWP for RACH, if the number of preamble transmission is reached to the maximum value and a random access problem is indicated to the upper layer.

Proposals need further discussion:

Proposal 3: [To discuss] Capture the following agreement in MAC specification for idle/inactive mode, using the text below as the starting point (continue discuss in MAC CR):

Agreement: If a RedCap-specific initial UL BWP is configured for RACH, RedCap UEs shall use only the RedCap-specific initial UL BWP to perform RACH.

* Continue in offline 106

…

Proposal 4: [To discuss] Capture the following agreement in MAC specification for connected mode, using the text below as the starting point (continue discuss in MAC CR):

Agreement: If a RedCap-specific initial UL BWP is configured for RACH, RedCap UEs shall use only the RedCap-specific initial UL BWP to perform RACH.

* Continue in offline 106

[R2-2203281](file:///C:\Data\3GPP\Extracts\R2-2203281%20Early%20identification%20capability.docx) Early identification capability Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_redcap-Core

##### 8.12.3.1.2 Other

Contributions on any other issues.

### 8.12.4 NCD-SSB aspects

Contributions on NCD-SSB aspects that might affect multiple specs

[R2-2202318](file:///C:\Data\3GPP\Extracts\R2-2202318_Discussion%20on%20RAN2%20impacts%20on%20NCD-SSB%20and%20separate%20initial%20BWP.DOCX) Discussion on RAN2 impacts on NCD-SSB and separate initial BWP vivo, Guangdong Genius discussion Rel-17 NR\_redcap-Core

[R2-2202653](file:///C:\Data\3GPP\Extracts\R2-2202653%20Remaining%20issues%20on%20separate%20initial%20BWP%20and%20NCD-SSB%20for%20RedCap%20UEs.docx) Remaining issues on separate initial BWP and NCD-SSB for RedCap UEs ZTE Corporation, Sanechips discussion Rel-17 NR\_redcap-Core

[R2-2202998](file:///C:\Data\3GPP\Extracts\R2-2202998%20-%20Left%20open%20issues%20on%20NCD-SSB.doc) Left open issues on NCD-SSB OPPO discussion Rel-17 NR\_redcap-Core

[R2-2203057](file:///C:\Data\3GPP\Extracts\R2-2203057%20Discussion%20on%20NCD-SSB%20aspects%20for%20RedCap%20UE.doc) Discussion on NCD-SSB aspects for RedCap UE Huawei, HiSilicon discussion Rel-17 NR\_redcap-Core

[R2-2203078](file:///C:\Data\3GPP\Extracts\R2-2203078-%20Discussion%20on%20the%20open%20issues%20of%20NCD-SSB.docx) Discussion on the open issues of NCD-SSB CATT discussion Rel-17 NR\_redcap-Core

[R2-2203505](file:///C:\Data\3GPP\Extracts\R2-2203505%20-%20Monitoring%20POs%20in%20connected%20mode%20when%20using%20NCD-SSB%20for%20RedCap%20UEs.docx) Monitoring POs in connected mode when using NCD-SSB Ericsson discussion Rel-17 NR\_redcap-Core Late

[R2-2203508](file:///C:\Data\3GPP\Extracts\R2-2203508.docx) C-plane related open issues on NCD-SSB DENSO CORPORATION discussion Rel-17 NR\_redcap-Core

### 8.12.5 UE capabilities

#### 8.12.5.1 Open issues

Contributions on open issues listed in [R2-2201893](file:///C:\Data\3GPP\archive\RAN2\RAN2%23116bis\Tdocs\R2-2201893.zip). For some aspects the discussion will happen in Pre117 email discussion [107]. For the others, company contributions can be submitted.

