3GPP TSG-RAN WG2 Meeting #126 draft-R2-2405708

Fukuoka, Japan May 20th – 26th, 2024

Source: Session Chair (ZTE)

Title: Report from Further NR coverage enhancements session

**Status of At-Meeting Email Discussions**

* [AT126][800][CE\_enh] Organisational (Session chair: ZTE)

 Scope:

* Share plans and list ongoing email discussions and their status
* Share meeting notes for any comments

Status: Ongoing

**Summary of Post-Meeting Email Discussions**

TBD

## 7.21 Further NR coverage enhancements

(NR\_cov\_enh2-Core; leading WG: RAN1; REL-18; WID: [RP-221858](http://ftp.3gpp.org/tsg_ran/TSG_RAN/TSGR_96/Docs/RP-221858.zip))

Time budget: 0 TU

Tdoc Limitation: 1 tdoc

### 7.21.1 Organizational

Incoming LSs, Rapporteur input etc.

Editorials/clarifications should not be included in any tdoc but sent to the WI spec rapporteurs, who can submit a rapporteur CR as part of this AI.

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

R2-2405056 Micellaneous MAC corrections for CE ZTE Corporation CR Rel-18 38.321 18.1.0 1851 - F NR\_cov\_enh2-Core

* ?? Use as baseline for updates from this meeting
* ?? Will be sent to post meeting email (for plenary)

[R2-2405387](file:///C%3A%5Cevutukuri%5Cwork%5C5G%5CRAN2%5Cdocs%5CR2-2405387.zip) Updated RIL List for CE (based on v102) Huawei, HiSilicon discussion NR\_cov\_enh2-Core

* ?? M871, M872, E169 : Agreed
* => ?? S831: ToDo (see below)

[R2-2405388](file:///C%3A%5Cevutukuri%5Cwork%5C5G%5CRAN2%5Cdocs%5CR2-2405388.zip) RRC CR for agreed Coverage Enhancements RILs Huawei, HiSilicon CR Rel-18 38.331 18.1.0 4833 - F NR\_cov\_enh2-Core

* ?? Use as baseline for updates from this meeting
* ?? Will be sent to post meeting email (for plenary)

### 7.21.2 Other Essential corrections

General Discussion on which IE (rach-ConfigCommon) to use to initialize the RACH parameters for SI request/PDCCH order/CFRA with/without MSG1 repetition

[R2-2405389](file:///C%3A%5Cevutukuri%5Cwork%5C5G%5CRAN2%5Cdocs%5CR2-2405389.zip) [S831] Discussion on SI-RequestConfig for MSG1 repetition Huawei, HiSilicon discussion NR\_cov\_enh2-Core

Proposal 1: For non-REDCAP specific initial BWP, UE use the parameters (e.g. rach-ConfigGeneric and ssb-perRACH-Occasion) in rach-ConfigCommon associated with the same repetition number only in case that rach-OccasionsSI is absent.

Proposal 1bis: For non-REDCAP specific initial BWP, UE use the other parameters (e.g. prach-RootSequenceIndex and msg1-SubcarrierSpacing etc) in rach-ConfigCommon associated with the same repetition number only regardless of whether or not rach-OccasionsSI is absent.

Proposal 2: For REDCAP specific initial BWP, UE use the parameters (e.g. rach-ConfigGeneric and ssb-perRACH-Occasion) in rach-ConfigCommon associated with the same repetition number and (e)RedCap indication only in case that rach-OccasionsSI is absent.

Proposal 2bis: For REDCAP specific initial BWP, UE use the other parameters (e.g. prach-RootSequenceIndex and msg1-SubcarrierSpacing etc) in rach-ConfigCommon associated with the same repetition number and (e)RedCap indication only regardless of whether or not rach-OccasionsSI is absent.

Proposal 3: clarify in SI-RequestConfigRepetition description that the UE then applies the corresponding parameters depending on the RACH resource set selected for SI request with repetition upon RACH initialization and a reference is added to MAC.

[R2-2404948](file:///C%3A%5Cevutukuri%5Cwork%5C5G%5CRAN2%5Cdocs%5CR2-2404948.zip) [S831] Discussion on the remainging issues on Msg1 repetition CATT discussion Rel-18 NR\_cov\_enh2-Core

Proposal 1: For SI request with MSG1 repetition on the non-REDCAP specific initial BWP, if rach-OccasionsSI is not configured, UE uses the rach-ConfigCommon associated with msg1-Repetitons feature only and with the same repetition number.

Proposal 2: For SI request with msg1 repetiton on Redcap-specific intial BWP, if rach-OccasionsSI is not configured, UE uses the rach-ConfigCommon associated with the same msg1 repetition number in initialUplinkBWP-RedCap.

Proposal 3: Introduce a new configure condition for rach-OccasionsSI in SI-RequestConfigRepetition to guarantee that only when there is available configuration of rach-ConfigCommon associated with same msg1 repetition number on initial BWP or Redcap specific intial BWP, the rach-OccasionsSI in SI-RequestConfigRepetition can be configured as optional, similiarly as 4StepCFRArep.

Proposal 4: It needed to make the clarification for (e)Redcap UEs from Rel 17 that if rach-OccasionsSI is not configured, the (e)Redcap UE uses the corresponding parameters configured in rach-ConfigCommon of the Redcap-specific initial uplink BWP.

