3GPP TSG-RAN WG2 #119-e Tdoc R2-220XXXX

Electronic meeting, 9th - 20th May 2022

Agenda Item: 6.12.2.2

Source: Ericsson (Rapporteur)

Title: Report from [AT119-e][115][RedCap] CP Corrections (Ericsson)

Document for: Discussion, Decision

# 1 Introduction

This is the report from the offline discussion below:

**[AT119-e][115][RedCap] CP corrections (Ericsson)**

Initial scope: Discuss remaining CP corrections

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 2022-08-22 1200 UTC

Initial deadline (for rapporteur's summary in R2-2208772): Monday 2022-08-22 2000 UTC

Proposals marked "for agreement" in R2-2208772 not challenged until Tuesday 2022-08-23 08:00 UTC will be declared as agreed via email by the session chair (for the rest the discussion might continue offline).

Companies should consider the following Tdocs and the discussions therein in mind when providing feedback to the offline discussion:

[R2-2207054](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2207054.zip) Clarification on support of eDRX OPPO CR Rel-17 38.331 17.1.0 3213 - F NR\_redcap-Core

[R2-2207055](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2207055.zip) Clarification on UE support of eDRX OPPO CR Rel-17 38.306 17.1.0 0757 - F NR\_redcap-Core

[R2-2207069](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2207069.zip) Discussion on inter-RAT mobility from LTE to NR OPPO discussion Rel-17 NR\_redcap-Core

[R2-2207209](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2207209.zip) 38.331 Corrections on PDCCH-ConfigCommon for Redcap Xiaomi Communications draftCR Rel-17 38.331 17.1.0 NR\_redcap-Core

[R2-2207230](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2207230.zip) Correction on inter-RAT handover from E-UTRA to NR for RedCap Sequans Communications, Huawei, HiSilicon CR Rel-17 38.300 17.1.0 0505 - F NR\_redcap-Core

[R2-2207386](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2207386.zip) Alignment on the support of 2TX and 2UL MIMO for RedCap UEs Intel Corporation, Huawei discussion Rel-17 NR\_redcap-Core

[R2-2207620](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2207620.zip) Corrections on PDCCH-ConfigCommon for RedCap initial BWP Huawei, HiSilicon CR Rel-17 38.331 17.1.0 3297 - F NR\_redcap-Core

[R2-2207621](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2207621.zip) Corrections on the relaxed measurement criterion and smtc field for RedCap Huawei, HiSilicon CR Rel-17 38.331 17.1.0 3298 - F NR\_redcap-Core

[R2-2207747](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2207747.zip) Discussion on NCD SSB for RedCap UEs vivo, Guangdong Genius discussion Rel-17 NR\_redcap-Core

[R2-2207749](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2207749.zip) Correction on capability for RedCap vivo, Guangdong Genius CR Rel-17 38.306 17.1.0 0777 - F NR\_redcap-Core Late

[R2-2207751](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2207751.zip) Correction on TS 38.300 for RedCap vivo CR Rel-17 38.300 17.1.0 0517 - F NR\_redcap-Core

[R2-2207996](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2207996.zip) Inter-RAT handover from LTE to NR MediaTek Inc. discussion Rel-17 NR\_redcap-Core

[R2-2208155](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2208155.zip) Correction on UERadioPagingInformation and UERadioPagingInfo container Ericsson CR Rel-17 38.331 17.1.0 3364 - F NR\_newRAT-Core, NR\_redcap-Core Withdrawn

[R2-2208309](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2208309.zip) Clarification on the field description of commonControlResourceSet for RedCap UEs Ericsson CR Rel-17 38.331 17.1.0 3402 - F NR\_redcap-Core

[R2-2208310](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2208310.zip) Paging configuration for RedCap UEs in the initial DL BWP Ericsson discussion Rel-17 NR\_redcap-Core Late

[R2-2208385](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2208385.zip) Corrections on RedCap specific initial DL BWP related description CATT CR Rel-17 38.331 17.1.0 3413 - F NR\_redcap-Core

[R2-2208386](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2208386.zip) Discussion and TP on the SI request on SUL for RedCap CATT discussion Rel-17 NR\_redcap-Core

[R2-2208438](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2208438.zip) Remaining aspect on RedCap initial DL BWP CMCC discussion Rel-17 NR\_redcap-Core

[R2-2208439](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2208439.zip) Corrections on RedCap initial DL BWP CMCC CR Rel-17 38.331 17.1.0 3420 - F NR\_redcap-Core

[R2-2208631](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2208631.zip) Correction on eDRX allowed indication and PDCCH-ConfigCommon ZTE Corporation, Sanechips CR Rel-17 38.331 17.1.0 3456 - F NR\_redcap-Core

[R2-2208632](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2208632.zip) Correction on eDRX allowed indication and BFD ZTE Corporation, Sanechips CR Rel-17 38.300 17.1.0 0544 - F NR\_redcap-Core

[R2-2208924](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2208924.zip) Correction on PUCCH-ConfigCommon for RedCap UE ZTE Corporation, Sanechips CR Rel-17 38.331 17.1.0 3463 - F NR\_redcap-Core

In this document, we discuss the remaining control plane corrections based on the discussions during the online session on Thursday, August 18th and the list of Tdocs provided above with the intention to formulate a list of proposals that are agreeable and a list of proposals that require further discussion during the next online session.