Including report of [Pre117-e][107][RedCap] UE caps open issues (Intel)

[R2-2202497](file:///C:\Data\3GPP\Extracts\R2-2202497_Report%20of%20Pre117-107-P2-v11.docx) Report of [Pre117-e][107][RedCap] UE caps open issues (Intel) Intel Corporation discussion Rel-17 NR\_redcap Late

* [AT117-e][107][RedCap] UE caps open issues (Intel)

Initial scope: Discuss UE caps open issues based on the report in [R2-2202497](file:///C:\Data\3GPP\Extracts\R2-2202497_Report%20of%20Pre117-107-P2-v11.docx)

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): Wednesday 2022-02-23 0600 UTC

Initial deadline (for rapporteur's summary in R2-2203540): Wednesday 2022-02-23 1000 UTC

Updated scope:

1. Continue the discussion on CP open issues
2. Update the RRC and 38.306 CRs

Updated intended outcome: Updated RRC and 38.306 CRs and 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)

Deadline (for companies' feedback): Tuesday 2022-03-01 1200 UTC

Deadline (for rapporteur's summary in R2-2203563): Tuesday 2022-03-01 1800 UTC

Deadline (for RRC and 38.306 CRs): Thursday 2022-03-03 1000 UTC

Final scope: Update the RRC and 38.306 CRs

Final intended outcome: Updated RRC and 38.306 CRs

Deadline (for RRC and 38.306 CRs): Thursday 2022-03-03 1000 UTC

[R2-2203540](file:///C:\Data\3GPP\Extracts\R2-2203540_Report%20of%20AT117-107-v20_Summary.docx) [offline-107] UE caps open issues Intel discussion Rel-17 NR\_redcap-Core

For agreement:

Phase 1-Proposal 3.1.2-1: [For agreements] [16/16] Rel-17 RRM relaxation for RRC\_IDLE/INACTIVE UEs is captured in TS38.306 as optional feature without capability:

Definitions for feature

Rel-17 relaxed measurement for RRC\_IDLE/RRC\_INACTIVE

It is optional for RedCap UE to support Rel-17 relaxed RRM measurements of neighbor cells in RRC\_IDLE/RRC\_INACTIVE as specified in TS 38.304 [21].

Note: “for RedCap UE” could be further updated based on the conclusion on At117-Proposal 3.2.1-1.

* Agreed

Phase 1-Proposal 3.2.1-1: [For agreements] [16/16] Rel-17 eDRX for RRC\_IDLE UEs is captured in TS38.306 as optional feature without capability signalling, i.e.

Definitions for feature

Rel-17 extended DRX in RRC\_IDLE

It is optional for UE to support Rel-17 extended DRX cycle up to 10485.76 seconds and paging in extended DRX in RRC\_IDLE as specified in TS 38.331 [9] and TS 38.304 [21].

* Agreed

Phase 1-Proposal 3.2.2-1: [For agreements] [16/16] inactiveStatePO-Determination-r17 introduced in R2-2111586 covers eDRX scenario, and no new UE capability is needed. A UE supports eDRX shall also support inactiveStatePO-Determination-r17.

* Agreed

Phase 1-Proposal 3.3.1-1a: [for agreement] [12/14] remove “For FR1 RedCap UE, the bit which indicates 20MHz shall be set to 1. For FR2 RedCap UE, the bit which indicates 100MHz shall be set to 1.” .

* Agreed

Phase 1-Proposal 3.3.1-2: [for agreement] [15/15] remove “This capability is not applicable to RedCap Ues.” From the definition of channelBW-90mhz .

* Agreed

Phase 1-Proposal 3.3.2-1: [for agreement] [9/15] Follow RAN2 agreement, i.e. keep the following sentence “RedCap UE shall always report “1”.” in the definition of shorts and am-WithShortSN? .

* Ericsson thinks that although we do have earlier RAN2 agreement on “reporting ‘1’”, it is not necessary at all to add such text in the field description. As mentioned, this is a mandatory feature with capability signaling. It is expected all RedCap UEs support and indicate support for the feature in any case (i.e. after successful testing phase). There doesn’t seem to be reason to have such requirement in the field description and in practice the NW needs to check anyways whether the feature is indicated or not. It should at least be corrected then to say “RedCap UE shall always indicate support for the feature” or similar, as “report ‘1’” is dependent on how the exact encoding and might not be exactly correct.
* Continue online
* Mediatek agrees this is unnecessary. Intel agrees.