[R2-2405057](file:///C%3A%5Cevutukuri%5Cwork%5C5G%5CRAN2%5Cdocs%5CR2-2405057.zip) RACH-ConfigCommon for SI request with Msg1 repetition ZTE Corporation discussion Rel-18 NR\_cov\_enh2-Core

Proposal 1 For all the SI request cases (irrespective of Msg1 repetition and RedCap), if rach-OccasionsSI is not configured in corresponding SI request configuration, UE applies the RACH-ConfigCommon that is not associated with any feature. (Apply the same principle for Rel-17 and Rel-18, revert previous RAN2 agreement)

[R2-2405541](file:///C%3A%5Cevutukuri%5Cwork%5C5G%5CRAN2%5Cdocs%5CR2-2405541.zip) On RACH partition selection on RedCap-specific initial BWP for Msg1-based SI request LG Electronics Inc. discussion Rel-18 NR\_cov\_enh2-Core

Proposal 1. When a RedCap UE performs Msg1-based SI request with Msg1 repetition in RedCap-specific initial UL BWP, RACH partition associated with RedCap indication and Msg1 repetition indication with the same repetition number should be selected.

Proposal 2. When an eRedCap UE performs Msg1-based SI request with Msg1 repetition in RedCap-specific initial UL BWP, RACH partition is selected as follows:

- If the RACH partition associated with RedCap indication and Msg1 repetition indication with the same repetition number is configured, this RACH partition should be selected

- Otherwise, RACH partition associated with eRedCap indication and Msg1 repetition indication with the same repetition number should be selected.

Rel-17 proposal??

Proposal 3. When a RedCap UE performs Msg1-based SI request (without Msg1 repetition) in RedCap-specific initial UL BWP, RACH partition is selected as follows:

- If the RACH partition associated with RedCap indication is configured, this RACH partition should be selected

- Otherwise, legacy RACH partition should be selected.

Proposal 4. When an eRedCap UE performs Msg1-based SI request (without Msg1 repetition) in RedCap-specific initial UL BWP, RACH partition is selected as follows:

- If the RACH partition associated with RedCap indication is configured, this RACH partition should be selected.

- Otherwise,

 If RedCap is not applicable for eRedCap UE, RACH partition associated with eRedCap indication is selected.

 Otherwise (i.e., if RedCap is applicable for eRedCap UE), legacy RACH partition is selected.

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Time offset for CFRA/SI request with Msg1 repetition

[R2-2404156](file:///C%3A%5Cevutukuri%5Cwork%5C5G%5CRAN2%5Cdocs%5CR2-2404156.zip) Correction on CFRA with Msg1 Repetition vivo discussion Rel-18 NR\_cov\_enh2-Core

Proposal 1: RAN2 confirms msg1-RepetitionTimeOffsetROGroup is applicable for CFRA with Msg1 repetition.

Proposal 2: RAN2 to discuss the following options, if it is confirmed that msg1-RepetitionTimeOffsetROGroup is applicable for CFRA with a given repetition number:

- Option 1: msg1-RepetitionTimeOffsetROGroup associated with the same repetition number in FeatureCombinationPreambles is applied.

- Option 2: msg1-RepetitionTimeOffsetROGroup can be indicated together with msg1-RepetitionNum via RACH-ConfigDedicated when dedicated ROs are configured for CFRA. If absent, two neighbour RO groups are consecutive.

[R2-2405583](file:///C%3A%5Cevutukuri%5Cwork%5C5G%5CRAN2%5Cdocs%5CR2-2405583.zip) Discussion on time offset of RO group for CFRA with Msg1 repetition China Telecom discussion Rel-18 NR\_cov\_enh2-Core

Proposal 1: Time offset of RO group can be applied to CFRA with Msg1 repetition. No additional spec change is needed.

[R2-2405068](file:///C%3A%5Cevutukuri%5Cwork%5C5G%5CRAN2%5Cdocs%5CR2-2405068.zip) Remaining issues for preamble repetitions ETRI discussion

Proposal 3: Introduce msg1-RepetitionTimeOffsetROGroup-r18 in CFRA.

Proposal 4: Introduce msg1-RepetitionNumTimeOffsetROGroup-r18 in SI-RequestConfigRepetition-r18 for each repetition number.

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Other issues

[R2-2404225](file:///C%3A%5Cevutukuri%5Cwork%5C5G%5CRAN2%5Cdocs%5CR2-2404225.zip) Correction to PHR MAC CE Design for assumed PUSCH reporting Samsung, Nokia, Nokia Shanghai Bell, Lenovo, NEC, Interdigital, Ericsson, Qualcomm, Vivo discussion Rel-18 NR\_cov\_enh2-Core

Proposal 1: For the Multiple Entry PHR with assumed PUSCH MAC CE:

- Ek indicates the presence of a PCMAX,f,c for assumed PUSCH field of Serving Cells for which Ci field is set to 1 and PCell.

- The Serving Cells for which Ci field is set to 1 and PCell are indexed sequentially starting with PCell and followed by other Serving Cells in ascending order of ServCellIndex i.

- The Ek field set to 1 indicates that a PCMAX,f,c for assumed PUSCH field for the kth Serving Cell is reported.

[R2-2404259](file:///C%3A%5Cevutukuri%5Cwork%5C5G%5CRAN2%5Cdocs%5CR2-2404259.zip) Discussion on remaining issues for Coverage Enhancements Ericsson discussion Rel-18 38.321 NR\_cov\_enh2-Core

Proposal 1 Correct the MAC specification so that only the particular repetition factor as measured by RSRP and compared to the threshold value is considered according to TP.