# Contact Information

Please fill in the following table for contact information:

|  |  |
| --- | --- |
| Company | Contact person - email@address.com |
| Ericsson | Emre A. Yavuz – emre.yavuz@ericsson.com |
| Huawei, HiSilicon | Yulong – shiyulong5@huawei.com |
| Xiaomi | Liyanhua1@xiaomi.com |
| CMCC | liuxiaoman@chinamobile.com |
| Samsung | Seungbeom Jeong - s90.jeong@samsung.com |
| Apple | naveen.palle@apple.com |
| Qualcomm | Linhai He - linhaihe@qti.qualcomm.com |
| Futurewei | Yunsong Yang – yyang1@futurewei.com |
| vivo | Chenli5g@vivo.com |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

# 2 Discussion on CP corrections

## 2.1 eDRX

In this section, we discuss the eDRX related issues brought up in the contributions below:

[R2-2207054](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2207054.zip) Clarification on support of eDRX OPPO CR Rel-17 38.331 17.1.0 3213 - F NR\_redcap-Core

[R2-2207055](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2207055.zip) Clarification on UE support of eDRX OPPO CR Rel-17 38.306 17.1.0 0757 - F NR\_redcap-Core

[R2-2208631](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2208631.zip) Correction on eDRX allowed indication and PDCCH-ConfigCommon ZTE Corporation, Sanechips CR Rel-17 38.331 17.1.0 3456 - F NR\_redcap-Core

[R2-2208632](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2208632.zip) Correction on eDRX allowed indication and BFD ZTE Corporation, Sanechips CR Rel-17 38.300 17.1.0 0544 - F NR\_redcap-Core

**Q 2.1.1** In R2-2207054 and R2-2207055, it is proposed to revise the names of some eDRX related parameters. Do you agree with the intention of changes? Please elaborate your reply, especially if you do not.

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Comments** |
| Huawei, HiSilicon | No, but | Renaming the ASN.1 field is not needed.But the changes to the text on “for UE in RRC\_IDLE” is reasonable. |
| Xiaomi | - | Not to change the field. We can make some clarification in the field description.  |
| Samsung |  | Prefer to avoid renaming IE, but proposed changes in field description is fine. |
| Apple |  | Same view as Samsung |
| Qualcomm | Yes | We agree with the intention |
| Futurewei |  | Same view as Samsung |
| vivo | Yes  | We agree with the intention. The change of the field description looks fine to us, but we could follow the majority on whether re-name the IE.  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

**Q 2.1.2** If you agree with the intention of changes in R2-2207054 and R2-2207055., please comment below if you have any suggestions for the wording and elaborate why.

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Qualcomm | We are fine with the proposed changes in the field descriptions. No strong view on the change in the names. |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

**Summary – Q 2.1.1 and Q 2.1.2**

???

Based on the observations above, the rapporteur proposes the following:

1. ???

**Q 2.1.3** In R2-2208631 and R2-2208632, it is proposed to revise the names of some eDRX related parameters, and introduce new parameters in *PDCCH-ConfigCommon*. Do you agree with the intention of changes? Please elaborate your reply, especially if you do not.

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Comments** |
| Huawei, HiSilicon | Maybe | R2-2208631The changes to the field description eDRX-AllowedIdle/eDRX-AllowedInactive are reasonable.Other changes can relies on NW implementation. But we are fine to go with majority.R2-2208632Changes on eDRX: Intention is OK. Changes on BFD: Intention is OK.  |
| Xiaomi | - | On RAN2-2208631:The first/second change: OkThe third change on *PEI-ConfigBWP is right. We have similar docs in ePowsaving, and they are postponed and depends on the discussion in Redcap WI.*On RAN2-2208632:*Both changes are ok* |
| Samsung | Yes | Changes in R2-2208631: OKChanges in R2-2208632: OK |
| Qualcomm | yes | Changes in R2-2208631 and R2-2208632 are fine. |
| Futurewei | Yes to both | But noticed that we have used both CN paging and CN-initiated paging, RAN paging and RAN-initiated paging in 38.330. In 38.331, we have mostly used RAN paging and CN paging, except that there are two instances of RAN-initiated paging.Wonder if we should make an effort to unify the terms.  |
| vivo |  comments | R2-2208631:1st change: We agree with the intent of revising of some eDRX related parameters, which is similar to the R2-2207054 and R2-2207055.2nd change: we don’t agree to add the restriction in the field description of searchSpaceMCCH and searchSpaceMTCH in PDCCH-ConfigCommon. Since for the cases that bandwidth configuration for MCCH and MTCH which is larger than and fully contains the bandwidth for the initial DL BWP and CORESET#0, it could also contain the RedCap specific initial DL BWP. In this case, the MCCH and MTCH could also be configured in RedCap specific initial DL BWP.3rd change: we agree with the change on *PEI-ConfigBWP.*On RAN2-2208632:Both changes are ok |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