Phase 1-Proposal 3.3.3-1: [for agreement] [Only 1 company wants to keep] Do not add the change “since xxx.” for the definition of supportOf16DRB-RedCap, longSN-RedCap and am-WithShortSN-RedCap.

* Agreed

Phase 1-Proposal 3.3.4-1: [for agreement] [13/14] Follow RAN2 agreements, keep the structure as it is, i.e. separate section for RedCap specific capabilities;.

* Agreed

Phase 2-proposal 4.2.3-2: [For agreements] [7/7] remove “channelBWs-DL-v1590 is not applicable to RedCap Ues” from the corresponding field description since it is already clear in the specification.

* Agreed

Agreements via email - from offline 107:

1. Rel-17 RRM relaxation for RRC\_IDLE/INACTIVE UEs is captured in TS38.306 as optional feature without capability:
2. Rel-17 eDRX for RRC\_IDLE UEs is captured in TS38.306 as optional feature without capability signalling
3. *inactiveStatePO-Determination-r17* introduced in R2-2111586 covers eDRX scenario, and no new UE capability is needed. A UE supports eDRX shall also support *inactiveStatePO-Determination-r17*.
4. Remove “For FR1 RedCap UE, the bit which indicates 20MHz shall be set to 1. For FR2 RedCap UE, the bit which indicates 100MHz shall be set to 1.”
5. Remove “This capability is not applicable to RedCap UEs.” from the definition of channelBW-90mhz.
6. Do not add the change “since xxx.” for the definition of supportOf16DRB-RedCap, longSN-RedCap and am-WithShortSN-RedCap.
7. Follow RAN2 agreements, keep the structure as it is, i.e. separate section for RedCap specific capabilities.
8. Remove “channelBWs-DL-v1590 is not applicable to RedCap UEs” from the corresponding field description since it is already clear in the specification.

Online discussion:

At117-proposal 4.2.3-1: [online discussion] RAN2 to confirm which option should be agreed to replace “RedCap Ues shall support the maximum channel bandwidth defined for the respective band up to 20 MHz for FR1 and up to 100 Mhz for FR2. ”

Option 1 (15): for channelBWs-DL, channelBWs-UL, supportedBandwidthDL and supportedBandwidthUL:

For each band, RedCap UEs shall indicate the maximum channel bandwidth, which is the maximum one from the channel bandwidths less than or equal to 20 MHz for FR1 and less than or equal to 100 Mhz for FR2, taking restrictions in TS 38.101-1 [2] and TS 38.101-2 [3] into consideration.

Option 2 (2):

For the case of channelBWs-DL and channelBWs-UL which are bitmap signalling, use the text:

For each band, RedCap UEs shall indicate supporting the maximum of those channel bandwidths that are less than or equal to 20 MHz for FR1 and less than or equal to 100 Mhz for FR2, taking restrictions in TS 38.101-1 [2] and TS 38.101-2 [3] into consideration

For the case of supportedBandwidthDL and supportedBandwidthUL which are enumerated to indicate the maximum channel BW, use the text:

For each band, RedCap UEs shall indicate its maximum channel bandwidth, which is the maximum of those channel bandwidths that are less than or equal to 20 MHz for FR1 and less than or equal to 100 Mhz for FR2, taking restrictions in TS 38.101-1 [2] and TS 38.101-2 [3] into consideration.

* Mediatek clarifies this is a clarification on top of option1
* T-mobile thinks we can wait for RAN4. Huawei thinks their paper in RAN4 is not related to this and we can conclude in RAN2

Option 3 (1): wait for RAN4;

* RAN2 adopts option 2 and might come back to this based on information from RAN4.

