**3GPP TSG-RAN2 Meeting #121bis-e R2-230xxxx**

**Online, 17th April– 26th April 2023**

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| *CR-Form-v12.2* |
| **CHANGE REQUEST** |
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|  | **38.331** | **CR** | **4044** | **rev** | **1** | **Current version:** | **17.4.0** |  |
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| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
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| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network | **X** | Core Network |  |

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| ***Title:***  | Miscellaneous RRC corrections for MBS |
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| ***Source to WG:*** | Huawei, HiSilicon |
| ***Source to TSG:*** | R2 |
|  |  |
| ***Work item code:*** | NR\_MBS-Core |  | ***Date:*** | 2023-04-17 |
|  |  |  |  |  |
| ***Category:*** | **F** |  | ***Release:*** | Rel-17 |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)…Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19)* |
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| ***Reason for change:*** | 1. In section 6.3.2 the field description of *harq-FeedbackEnablerMulticast* when absent is misaligned with TS 38.213, according to the RAN1's CR of R1-2212972: *“When the UE is not provided harq-FeedbackEnablerMulticast for a G-RNTI or G-CS-RNTI and pdsch-HARQ-ACK-Codebook = dynamic for multicast HARQ-ACK information, the UE does not provide HARQ-ACK information for respective PDSCH receptions.”*That means, if HARQ is disabled for some G-RNTIs or G-CS-RNTIs (by not configuring *harq-FeedbackEnablerMulticast*) and enabled for other G-RNTIs or G-CS-RNTIs and semi-static HARQ ACK codebook is used (configured per cell group), the UE should still report HARQ feedback for all G-RNTIs or G-CS-RNTIs to make sure the HARQ codebook size is aligned between UE and gNB. Besides, in TS38.213, Clause 9.1.2, the following is specified:*If a Type-1 HARQ-ACK codebook would not include any HARQ-ACK information for transport blocks with enabled HARQ-ACK information, the UE does not provide the Type-1 HARQ-ACK codebook and does not transmit a corresponding PUCCH.*This is another case that the UE doesn’t provide HARQ feedback when the HARQ feedback is disabled. For other cases, the UE should provide HARQ feedback even if the HARQ feedback is disabled.But RRC spec, doesn’t need to capture all the details from RAN1. For simplicity, the details can be removed and just refer to RAN1 spec.2. In section 6.3.6 there is a typo in the field description of *locationAndBandwidthBroadcast*, as follows:*the Value locationAndBandwidth is used to configure CFR with bandwidth that is larger than and fully contains the bandwidth for the initial DL BWP and CORESET#0 configured in SIB1.* However, the CORESET#0 cannot be configured in SIB1, only the initial BWP can be configured in SIB1.  |
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| ***Summary of change:*** | 1. In 6.3.2, update the description when *harq-FeedbackEnablerMulticast* is absentby referring to TS 38.213 [13].2. In 6.3.6, change “the initial DL BWP and CORESET#0 configured in SIB1.” to “the initial DL BWP configured in SIB1 and CORESET#0.”**Impact analysis**Impacted 5G architecture options:NR SA, NE-DC, NR-DCImpacted functionality:MBSInter-operability:1. If the network is implemented according to the CR and the UE is not, some MBS configurations may not be correctly implemented by the UE;2. If the UE is implemented according to the CR and the network is not, some MBS configurations may not be correctly implemented by the UE. |
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| ***Consequences if not approved:*** | 1. The RRC specification is not aligned with TS 38.213.2. Field description of *locationAndBandwidthBroadcast* is not correct. |
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| ***Clauses affected:*** | 6.3.2, 6.3.6 |
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|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
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| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

*START OF CHANGE*

### 6.3.2 Radio resource control information elements

– *MAC-CellGroupConfig*

The IE *MAC-CellGroupConfig* is used to configure MAC parameters for a cell group, including DRX.

***MAC-CellGroupConfig* information element**

-- ASN1START

-- TAG-MAC-CELLGROUPCONFIG-START

MAC-CellGroupConfig ::= SEQUENCE {

 drx-Config SetupRelease { DRX-Config } OPTIONAL, -- Need M

 schedulingRequestConfig SchedulingRequestConfig OPTIONAL, -- Need M

 bsr-Config BSR-Config OPTIONAL, -- Need M

 tag-Config TAG-Config OPTIONAL, -- Need M

 phr-Config SetupRelease { PHR-Config } OPTIONAL, -- Need M

 skipUplinkTxDynamic BOOLEAN,

 ...,

 [[

 csi-Mask BOOLEAN OPTIONAL, -- Need M

 dataInactivityTimer SetupRelease { DataInactivityTimer } OPTIONAL -- Cond MCG-Only