**Q 2.1.4** If you agree with the intention of changes in R2-2208631 and R2-2208632., please comment below if you have any suggestions for the wording and elaborate why.

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Qualcomm | A minor suggestion on R2-2208632 to better match the wording used for non-RedCap UEs proceeding the change:For RedCap UEs, SSB-based Beam Failure Detection can be also performed based on the non-cell defining SSB. |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

**Summary – Q 2.1.3 and Q 2.1.4**

???

Based on the observations above, the rapporteur proposes the following:

1. ???

## 2.2 inter RAT mobility

In this section, we discuss the inter RAT mobility related issues based on the outcome of the related online discussion.:

[R2-2207069](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2207069.zip) Discussion on inter-RAT mobility from LTE to NR OPPO discussion Rel-17 NR\_redcap-Core

[R2-2207230](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2207230.zip) Correction on inter-RAT handover from E-UTRA to NR for RedCap Sequans Communications, Huawei, HiSilicon CR Rel-17 38.300 17.1.0 0505 - F NR\_redcap-Core

[R2-2207996](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2207996.zip) Inter-RAT handover from LTE to NR MediaTek Inc. discussion Rel-17 NR\_redcap-Core

The following agreement was made during the online session on Thursday, August 18th.

1. For inter-RAT mobility from LTE to NR, RAN2 agrees to have a note in Stage 2, based on the TP in R2-2207230. Further discuss the detailed wording offline, especially for the second sentence.

**Q 2.2.1** Please comment below if you have any suggestions for the wording and elaborate why.

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Huawei, HiSilicon | TP in R2-2207230 is fine as the baseline.If companies think the wording is strong we can change like“ NOTE: It is up to the E-UTRA network implementation, if possible, to avoid handover attempts of a RedCap UE to a target NR cell not supporting RedCap. If a RedCap UE determines that the target NR cell does not support RedCap, by considering the above configuration in SIB1 of the target cell, the UE ~~is expected to~~should initiate the connection re-establishment procedure.“BTW, copy the corresponding agreement below

|  |
| --- |
| RAN2#116bis-eAgreements online:For the LTE to NR handover, in case the target NR cell is a legacy cell, the RedCap UE should trigger RRC re-establishment procedure. FFS any specification impact or purely leave to implementation |

 |
| Xiaomi | We prefer only capture the first sentence here. |
| Samsung | Prefer “should” as in the previous agreement |
| Qualcomm | We prefer keeping only the first sentence in the TP, i.e.NOTE: It is up to the E-UTRA network implementation, if possible, to avoid handover attempts of a RedCap UE to a target NR cell not supporting RedCap. Becase at RAN2#116bis-e, it is left FFS whether to capture the agreement in the spec or leave to implementation. We think leaving it to UE implementation is sufficient. |
| Futurewei | Prefer “should” as well. |
| vivo | Agree with Xiaomi and Qualcomm that only capture the first sentence here. Since E-UTRAN network implementation shall promise the target NR cell is a RedCap-support cell, then the scenario in the second sentence in R2-2207230 won’t happen. Otherwise, the RRC spec has to be changed to include the RRC re-establishment condition for this case. However, in our understanding, it has been excluded during RAN2 discussion in the last few meetings.  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

**Summary – Q 2.2.1**

???

Based on the observations above, the rapporteur proposes the following:

1. ???

## 2.3 PDCCH-ConfigCommon

In this section, we discuss the *PDCCH-ConfigCommon* related issues based on the contributions below:

[R2-2207209](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2207209.zip) 38.331 Corrections on PDCCH-ConfigCommon for Redcap Xiaomi Communications draftCR Rel-17 38.331 17.1.0 NR\_redcap-Core

[R2-2207620](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2207620.zip) Corrections on PDCCH-ConfigCommon for RedCap initial BWP Huawei, HiSilicon CR Rel-17 38.331 17.1.0 3297 - F NR\_redcap-Core

[R2-2208309](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2208309.zip) Clarification on the field description of commonControlResourceSet for RedCap UEs Ericsson CR Rel-17 38.331 17.1.0 3402 - F NR\_redcap-Core

**Q 2.3.1** In the contributions above, it is proposed to clarify the field description of *commonControlResourceSet* in *PDCCH-ConfigCommon* for RedCap UEs. Do you agree with the intention of changes? Please elaborate your reply, especially if you do not.