At117-Proposal 3.4-1: [online discussion] [14/18] Confirm the working assumption that Msg3 early identification is mandatorily supported by RedCap UE;

* T-mobile thinks we already have other mandatory features and wonders about the additional complexity.
* vivo wonders about the need for msg3 identification
* QC prefers to have it optional
* Apple thinks there is a security issue
* Ericsson thinks there is no complexity issue. HW/ZTE/LGE/Denso agree. Samsung also agrees: the consequence is that the NW always has to support msg1 identification. Mediatek/Nokia/CATT agrees. BT fully agrees.

Show of hands:

* Confirm the WA: IDC, Nokia, Samsung, MTK, Futurewei, LGE, Denso, BT, HW, Orange, CATT, ZTE, Spreadtrum, Intel, KDDI, Sharp, Ericsson, Xiaomi, Oppo
* Revert the WA: T-mobile, Apple, QC, vivo
* The WA that Msg3 early identification is mandatorily supported by RedCap UE is confirmed

At117-Proposal 3.2.1-1: [online discussion] [10/16] Rel-17 RRM relaxation can apply to any Rel-17 UE;

* Mediatek wonders if we will have CRs in the future to clarify the behaviour for non RedCap UEs or not.
* VC thinks this can be raised in the plenary to extend the behaviour to any Rel-17 UEs

At117-Proposal 3.2.2-1: [online discussion] [9 vs 7] a UE supports eDRX, must support Edrx in RRC\_IDLE and RRC\_INACTIVE simultaneously;

* Continue offline or only online in GTW session in week2 (up to offline rapporteur)

At117-Proposal 3.2.2-2: [online discussion] [10] Assuming a UE supports eDRX, must support Edrx in RRC\_IDLE and RRC\_INACTIVE simultaneously, the eDRX in RRC\_INACTIVE is introduced together with eDRX in RRC\_IDLE as

| Definitions for feature |
| --- |
| Rel-17 extended DRX in RRC\_IDLE and RRC\_INACTIVE  It is optional for UE to support Rel-17 extended DRX cycle values up to 10485.76 seconds for RRC\_IDLE and up to 10.24 seconds for RRC\_INACTIVE, and paging in extended DRX in RRC\_IDLE and RRC\_INACTIVE as specified in TS 38.331 [9] and TS 38.304 [21]. |

* Continue offline or only online in GTW session in week2 (up to offline rapporteur)

At117-Proposal 3.2.2-3: [online discussion] [7/8] Assuming a UE supports eDRX, may not support Edrx in RRC\_IDLE and RRC\_INACTIVE simultaneously, for extended long DRX for RRC\_INACTIVE, introduce a new capability bit extendedDRX-r17 covering DRX values of 2.56s, 5.12s and 10.24s;

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Definitions for parameters | Per | M | FDD-TDD DIFF | FR1-FR2 DIFF |
| extendedDRX-Cycle-r17  Indicates whether UE in RRC\_INACTIVE supports the extended DRX values of 256, 512 and 1024 radio frames as specified in TS 38.331 [9]. | UE | No | No | No |

* Continue offline or only online in GTW session in week2 (up to offline rapporteur)

At117-proposal 3.2.3-1: [online discussion] RAN2 to decide which option should be agreed:

Option 1: 12 companies (Qualcomm, Samsung, Vivo, Nokia, Sequans, LGE, Apple, Ericsson, BT, KDDI, Spreadtrum, CATT)

Rel-17 RRM relaxation for RRC\_CONNECTED Ues is captured in TS38.306 as optional feature with capability ignaling, i.e. introduce a capability bit on this;

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Definitions for parameters | Per | M | FDD-TDD DIFF | FR1-FR2 DIFF |
| rrm-RelaxationRRC-ConnectedRedCap-r17  Indicates whether UE supports Rel-17 relaxed RRM measurements in RRC\_CONNECTED as specified in TS 38.331 [9]. | UE | No | No | No |

Option 2: 6 companies (Huawei, MediaTek, OPPO, ZTE, Futurewei, T-Mobile )

