**3GPP TSG-RAN WG2 Meeting #122 draft - R2-2306551**

**Incheon, Korea, May 22-26, 2023**

**Source: Session Chair (ZTE Corporation)**

**Title: Report from Session on NES, UAV, Rel-15-17 UP, Rel-17 Small Data, IIoT/URLLC, and RACH partitioning**

**Email discussions:**

**[AT121bis-e][800] Organizational Eswar – NR\_cov\_enh2 (Rel-18)**

Scope:

* + - Share plans for the meetings and list of ongoing email discussions for the sessions related to Further NR coverage enhancements
    - Share availability of updated session notes and agreements for review and endorsement

## 

## 7.21 Further NR coverage enhancements

(NR\_cov\_enh2-Core; leading WG: RAN1; REL-18; WID: RP-221858)

Time budget: 0.5 TU

Tdoc Limitation: 2 tdoc

### 7.21.1 Organizational

Incoming LSs, Rapporteur input etc.

[R2-2304613](file:///C:\evutukuri\work\5G\RAN2\docs\R2-2304613.zip) LS on PRACH coverage enhancement (R1-2304141; contact: China Telecom) RAN1 LS in Rel-18 NR\_cov\_enh2 To:RAN2

=> Noted??

=> Reply needed?

### 7.21.2 Control plane issues

Details of RACH configuration and RACH partitioning signalling and any other impacts to CP from RAN1 agreements.

**Stage-2 Level discussions:**

- CBRA open issues (SI request support)

Vivo ([R2-2304702](file:///C:\evutukuri\work\5G\RAN2\docs\R2-2304702.zip))

Proposal 1: MSG1 repetition can be applicable to the 4-step CBRA procedure initiated by Msg1-based SI request.

Proposal 2: MSG1 repetition can be applicable to the 4-step CBRA procedure initiated by Msg3-based SI request.

Samsung ([R2-2304723](file:///C:\evutukuri\work\5G\RAN2\docs\R2-2304723.zip))

Proposal 3: Msg1 based repetitions are supported for Msg3 based SI request.

Huawei ([R2-2306232](file:///C:\evutukuri\work\5G\RAN2\docs\R2-2306232.zip))

Proposal 1: MSG3 based SI request is supported with MSG1 repetition.

Proposal 2: MSG1 based SI request with MSG1 repetition is de-prioritised before RAN1 has more progress.

Joint discussion on the above proposals

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| Agreements |

- CFRA support

NEC ([R2-2305269](file:///C:\evutukuri\work\5G\RAN2\docs\R2-2305269.zip))

Proposal 2: MSG1 repetition can also be applicable to CFRA procedure.

Ericsson ([R2-2305354](file:///C:\evutukuri\work\5G\RAN2\docs\R2-2305354.zip))

Proposal 1 CFRA is supported for Multiple PRACH Transmissions, at least for BFR and handover.

Vivo ([R2-2304702](file:///C:\evutukuri\work\5G\RAN2\docs\R2-2304702.zip))

Proposal 4: MSG1 repetition for the CFRA of 4-step type initiated by PDCCH order is deprioritized.

Xiaomi ([R2-2305732](file:///C:\evutukuri\work\5G\RAN2\docs\R2-2305732.zip))

Proposal 2 Whether to support CFRA for multiple PRACH transmission is left to RAN plenary to decide.

LG ([R2-2306350](file:///C:\evutukuri\work\5G\RAN2\docs\R2-2306350.zip))

Proposal 3. Wait for RAN1 for support of CFRA with PRACH repetition.

Joint discussion on the above proposals

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| Agreements |

RSRP thresholds:

ZTE ([R2-2305403](file:///C:\evutukuri\work\5G\RAN2\docs\R2-2305403.zip))

Proposal 5: RAN2 to agree to configure multiple RSRP thresholds for different repetition numbers. Other triggering conditions can be considered if agreed by RAN1.

Proposal 6: The RSRP threshold(s) for triggering Msg1 repetition are configured per-BWP

Huawei ([R2-2306231](file:///C:\evutukuri\work\5G\RAN2\docs\R2-2306231.zip))

Proposal 1: Different SSB-RSRP thresholds can be configured corresponding to different PRACH partitions, which are used to differentiate between different Msg1 repetition numbers.

Proposal 2: Multiple SSB-RSRP thresholds for determining Msg1 repetition number are configured per feature, rather than per feature combination. The thresholds can be configured under BWP-UplinkCommon.

CATT ([R2-2304904](file:///C:\evutukuri\work\5G\RAN2\docs\R2-2304904.zip))

Proposal 5: Define different RSRP thresholds for different MSG1 repetition number

Joint discussion on the above proposals

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| Agreements |

**Stage-3 discussions (if time allows – after going through UP discussions)**

How to signal the partitions

China Telecom ([R2-2305237](file:///C:\evutukuri\work\5G\RAN2\docs\R2-2305237.zip))

Proposal 1: Use the spare fields of FeatureCombination to indicate the repetition times {2,4,8} for Msg1.

Proposal 2: Only one spare filed is needed to make choice of repetition times {2,4,8}.

Ericsson ([R2-2305355](file:///C:\evutukuri\work\5G\RAN2\docs\R2-2305355.zip))

Proposal 1 Parameter msg1-Repetitions-r18 replaces one of spare1-4 in the FeatureCombination information element.

Proposal 2 Add configuration options to FeatureCombinationPreambles IE to indicate the specific repetition factor for a preamble partition that supports msg1 repetitions.

Joint discussion on the above proposals

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| Agreements |

How many priorities?