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Comments** |
| Huawei, HiSilicon | Yes | The intentions are similar.**But, another change is missing in the question from R2-2207620 to clarify the conditional presence of InitialBWP-Only***InitialBWP-Only*If *SIB1* is broadcast the field is mandatory present in the *PDCCH-ConfigCommon* of the initial BWP (BWP#0) in *ServingCellConfigCommon,* except it is the RedCap specific initial BWP not including CD-SSB and the entire CORESET#0; it is absent in other BWPs and when sent in system information. If SIB1 is not broadcast and there is an SSB associated to the cell, the field is optionally present, Need M, in the *PDCCH-ConfigCommon* of the initial BWP (BWP#0) in *ServingCellConfigCommon* (still with the same setting for all UEs). In other cases, the field is absent. |
| Xiaomi | YEs | We prefer the to list the case for Redcap explicitly:“If the RedCap specific initial DL BWP does NOT contain the entire CORESET#0, the network configures the commonControlResourceSet in SIB1 for Redcap so that it is NOT contained in the bandwidth of CORESET#0.” |
| Samsung | Yes | Prefer update of field description in R2-2207209 and agree with clarification on the conditional presence of InitialBWP-Only |
| Qualcomm | Yes |  |
| Futurewei | Yes |  |
| vivo | Yes  | We agree with the intent.  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

**Q 2.3.2** If you agree with the intention of changes in those contribution, please comment below if you have any suggestions for the wording and elaborate why.

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Huawei, HiSilicon | The wording from R2-2207620 is preferred. |
| Qualcomm | We prefer the TP from [R2-2207209](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2207209.zip), which is more explicit. |
| vivo | The wording from R2-2207620 is preferred. |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

**Summary – Q 2.3.1 and Q 2.3.2**

???

Based on the observations above, the rapporteur proposes the following:

1. ???

## 2.4 PUCCH-ConfigCommon

In this section, we discuss the *PUCCH-ConfigCommon* related issues based on the contributions below:

[R2-2208924](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2208924.zip) Correction on PUCCH-ConfigCommon for RedCap UE ZTE Corporation, Sanechips CR Rel-17 38.331 17.1.0 3463 - F NR\_redcap-Core

[R2-2208932](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2208932.zip) On PUCCH configuration in initial UL BWP MediaTek Inc. discussion Rel-17 NR\_redcap-Core

**Q 2.4.1** In R2-2208924, it is proposed to dummify the *pucch-ResourceCommon-RedCap* field and delete the corresponding field description. Do you agree with the intention of changes? Please elaborate your reply, especially if you do not.

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Comments** |
| Huawei, HiSilicon | No | This coming from the R1 LS on the RRC parameters. RAN1 spec already capture how it works between the legacy one and the newly added one. It seems even if in RedCap specific BWP, NW can choose to configure RedCap specific *pucch-ResourceCommon-RedCap.* |
| Xiaomi | No? | The PUCCH-ConfigCommon is configurd in BWP-UplinkCommon. If there is no Redcap specific uplink inital BWP, seems we can not use PUCCH-ConfigCommon to configure different parameters for legacy UE and Redcap UE? |
| Samsung | No | We have same understanding as Huawei, but we are fine to update the description of the conditional presence to clarify the concerned scenario. |
| Apple | No | Similar view as Xiaomi |
| Qualcomm | No | There does not seem to be an issue, because both pucch-ResourceCommon and pucch-ResourceCommon-RedCap-r17 are optional. Network hence can configure/omit them according to which BWP it is. |
| Futurewei | No |  |
| vivo | No | We agree with the issue. But as Qualcomm indicated that the network is able to configure the corresponding value for RedCap-specific initial UL BWP by using the legacy pucch-ResourceCommon IE. Seems nothing is broken with current specification.  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

**Q 2.4.2** If you agree with the intention of changes in R2-2208924, please comment below if you have any suggestions for the wording and elaborate why.

|  |  |
| --- | --- |
| **Company** | **Comments** |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

**Summary – Q 2.4.1 and Q 2.4.2**

???

Based on the observations above, the rapporteur proposes the following:

1. ???

**Q 2.4.3** In R2-2208932, it is proposed to clarify when different PUCCH resources need to be configured for RedCap UEs and if so which set of PUCCH resources are to be used. Do you agree with the intention of changes and sending an LS to RAN1 to inform them? Please elaborate your reply, especially if you do not.