Rel-17 RRM relaxation for RRC\_CONNECTED Ues is captured in TS38.306 as optional feature with capability ignaling, i.e. introduce a capability bit on this;

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Definitions for parameters | Per | M | FDD-TDD DIFF | FR1-FR2 DIFF |
| rrm-RelaxationRRC-ConnectedRedCap-r17  Indicates whether UE supports UE assistance reporting of fulfilment status for RRM measurement relaxation criterion in RRC\_CONNECTED as specified in TS 38.331 [9]. | UE | No | No | No |

* Continue offline or only online in GTW session in week2 (up to offline rapporteur)

Agreements online:

1. RAN2 adopts option 2 (in the summary of [R2-2203540](file:///C:\Data\3GPP\Extracts\R2-2203540_Report%20of%20AT117-107-v20_Summary.docx), to replace “RedCap UEs shall support the maximum channel bandwidth defined for the respective band up to 20 MHz for FR1 and up to 100 Mhz for FR2.”) and might come back to this based on information from RAN4
2. The working assumption that Msg3 early identification is mandatorily supported by RedCap UE is confirmed

[R2-2203563](file:///C:\Data\3GPP\RAN2\Inbox\R2-2203563.zip) [offline-107] UE caps open issues - second round Intel discussion Rel-17 NR\_redcap-Core

For online discussion:

At117-Proposal 3.2.2-1: [online discussion] [9 vs 7] a UE supports eDRX, must support Edrx in RRC\_IDLE and RRC\_INACTIVE simultaneously;

At117-Proposal 3.2.2-2: [online discussion] [10] Assuming a UE supports eDRX, must support Edrx in RRC\_IDLE and RRC\_INACTIVE simultaneously, the eDRX in RRC\_INACTIVE is introduced together with eDRX in RRC\_IDLE as

| Definitions for feature |
| --- |
| Rel-17 extended DRX in RRC\_IDLE and RRC\_INACTIVE  It is optional for UE to support Rel-17 extended DRX cycle values up to 10485.76 seconds for RRC\_IDLE and up to 10.24 seconds for RRC\_INACTIVE, and paging in extended DRX in RRC\_IDLE and RRC\_INACTIVE as specified in TS 38.331 [9] and TS 38.304 [21]. |

At117-Proposal 3.2.2-3: [online discussion] [7/8] Assuming a UE supports eDRX, may not support Edrx in RRC\_IDLE and RRC\_INACTIVE simultaneously, for extended long DRX for RRC\_INACTIVE, introduce a new capability bit extendedDRX-r17 covering DRX values of 2.56s, 5.12s and 10.24s;

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Definitions for parameters | Per | M | FDD-TDD DIFF | FR1-FR2 DIFF |
| extendedDRX-Cycle-r17  Indicates whether UE in RRC\_INACTIVE supports the extended DRX values of 256, 512 and 1024 radio frames as specified in TS 38.331 [9]. | UE | No | No | No |

At117-proposal 3.2.3-1: [online discussion] RAN2 to decide which option should be agreed:

Option 1: 13 companies (Qualcomm, Samsung, Vivo, Nokia, Sequans, LGE, Apple, Ericsson, BT, KDDI, Spreadtrum, CATT, Interdigital)

Rel-17 RRM relaxation for RRC\_CONNECTED Ues is captured in TS38.306 as optional feature with capability ignaling, i.e. introduce a capability bit on this;

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Definitions for parameters | Per | M | FDD-TDD DIFF | FR1-FR2 DIFF |
| rrm-RelaxationRRC-ConnectedRedCap-r17  Indicates whether UE supports Rel-17 relaxed RRM measurements in RRC\_CONNECTED as specified in TS 38.331 [9]. | UE | No | No | No |

Option 2: 6 companies (Huawei, MediaTek, OPPO, ZTE, Futurewei, T-Mobile )

Rel-17 RRM relaxation for RRC\_CONNECTED Ues is captured in TS38.306 as optional feature with capability ignaling, i.e. introduce a capability bit on this;