 ]],

 [[

 usePreBSR-r16 ENUMERATED {true} OPTIONAL, -- Need R

 schedulingRequestID-LBT-SCell-r16 SchedulingRequestId OPTIONAL, -- Need R

 lch-BasedPrioritization-r16 ENUMERATED {enabled} OPTIONAL, -- Need R

 schedulingRequestID-BFR-SCell-r16 SchedulingRequestId OPTIONAL, -- Need R

 drx-ConfigSecondaryGroup-r16 SetupRelease { DRX-ConfigSecondaryGroup-r16 } OPTIONAL -- Need M

 ]],

 [[

 enhancedSkipUplinkTxDynamic-r16 ENUMERATED {true} OPTIONAL, -- Need R

 enhancedSkipUplinkTxConfigured-r16 ENUMERATED {true} OPTIONAL -- Need R

 ]],

 [[

 intraCG-Prioritization-r17 ENUMERATED {enabled} OPTIONAL, -- Cond LCH-PrioWithReTxTimer

 drx-ConfigSL-r17 SetupRelease { DRX-ConfigSL-r17 } OPTIONAL, -- Need M

 drx-ConfigExt-v1700 SetupRelease { DRX-ConfigExt-v1700 } OPTIONAL, -- Need M

 schedulingRequestID-BFR-r17 SchedulingRequestId OPTIONAL, -- Need R

 schedulingRequestID-BFR2-r17 SchedulingRequestId OPTIONAL, -- Need R

 schedulingRequestConfig-v1700 SchedulingRequestConfig-v1700 OPTIONAL, -- Need M

 tar-Config-r17 SetupRelease { TAR-Config-r17 } OPTIONAL, -- Need M

 g-RNTI-ConfigToAddModList-r17 SEQUENCE (SIZE (1..maxG-RNTI-r17)) OF MBS-RNTI-SpecificConfig-r17 OPTIONAL, -- Need N

 g-RNTI-ConfigToReleaseList-r17 SEQUENCE (SIZE (1..maxG-RNTI-r17)) OF MBS-RNTI-SpecificConfigId-r17 OPTIONAL, -- Need N

 g-CS-RNTI-ConfigToAddModList-r17 SEQUENCE (SIZE (1..maxG-CS-RNTI-r17)) OF MBS-RNTI-SpecificConfig-r17 OPTIONAL, -- Need N

 g-CS-RNTI-ConfigToReleaseList-r17 SEQUENCE (SIZE (1..maxG-CS-RNTI-r17)) OF MBS-RNTI-SpecificConfigId-r17 OPTIONAL, -- Need N

 allowCSI-SRS-Tx-MulticastDRX-Active-r17 BOOLEAN OPTIONAL -- Need M

 ]],

 [[

 schedulingRequestID-PosMG-Request-r17 SchedulingRequestId OPTIONAL, -- Need R

 drx-LastTransmissionUL-r17 ENUMERATED {enabled} OPTIONAL -- Need R

 ]],

 [[

 posMG-Request-r17 ENUMERATED {enabled} OPTIONAL -- Need R

 ]]

}

DataInactivityTimer ::= ENUMERATED {s1, s2, s3, s5, s7, s10, s15, s20, s40, s50, s60, s80, s100, s120, s150, s180}

MBS-RNTI-SpecificConfig-r17 ::= SEQUENCE {

 mbs-RNTI-SpecificConfigId-r17 MBS-RNTI-SpecificConfigId-r17,

 groupCommon-RNTI-r17 CHOICE {

 g-RNTI RNTI-Value,

 g-CS-RNTI RNTI-Value

 },

 drx-ConfigPTM-r17 SetupRelease { DRX-ConfigPTM-r17 } OPTIONAL, -- Need M

 harq-FeedbackEnablerMulticast-r17 ENUMERATED {dci-enabler, enabled} OPTIONAL, -- Need S

 harq-FeedbackOptionMulticast-r17 ENUMERATED {ack-nack, nack-only} OPTIONAL, -- Cond HARQFeedback

 pdsch-AggregationFactor-r17 ENUMERATED {n2, n4, n8} OPTIONAL -- Cond G-RNTI

}

MBS-RNTI-SpecificConfigId-r17 ::= INTEGER (0..maxG-RNTI-1-r17)