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Comments** |
| Huawei, HiSilicon | Yes, but | The intention seems correct. On the LS itself, maybe we can check with our R1 colleagues first. Hope this is also the understanding in R1. In that case, there seems no need of the LS. |
| Xiaomi | - | Can confirm with RAN1 |
| Samsung | Yes | We have same understanding as P1 which can be checked with RAN1. |
| Qualcomm | Yes | Agree with P1. It is OK to check with RAN1. But not sure if any clarification to the current field description is necessary, as there is no other PUCCH configuration that RedCap UE may use. |
| Futurewei | Yes |  |
| vivo | Yes  | Agree with the intention and we prefer to confirm with RAN1. |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

**Q 2.4.4** If you agree with the intention of changes suggested in R2-2208932, please comment below if you have any suggestions for the wording and elaborate why.

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Qualcomm | No change is necessary |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

**Summary – Q 2.4.3 and Q 2.4.4**

???

Based on the observations above, the rapporteur proposes the following:

1. ???

## 2.5 UE Capabilities

In this section, we discuss the conflict between the description TS 38.306 and the RAN4 agreements based on the contribution below:

[R2-2207386](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2207386.zip) Alignment on the support of 2TX and 2UL MIMO for RedCap UEs Intel Corporation, Huawei discussion Rel-17 NR\_redcap-Core

**Q 2.5.1** Do you agree with the problem described in the contribution above. Please elaborate your reply, especially if you do not.

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Comments** |
| Huawei, HiSilicon | Yes | It is the R4 conclusion. |
| Xiaomi | Yes | Option1 is Ok. |
| Samsung | Yes |  |
| Apple | Yes |  |
| Qualcomm | Yes |  |
| Futurewei | Yes |  |
| vivo | Yes  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

**Q 2.5.2** If you agree with the problem described, please comment below on how RAN2 should address the problem, e.g., option 1, option 2, any other option, and elaborate why.

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Huawei, HiSilicon | Option1**Proposal: Update TS 38.306, indicating that 2 Tx and 2 UL MIMO layers are not supported by the RedCap UEs. If so, the following change should be captured in Capability Mega CR as*:***For FR 1, 1 DL MIMO layer if 1 Rx branch is supported, and 2 DL MIMO layers if 2 Rx branches are supported; for FR2, either 1 or 2 DL MIMO layers can be supported, while 2 Rx branches are always supported. For FR1 and FR2, UE features and corresponding capabilities related to more than 2 UE Rx branches or more than 2 DL MIMO layers, as well as UE features and capabilities related to more than or equal to 2 UE Tx branches or more than or equal to 2 UL MIMO layers are not supported by RedCap UEs; |
| Samsung | Support option 1 and proposal |
| Apple | Option 1 is ok for us. |
| Qualcomm | We prefer option 1 |
| Futurewei | Option 1 (i.e., keep aligned), except that a simpler way of option 1 can be the following:more than 1 UE Tx branch or more than 1 UL MIMO layer |
| vivo | Option 1 is fine to us. |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

**Summary – Q 2.5.1 and Q 2.5.2**

???

Based on the observations above, the rapporteur proposes the following:

1. ???

## 2.6.1 Initial DL BWP

In this section, we discuss the inital DL BWP related issues brought up in the contributions below:

[R2-2208385](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2208385.zip) Corrections on RedCap specific initial DL BWP related description CATT CR Rel-17 38.331 17.1.0 3413 - F NR\_redcap-Core

[R2-2208438](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2208438.zip) Remaining aspect on RedCap initial DL BWP CMCC discussion Rel-17 NR\_redcap-Core

[R2-2208439](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2208439.zip) Corrections on RedCap initial DL BWP CMCC CR Rel-17 38.331 17.1.0 3420 - F NR\_redcap-Core

**Q 2.6.1** Do you agree with the intention of changes in R2-2208385? Please elaborate your reply, especially if you do not.

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Comments** |
| Huawei, HiSilicon |  | The change to commonControlResourceSet is already discussed in Q 2.3.1.For the rest of changes, it is sufficient to add one sentence to clarify the initial BWP also includes the RedCap specific initial BWP, rather than to clarify everywhere. |
| Xiaomi |  | First change is covered in above questions.No strong view on the rest changes. |
| Samsung |  | Same view with Xiaomi |
| Qualcomm |  | Same comment as Huawei.  |
| vivo | Yes  | First change has been discussed above.For the rest of changes, we agree with the intent that also considers RedCap specific initial BWP on the corresponding part in RRC spec for legacy initial BWP. However, we think the change in R2-2208385 is not safe considering some changes may be missed. Hence, we also agree with Huawei to add one sentence to clarify the initial BWP also includes the RedCap specific initial BWP. Anyway, some kind of clarification should be captured in RRC spec. |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

**Q 2.6.2** If you agree with the intention of changes in R2-2208385, please comment below if you have any suggestions for the wording and elaborate why.

|  |  |
| --- | --- |
| **Company** | **Comments** |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

**Summary – Q 2.6.1 and Q 2.6.2**

???