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Definitions for parameters | Per | M | FDD-TDD DIFF | FR1-FR2 DIFF |
| rrm-RelaxationRRC-ConnectedRedCap-r17  Indicates whether UE supports UE assistance reporting of fulfilment status for RRM measurement relaxation criterion in RRC\_CONNECTED as specified in TS 38.331 [9]. | UE | No | No | No |

* Mediatek thinks we should link the capability to a feature.
* Come back online in the final CB session on Thursday (if time allows)

At117-proposal 4.1.3-1: [online discussion] RAN2 to decide which option should be agreed:

Option 1 (6 companies, ZTE, Sequans, Intel, Futurewei, OPPO, Huawei ): keep the sentence “RedCap UE shall always report “1”.

Option 2 (9 companies, MediaTek, Interdigital, LGE, Ericsson, Intel, vivo, Samsung, Apple, Qualcomm): Do nothing, i.e. the capability is mandatory with IoT bit for RedCap UE;

[R2-2203143](file:///C:\Data\3GPP\Extracts\R2-2203143%20Further%20discussion%20on%20RRM%20relaxation%20for%20RedCap%20UE.docx) Further discussion on RRM relaxation for RedCap UE China Telecommunications discussion Rel-17

Withdrawn

R2-2203141 Further discussion on RRM relaxation for RedCap UE China Telecommunications discussion Rel-17 Late

R2-2203142 Further discussion on RRM relaxation for RedCap UE China Telecommunications discussion Rel-17 Late

#### 8.12.5.2 Other

Contributions on any other issues.

## 8.19 Coverage Enhancements

(NR\_cov\_enh-Core; leading WG: RAN1; REL-17; WID: [RP-211566](file:///C:\Data\3GPP\archive\RAN\RAN%2392\Tdocs\RP-211566.zip))

Time budget: 0.5

Tdoc Limitation: 1 tdoc

Common aspects related to RACH indication (in MSG1) / RACH partitioning shall be submitted to 8.18

### 8.19.1 Organizational

Rapporteur input, incoming LS etc.

#### 8.19.1.1 LS in

For LSes that need action: one tdoc by contact company to address the LS and potential reply is considered.

Rapporteur input may be provided.

[R2-2202153](file:///C:\Data\3GPP\Extracts\R2-2202153_R4-2202368.docx) Reply LS on Maximum duration for DMRS bundling (R4-2202368; contact: Qualcomm) RAN4 LS in Rel-17 To:RAN1, RAN2

- QC thinks there is no impact on RAN2 for now

- vivo thinks we can wait for RAN1 parameter list

* Noted

#### 8.19.1.2 CRs

CR Rapporteurs to provide running CRs, potentially updated.

[R2-2202831](file:///C:\Data\3GPP\Extracts\R2-2202831.docx) TS 38.300 CR for Rel-17 NR coverage enhancements China Telecom CR Rel-17 38.300 16.8.0 0412 - B NR\_cov\_enh-Core

* Wait for RAN1 reply LS

[R2-2202652](file:///C:\Data\3GPP\Extracts\R2-2202652%20TS%2038.321%20CR%20for%20NR%20coverage%20enhancements.docx) TS 38.321 CR for Rel-17 Coverage enhancement ZTE Corporation, Sanechips CR Rel-17 38.321 16.7.0 1199 - B NR\_cov\_enh-Core

* LG thinks the CR touches the legacy text and would prefer not to do so.
* ZTE thinks it's different to do without touching legacy text.
* Noted
* Revised in R2-2203553
* Continue in offline 111

R2-2203553 TS 38.321 CR for Rel-17 Coverage enhancement ZTE Corporation, Sanechips CR Rel-17 38.321 16.7.0 1199 1 B NR\_cov\_enh-Core

* [AT117-e][111][CovEnh] MAC CR (ZTE)