-- TAG-MAC-CELLGROUPCONFIG-STOP

-- ASN1STOP

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| ***MAC-CellGroupConfig* field descriptions** |
| ***allowCSI-SRS-Tx-MulticastDRX-Active***Used to control the CSI/SRS transmission during MBS multicast DRX ActiveTime, see TS 38.321 [3]. |
| ***csi-Mask***If set to true, the UE limits CSI reports to the on-duration period of the DRX cycle, see TS 38.321 [3]. |
| ***dataInactivityTimer***Releases the RRC connection upon data inactivity as specified in clause 5.3.8.5 and in TS 38.321 [3]. Value *s1* corresponds to 1 second, value s2 corresponds to 2 seconds, and so on. |
| ***drx-Config, drx-ConfigExt***Used to configure DRX as specified in TS 38.321 [3]. Network only configures *drx-ConfigExt* when *drx-Config* is configured. |
| ***drx-ConfigSecondaryGroup***Used to configure DRX related parameters for the second DRX group as specified in TS 38.321 [3]. The network does not configure secondary DRX group with DCP simultaneously nor secondary DRX group with a dormant BWP simultaneously. |
| ***drx-ConfigSL***Used to configure additional DRX parameters for the UE performing sidelink operation with resource allocation mode 1, as specified in TS 38.321 [3]. Network only configures this field if *sl-ScheduledConfig* is configured and *drx-Config* is configured. |
| ***drx-LastTransmissionUL***If this field is present, the start of the *drx-HARQ-RTT-TimerUL* is after the last transmission within a bundle, see TS 38.321 [3]. |
| ***g-RNTI-ConfigToAddModList***List of G-RNTI configurations to add or modify. Up to 8 G-RNTIs can be configured in total in this release based on the UE capability. |
| ***g-RNTI-ConfigToReleaseList***List of G-RNTI configurations to release. |
| ***g-CS-RNTI-ConfigToAddModList***List of G-CS-RNTI configurations to add or modify. Up to 8 G-CS-RNTIs can be configured in total in this release based on the UE capability. |
| ***g-CS-RNTI-ConfigToReleaseList***List of G-CS-RNTI configurations to release. |
| ***intraCG-Prioritization***Used to enable HARQ process ID selection based on LCH-priority for one CG as specified in TS 38.321 [3]. |
| ***lch-BasedPrioritization***If this field is present, the corresponding MAC entity of the UE is configured with prioritization between overlapping grants and between scheduling request and overlapping grants based on LCH priority, see TS 38.321 [3]. The network does not configure *lch-BasedPrioritization* with *enhancedSkipUplinkTxDynamic* simultaneously nor *lch-BasedPrioritization* with *enhancedSkipUplinkTxConfigured* simultaneously. |
| ***posMG-Request***Indicates whether UE is configured to send UL MAC CE for Positioning Measurement Gap Activation/Deactivation Request, as specified in TS 38.321 [3]. |
| ***schedulingRequestID-BFR-SCell***Indicates the scheduling request configuration applicable for BFR on SCell, as specified in TS 38.321 [3]. |
| ***schedulingRequestID-BFR***Indicates the scheduling request configuration (SchedulingRequestConfig) that the UE shall use upon detecting a beam failure on the detection resources configured in *failureDetectionSet1* of a serving cell while beam failure is not detected on resources configured in *failureDetectionSet2* of the same serving cell. |
| ***schedulingRequestID-BFR2***Indicates the scheduling request configuration (SchedulingRequestConfig) that the UE shall use upon detecting a beam failure on the detection resources configured in *failureDetectionSet2* of a serving cell while beam failure is not detected on resources configured in *failureDetectionSet1* of the same serving cell. |
| ***schedulingRequestID-LBT-SCell***Indicates the scheduling request configuration applicable for consistent uplink LBT recovery on SCell, as specified in TS 38.321 [3]. |
| ***schedulingRequestID-PosMG-Request***Indicates the scheduling request configuration applicable for Positioning Measurement Gap Activation/Deactivation Request, as specified in TS 38.321 [3]. |
| ***skipUplinkTxDynamic, enhancedSkipUplinkTxDynamic, enhancedSkipUplinkTxConfigured***If set to *true*, the UE skips UL transmissions as described in TS 38.321 [3]. If the UE is configured with *enhancedSkipUplinkTxDynamic* or *enhancedSkipUplinkTxConfigured* with value *true*, REPETITION\_NUMBER (as specified in TS 38.321 [3], clause 5.4.2.1) of the corresponding PUSCH transmission of the uplink grant shall be equal to 1. |
| ***tag-Config***The field is used to configure parameters for a time-alignment group. The field is not present if any DAPS bearer is configured. |
| ***usePreBSR***If set to true, the MAC entity of the IAB-MT may use the Pre-emptive BSR, see TS 38.321 [3]. |