Based on the observations above, the rapporteur proposes the following:

1. ???

**Q 2.6.3** Do you agree with the intention of changes proposed in R2-2208438 and captured in R2-2208439? Please elaborate your reply, especially if you do not.

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Comments** |
| Huawei, HiSilicon | No | This is NBC change for signaling optimization. |
| Xiaomi | No | We have agreed that :**If initial downlink BWP is wider than RedCap UE’s maximum transmission bandwidth, a separate initial DL BWP should be configured for RedCap UEs to ensure RedCap UEs’ access** |
| CMCC | Yes | This enhancement is under the condition that separate initial BWP is configured, and it cannot be excluded that *initialDownlinkBWP-RedCap-r17* share the same value with the location, bandwidth, SCS, and cyclic prefix of the MIB-configured CORESET#0. Therefore, these same parameters can be optional for payload reducing.And Since RedCap is still under discussion, there’s no RedCap product or device, thus we think it could be changed. |
| Samsung | No | Same view with Huawei. |
| Apple | No | This is NBC for all UEs…? |
| Qualcomm | No | This is an NBC, as companies above have pointed out. And it reverts an existing agreement that RedCap-specific configurations do not use delta signaling. |
| Futurewei | No | Same view with Samsung and Huawei. |
| vivo | No  | We understand this could reduce the SIB payload when the RedCap-specific initial DL BWP is same as CORESET#0. But we agree with other companies this is NBC change. |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

**Q 2.6.4** If you agree with the intention of changes in R2-2208438, please comment below if you have any suggestions for the wording (any alternative text to what is captured in R2-2208439) and elaborate why.

|  |  |
| --- | --- |
| **Company** | **Comments** |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

**Summary – Q 2.6.3 and Q 2.6.4**

???

Based on the observations above, the rapporteur proposes the following:

1. ???

## 2.7.1 Others

In this section, we discuss other issues brought up in the contributions below:

[R2-2207621](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2207621.zip) Corrections on the relaxed measurement criterion and smtc field for RedCap Huawei, HiSilicon CR Rel-17 38.331 17.1.0 3298 - F NR\_redcap-Core

[R2-2208310](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2208310.zip) Paging configuration for RedCap UEs in the initial DL BWP Ericsson discussion Rel-17 NR\_redcap-Core Late

**Q 2.7.1** Do you agree with the intention of changes in R2-2207621? Please elaborate your reply, especially if you do not.

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Comments** |
| Huawei, HiSilicon | Yes, proponent | The current field description of *smtc* only considers the case that the first active BWP is configured with CD-SSB. For RedCap UE, when the first active DL BWP is configured with NCD-SSB, the following description is not correct: “The network sets the periodicityAndOffset to indicate the same periodicity as ssb-periodicityServingCell in spCellConfigCommon”, where the periodicityAndOffset can be same as the one of NCD-SSB.Considering the NCD-SSB is introduced, the field description of *smtc*: “the UE uses the SMTC in the measObjectNR having the same SSB frequency and subcarrier spacing” becomes ambiguous. It is not clear which SSB the “SSB frequency and subcarrier spacing” refers to. It should be clarified as the previous CD-SSB for non-RedCap UEs and as the previous NCD-SSB on the active DL BWP before handover for RedCap UE.***smtc***The SSB periodicity/offset/duration configuration of target cell for NR PSCell change and NR PCell change. The network sets the *periodicityAndOffset* to indicate the same periodicity as *ssb-periodicityServingCell* in *spCellConfigCommon,* unless the first active DL BWP included in this RRC message is configured with *nonCellDefiningSSB-r17* for RedCap*.*For case of NR PCell change, the *smtc* is based on the timing reference of (source) PCell. For case of NR PSCell change, it is based on the timing reference of source PSCell.If both this field and *targetCellSMTC-SCG* are absent, the UE uses the SMTC in the *measObjectNR* having the same SSB frequency and subcarrier spacing as the cell-Defining SSB,or the non-Cell-Defining SSB on the active DL BWP for RedCap, as configured before the reception of the RRC message. For a RedCap UE, if the first active DL BWP included in this RRC message is configured with *nonCellDefiningSSB-r17*, this field corresponds to the NCD-SSB indicated by *nonCellDefiningSSB-r17*, otherwise, this field corresponds to the CD-SSB indicated by *absoluteFrequencySSB* in *frequencyInfoDL*. |
| Xiaomi |  | For the first change:No strong view.Even though the need code is need M, in such a case, the UE still update the reference RSRP according to the following condition since the PCell has been changed already (Neighour cell RSRP is better): If (SS-RSRP – SS-RSRPRefStationaryConnected) > 0; or |
| Samsung |  | For the 1st change, we understand Xiaomi’s comment, but prefer to add the proposed change for clarification.For the 2nd change, we agree with the intention, and are fine with the changes. |
| Qualcomm | Yes | We are fine with both changes |
| Futurewei | Yes to both |  |
| vivo |  | For the 1st change, we are ok with the change.For the 2nd change, we agree with the intention, however we think the current text “For a RedCap UE, if the first active DL BWP included in this RRC message is configured with *nonCellDefiningSSB-r17*, this field corresponds to the NCD-SSB indicated by *nonCellDefiningSSB-r17*, otherwise, this field corresponds to the CD-SSB indicated by *absoluteFrequencySSB* in *frequencyInfoDL*” has covered the clarification. |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