Scope: Update the MAC CR

Intended outcome: Agreed MAC CR

Initial deadline (for companies' feedback): Tuesday 2022-03-01 1800 UTC

Initial deadline (for summary and Stage 2 CR in R2-2203553): Wednesday 2022-03-02 1000 UTC

R2-2204034 [offline-111] CE MAC CR ZTE Corporation discussion Rel-17 NR\_cov\_enh-Core

[R2-2203127](file:///C:\Data\3GPP\Extracts\R2-2203127%20Introduction%20of%20NR%20coverage%20enhancements%20in%20RRC.docx) Introduction of NR coverage enhancements in RRC Huawei, HiSilicon CR Rel-17 38.331 16.7.0 2928 - B NR\_cov\_enh-Core

- HW indicates they updated the CR and suggests to continue offline

* Noted
* Revised in R2-2203554
* Continue in offline 112

R2-2203554 Introduction of NR coverage enhancements in RRC Huawei, HiSilicon CR Rel-17 38.331 16.7.0 2928 1 B NR\_cov\_enh-Core

* [AT117-e][112][CovEnh] RRC CR (Huawei)

Scope: Update the RRC CR

Intended outcome: Agreed RRC CR

Initial deadline (for companies' feedback): Tuesday 2022-03-01 1800 UTC

Initial deadline (for Stage 2 CR in R2-2203554): Wednesday 2022-03-02 1000 UTC

### 8.19.2 General

All aspects, including possible corrections/TPs for the running CRs.

[R2-2203284](file:///C:\Data\3GPP\Extracts\R2-2203284%20BWP%20with%20only%20CE-RACH%20resources.docx) BWP with only CR-RACH resources Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_cov\_enh-Core

Proposal 1: In case RSRP threshold for CE is configured for BWP with only CE-RACH, the UE switches to initial BWP for RA procedure in case the RSRP is above the threshold.

* Vivo thinks this is discussed in RAN1 as well
* Can be discussed in offline 111, with the understanding this needs to be confirmed by RAN1.

[R2-2203128](file:///C:\Data\3GPP\Extracts\R2-2203128%20On%20measurement%20gap%20handling%20for%20Msg3%20repetitions.docx) On measurement gap handling for Msg3 repetitions Huawei, HiSilicon discussion Rel-17 NR\_cov\_enh-Core

Proposal 1: During a measurement gap, the MAC entity shall transmit on UL-SCH for all repetitions of the Msg3 transmission.

* Discussed in offline 111

[R2-2203007](file:///C:\Data\3GPP\Extracts\R2-2203007%20stage-2%20correction.doc) Minor connection to the stage-2 running CR OPPO discussion Rel-17 NR\_cov\_enh-Core

[R2-2202695](file:///C:\Data\3GPP\Extracts\R2-2202695%20Remaining%20issues%20for%20Msg3%20repetition.docx) Remaining issues for Msg3 repetition CATT discussion Rel-17 NR\_cov\_enh-Core

[R2-2202981](file:///C:\Data\3GPP\Extracts\R2-2202981%20Discussion%20on%20CFRA%20PUSCH%20with%20Repetition.docx) Discussion on CFRA PUSCH with Repetition vivo discussion Rel-17 NR\_cov\_enh

[R2-2203031](file:///C:\Data\3GPP\Extracts\R2-2203031%20Discussion%20on%20Msg3%20repetition%20for%20CFRA.docx) Discussion on Msg3 repetition for CFRA Qualcomm Incorporated discussion Rel-17 NR\_cov\_enh-Core Late

[R2-2203168](file:///C:\Data\3GPP\Extracts\R2-2203168%20Further%20issues%20on%20msg3%20repetitions.docx) Further issues on msg3 repetitions Ericsson discussion Rel-17 NR\_cov\_enh

* On PUSCH repetition for CFRA, RAN2 will wait for RAN1 decision. If RAN1 decides that this can be supported, RAN2 can introduce this in Rel-17

## Summary

Agreed CRs

TBD

Approved LSs out

TBD

[POST117-e] Email discussions

TBD