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| ***MBS-RNTI-SpecificConfig* field descriptions** |
| ***drx-ConfigPTM***Used to configure DRX for PTM transmission as specified in TS 38.321 [3]. |
| ***g-CS-RNTI***Used to scramble the SPS group-common PDSCH and activation/deactivation of SPS group-common PDSCH for one or more MBS multicast services. |
| ***g-RNTI***Used to scramble the scheduling and transmission of PTM for one or more MBS multicast services. |
| ***groupCommon-RNTI***Used to configure g-RNTI or g-CS-RNTI. |
| ***harq-FeedbackEnablerMulticast***Indicates whether the UE shall provide HARQ feedback for MBS multicast. Value *dci-enabler* means that whether the UE shall provide HARQ feedback for MBS multicast is indicated by DCI as specified in TS 38.213 [13]. Value *enabled* means the UE shall always provide HARQ feedback for MBS multicast. When the field is absent, the UE behavior is specified in TS 38.213 [13]. |
| ***harq-FeedbackOptionMulticast***Indicates the feedback mode for MBS multicast dynamically scheduled PDSCH or SPS PDSCH. |
| ***mbs-RNTI-SpecificConfigId***An identifier of the RNTI specific configuration for MBS multicast. |
| ***pdsch-AggregationFactor***Number of repetitions for dynamically scheduled MBS multicast data (see TS 38.214 [19], clause 5.1.2.1). When the field is absent and *groupCommon-RNTI* is set to *g-RNTI*, the UE applies the value 1. |

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| **Conditional Presence** | **Explanation** |
| *G-RNTI* | This field is optionally present, Need S, if *groupCommon-RNTI* is set to *g-RNTI*. The field is absent when *groupCommon-RNTI* is set to *g-CS-RNTI*. |
| *HARQFeedback* | The field is mandatory present when *harq-FeedbackEnablerMulticast* is present. It is absent otherwise.  |
| *MCG-Only* | This field is optionally present, Need M, for the *MAC-CellGroupConfig* of the MCG. It is absent otherwise. |
| *LCH-PrioWithReTxTimer* | This field is optionally present, Need R, if lch-BasedPrioritization-r16 is configured in this MAC entity and cg-RetransmissionTimer-r16 is configured for any configured grant configuration associated with this MAC entity. It is absent otherwise, Need R. |

*START OF NEXT CHANGE*

6.3.6 MBS information elements

– *CFR-ConfigMCCH-MTCH*

The IE *CFR-ConfigMCCH-MTCH* is used to configure the common frequency resource used for MCCH and MTCH reception.

***CFR-ConfigMCCH-MTCH* information element**

-- ASN1START

-- TAG-CFR-CONFIGMCCH-MTCH-START

CFR-ConfigMCCH-MTCH-r17 ::= SEQUENCE {

 locationAndBandwidthBroadcast-r17 LocationAndBandwidthBroadcast-r17 OPTIONAL, -- Need S

 pdsch-ConfigMCCH-r17 PDSCH-ConfigBroadcast-r17 OPTIONAL, -- Need S

 commonControlResourceSetExt-r17 ControlResourceSet OPTIONAL -- Cond NotSIB1CommonControlResource

}

LocationAndBandwidthBroadcast-r17 ::= CHOICE {

 sameAsSib1ConfiguredLocationAndBW NULL,

 locationAndBandwidth INTEGER (0..37949)

}

-- TAG-CFR-CONFIGMCCH-MTCH-STOP

-- ASN1STOP

| ***CFR-ConfigMCCH-MTCH* field descriptions** |
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| ***commonControlResourceSetExt***An additional common control resource set which may be configured and used for *searchSpaceMCCH*/*searchSpaceMTCH* or UE-specific search space in the BWP where *searchSpaceMCCH* is configured. It is contained in the bandwidth of the CFR for broadcast. |
| ***locationAndBandwidthBroadcast***Indicates starting PRB and the number of PRBs of CFR used for MCCH and MTCH reception.Value *sameAsSib1ConfiguredLocationAndBW* means the CFR for broadcast has the same location and size as the *locationAndBandwidth* for initial BWP configured in SIB1.Value *locationAndBandwidth* is used to configure CFR with bandwidth that is larger than and fully contains the bandwidth for the initial DL BWP configured in SIB1 and CORESET#0.If the field is absent, the CFR for broadcast has the same location and size as CORESET#0. |
| ***pdsch-ConfigMCCH***Indicates PDSCH parameters used for MCCH transmission. If the field is absent, PDSCH parameters used for MCCH are the same as those of PDSCH configuration provided in *initialDownlinkBWP* in *SIB1*. |

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| **Conditional Presence** | **Explanation** |
| *NotSIB1CommonControlResource* | The field is optional present in case *commonControlResourceSet* is not configured in SIB1, Need R, otherwise it is absent. |

*END OF CHANGE*