**Q 2.7.2** If you agree with the intention of changes in R2-2207621, please comment below if you have any suggestions for the wording and elaborate why.

|  |  |
| --- | --- |
| **Company** | **Comments** |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

**Summary – Q 2.7.1 and Q 2.7.2**

???

Based on the observations above, the rapporteur proposes the following:

1. ???

**Q 2.7.3** Do you agree with the intention of changes proposed in R2-2208310? Please elaborate your reply, especially if you do not.

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Comments** |
| Huawei, HiSilicon | Yes | Maybe the following is better.***pagingSearchSpace***ID of the Search space for paging (see TS 38.213 [13], clause 10.1). If the field is absent, the UE does not receive paging in this BWP (see TS 38.213 [13], clause 10). This field is absent for the RedCap specific initial DL BWP, and a RedCap UE shall monitor paging in the initial DL BWP defined by MIB-configured CORESET#0, if it does not include CD-SSB and the entire CORESET#0. |
| Xiaomi | - | Why initial DL BWP defined by MIB-configured CORESET#0?Why not initial BWP if configured in SIB1? Since the corset for paging is contained in corset#0 even if initial BWP configured in SIB1 is wider than 20M hz? |
| Samsung | No | We think the intention is that a RedCap UE camps on the legacy initial DL BWP in such case, and have same understanding as Xiaomi that, from the legacy, the CORESET for paging, if configured in SIB1, is contained in the bandwidth of CORESET#0. So then, no clarification would be needed? |
| Qualcomm | No | No change is needed, as it is clear what UE behavior is (i.e. monitor paging in legacy initial DL BWP. What other option it has?) |
| Futurewei | Yes |  |
| vivo | Yes  | We agree with the intent. We have observed that companies have different views on where RedCap UEs to monitor paging if the RedCap-specific initial BWP does not include CD-SSB and the entire CORESET#0. Some companies think it is in the legacy initial DL BWP, while others think it should be in the CORESET#0. Hence we prefer to add some clarification.In our understanding, there is no need for RedCap UEs to keep the channel bandwidth as legacy initial BWP in this case, since maybe the maximum bandwidth of RedCap is smaller than the initial BWP. According to the following field description, UE anyway monitors paging in CORESET#0 in RRC\_IDLE/ RRC\_INACTIVE. Hence, we agree with the change proposed by Huawei above.

|  |
| --- |
| ***initialDownlinkBWP***The initial downlink BWP configuration for a PCell. The network configures the *locationAndBandwidth* so that the initial downlink BWP contains the entire CORESET#0 of this serving cell in the frequency domain. The UE applies the *locationAndBandwidth* upon reception of this field (e.g. to determine the frequency position of signals described in relation to this *locationAndBandwidth*) but it keeps CORESET#0 until after reception of *RRCSetup*/*RRCResume/RRCReestablishment*. |

 |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

**Q 2.7.4** If you agree with the intention of changes in R2-2208310, please comment below if you have any suggestions for the wording and elaborate why.

|  |  |
| --- | --- |
| **Company** | **Comments** |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

**Summary – Q 2.7.3 and Q 2.7.4**

???

Based on the observations above, the rapporteur proposes the following:

1. ???