ZTE ([R2-2305403](file:///C:\evutukuri\work\5G\RAN2\docs\R2-2305403.zip))

Proposal 4: A single feature priority is configured for Msg 1 repetition, no need to differentiate different repetition numbers.

Huawei ([R2-2306231](file:///C:\evutukuri\work\5G\RAN2\docs\R2-2306231.zip))

Proposal 4: Introduce separate feature priority for different Msg1 repetition numbers provided in SIB1.

Joint discussion on the above proposals

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| Agreements |

Capabilities

Ericsson ([R2-2305354](file:///C:\evutukuri\work\5G\RAN2\docs\R2-2305354.zip))

Proposal 4: A UE capability for msg1 repetitions is introduced, and the UE then supports all repetition factors.

Joint discussion on the above proposals

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| Agreements |

R2-2304702 RAN2 Impacts of Multiple PRACH Transmissions from CP vivo Mobile Com. (Chongqing) discussion Rel-18 NR\_cov\_enh2-Core

R2-2304723 Control plane aspects of further NR Coverage Enhancements Samsung Electronics Co., Ltd discussion Rel-18 NR\_cov\_enh2-Core

R2-2304903 Discussion on CP issues for MSG1 repetition CATT discussion Rel-18 NR\_cov\_enh2-Core

R2-2305127 UL Coverage Enhancements Control Plane Qualcomm Incorporated discussion Rel-18

R2-2305237 RACH partition framework of Coverage Enhancement China Telecom discussion Rel-18 NR\_cov\_enh2-Core

R2-2305355 Discussion on Multiple PRACH Transmission Configuration Ericsson discussion Rel-18 NR\_cov\_enh2-Core

R2-2305403 CP issues for PRACH coverage enhancement ZTE Corporation, Sanechips discussion Rel-18 NR\_cov\_enh2-Core

R2-2305732 Discussion on RAN2 impact of PRACH enhancement Xiaomi discussion Rel-18

R2-2305929 Multiple PRACH transmissions – CP aspects InterDigital discussion Rel-18 NR\_cov\_enh2-Core

R2-2306231 RRC aspects for Msg1 repetition Huawei, HiSilicon discussion Rel-18 NR\_cov\_enh2-Core

R2-2306349 Signalling aspects on support of PRACH repetition LG Electronics Inc. discussion Rel-18 NR\_cov\_enh2-Core

### 7.21.3 User plane issues

Overall RACH procedure and any other MAC impacts

**Stage-2 issues**

Which fallbacks do we support/rule-out?

ZTE ([R2-2305404](file:///C:\evutukuri\work\5G\RAN2\docs\R2-2305404.zip))

Proposal 6: RAN2 to confirm not to support any fallback case related to Msg1 repetition.

Nokia ([R2-2305754](file:///C:\evutukuri\work\5G\RAN2\docs\R2-2305754.zip))

Proposal 2: Do not support fallback from 2-step RA to 4-step RA with Msg1 repetition.

Proposal 3: Define different number of Msg1 repetitions as single feature in RRC and NW may associate one or multiple number(s) of repetitions for a given RACH partition.

Proposal 4: Support fallback from lower number of Msg1 repetitions to higher number of Msg1 repetitions.

Qualcomm ([R2-2305128](file:///C:\evutukuri\work\5G\RAN2\docs\R2-2305128.zip))

Proposal 1: Fallback from Msg1 repetition with lower number to Msg1 repetition with higher number is supported.

Proposal 2: RAN2 will not support:

• Fallback from 2-step RA to 4-step RA with Msg1 repetition;

• Fallback from CFRA to CBRA with Msg1 repetition.

Interdigital ([R2-2305930](file:///C:\evutukuri\work\5G\RAN2\docs\R2-2305930.zip))

Proposal 1: The UE can increase the number of multiple PRACH transmissions after a configured number of retransmissions without receiving RAR.

Joint discussion on the above proposals

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| Agreements |

R2-2304703 RAN2 Impacts of Multiple PRACH Transmissions from UP vivo Mobile Com. (Chongqing) discussion Rel-18 NR\_cov\_enh2-Core

R2-2304724 User plane aspects of further NR Coverage Enhancements Samsung Electronics Co., Ltd discussion Rel-18 NR\_cov\_enh2-Core

R2-2304904 Discussion on UP issues for MSG1 repetition CATT discussion Rel-18 NR\_cov\_enh2-Core

R2-2305128 UL Coverage Enhancements User Plane Qualcomm Incorporated discussion Rel-18

R2-2305269 UP Impacts for Further NR Coverage Enhancements NEC Corporation discussion NR\_cov\_enh2-Core

R2-2305354 Discussion on Multiple PRACH Transmission Procedures Ericsson discussion Rel-18 NR\_cov\_enh2-Core

R2-2305404 UP issues for PRACH coverage enhancement ZTE Corporation, Sanechips discussion Rel-18 NR\_cov\_enh2-Core

R2-2305753 UP impacts of PRACH CE Nokia, Nokia Shanghai Bell discussion Rel-18 NR\_cov\_enh2-Core

R2-2305754 Fallback cases for PRACH repetition Nokia, Nokia Shanghai Bell discussion Rel-18 NR\_cov\_enh2-Core

R2-2305930 Multiple PRACH transmissions – UP aspects InterDigital discussion Rel-18 NR\_cov\_enh2-Core

R2-2306232 Discussion on MAC aspect with MSG1 repetition Huawei, HiSilicon discussion Rel-18 NR\_cov\_enh2-Core

R2-2306350 RA procedure to support PRACH repetition LG Electronics Inc. discussion Rel-18 NR\_cov\_enh2-Core