# 3 Conclusion

Based on the discussion above rapporteur suggests a discussion on the following proposals:

[Proposal 1 ???](#_Toc112039480)

[Proposal 2 ???](#_Toc112039481)

[Proposal 3 ???](#_Toc112039482)

[Proposal 4 ???](#_Toc112039483)

[Proposal 5 ???](#_Toc112039484)

[Proposal 6 ???](#_Toc112039485)

[Proposal 7 ???](#_Toc112039486)

[Proposal 8 ???](#_Toc112039487)

[Proposal 9 ???](#_Toc112039488)

[Proposal 10 ???](#_Toc112039489)

[Proposal 11 ???](#_Toc112039490)

# References

1. [R2-2207054](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2207054.zip) Clarification on support of eDRX OPPO CR Rel-17 38.331 17.1.0 3213 - F NR\_redcap-Core
2. [R2-2207055](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2207055.zip) Clarification on UE support of eDRX OPPO CR Rel-17 38.306 17.1.0 0757 - F NR\_redcap-Core
3. [R2-2207069](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2207069.zip) Discussion on inter-RAT mobility from LTE to NR OPPO discussion Rel-17 NR\_redcap-Core
4. [R2-2207209](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2207209.zip) 38.331 Corrections on PDCCH-ConfigCommon for Redcap Xiaomi Communications draftCR Rel-17 38.331 17.1.0 NR\_redcap-Core
5. [R2-2207230](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2207230.zip) Correction on inter-RAT handover from E-UTRA to NR for RedCap Sequans Communications, Huawei, HiSilicon CR Rel-17 38.300 17.1.0 0505 - F NR\_redcap-Core
6. [R2-2207386](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2207386.zip) Alignment on the support of 2TX and 2UL MIMO for RedCap UEs Intel Corporation, Huawei discussion Rel-17 NR\_redcap-Core
7. [R2-2207620](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2207620.zip) Corrections on PDCCH-ConfigCommon for RedCap initial BWP Huawei, HiSilicon CR Rel-17 38.331 17.1.0 3297 - F NR\_redcap-Core
8. [R2-2207621](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2207621.zip) Corrections on the relaxed measurement criterion and smtc field for RedCap Huawei, HiSilicon CR Rel-17 38.331 17.1.0 3298 - F NR\_redcap-Core
9. [R2-2207747](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2207747.zip) Discussion on NCD SSB for RedCap UEs vivo, Guangdong Genius discussion Rel-17 NR\_redcap-Core
10. [R2-2207749](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2207749.zip) Correction on capability for RedCap vivo, Guangdong Genius CR Rel-17 38.306 17.1.0 0777 - F NR\_redcap-Core Late
11. [R2-2207751](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2207751.zip) Correction on TS 38.300 for RedCap vivo CR Rel-17 38.300 17.1.0 0517 - F NR\_redcap-Core
12. [R2-2207996](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2207996.zip) Inter-RAT handover from LTE to NR MediaTek Inc. discussion Rel-17 NR\_redcap-Core
13. [R2-2208155](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2208155.zip) Correction on UERadioPagingInformation and UERadioPagingInfo container Ericsson CR Rel-17 38.331 17.1.0 3364 - F NR\_newRAT-Core, NR\_redcap-Core Withdrawn
14. [R2-2208309](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2208309.zip) Clarification on the field description of commonControlResourceSet for RedCap UEs Ericsson CR Rel-17 38.331 17.1.0 3402 - F NR\_redcap-Core
15. [R2-2208310](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2208310.zip) Paging configuration for RedCap UEs in the initial DL BWP Ericsson discussion Rel-17 NR\_redcap-Core Late
16. [R2-2208385](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2208385.zip) Corrections on RedCap specific initial DL BWP related description CATT CR Rel-17 38.331 17.1.0 3413 - F NR\_redcap-Core
17. [R2-2208386](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2208386.zip) Discussion and TP on the SI request on SUL for RedCap CATT discussion Rel-17 NR\_redcap-Core
18. [R2-2208438](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2208438.zip) Remaining aspect on RedCap initial DL BWP CMCC discussion Rel-17 NR\_redcap-Core
19. [R2-2208439](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2208439.zip) Corrections on RedCap initial DL BWP CMCC CR Rel-17 38.331 17.1.0 3420 - F NR\_redcap-Core
20. [R2-2208631](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2208631.zip) Correction on eDRX allowed indication and PDCCH-ConfigCommon ZTE Corporation, Sanechips CR Rel-17 38.331 17.1.0 3456 - F NR\_redcap-Core
21. [R2-2208632](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2208632.zip) Correction on eDRX allowed indication and BFD ZTE Corporation, Sanechips CR Rel-17 38.300 17.1.0 0544 - F NR\_redcap-Core
22. [R2-2208924](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2208924.zip) Correction on PUCCH-ConfigCommon for RedCap UE ZTE Corporation, Sanechips CR Rel-17 38.331 17.1.0 3463 - F NR\_redcap-Core

1. [R2-2208932](http://ftp.3gpp.org/tsg_ran/WG2_RL2/TSGR2_119-e/Docs/R2-2208932.zip) On PUCCH configuration in initial UL BWP MediaTek Inc. discussion Rel-17 NR\_redcap-Core