**3GPP TSG- WG2 Meeting #126 *R2-240xxxx***

**Fukuoka, Japan May 22nd – 26th, 2024**

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| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
|  |
|  | **331** | **CR** | **-** | **rev** | **-** | **Current version:** |  |  |
|  |
| *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:***  | Correction on multicast DRX to support NTN |
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| ***Source to WG:*** | LG eletronics Inc., Samsung, Xiaomi, Ericsson |
| ***Source to TSG:*** | R2 |
|  |  |
| ***Work item code:*** | NR\_NTN\_enh-Core, NR\_MBS\_enh-Core |  | ***Date:*** | 2024-05-20 |
|  |  |  |  |  |
| ***Category:*** |  |  | ***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-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19) Rel-20 (Release 20)* |
|  |  |
| ***Reason for change:*** | In RAN2#126 meeting, RAN2 confirms configuration of MBS Multicast in NR NTN can be supported for RRC connected mode in Rel-17/18 Spec.In DRX for NTN, since the duration of the HARQ-RTT-TimerDL cannot cover the large propagation delay in NTN, the UE sets the HARQ-RTT-TimerDL-NTN equal to drx-HARQ-RTT-TimerDL plus the latest available UE-gNB RTT value. Then, the UE starts the HARQ-RTT-TimerDL-NTN.However, for multicast DRX, the duration of the drx-HARQ-RTT-TimerDL is not considered for the large propagation delay in NTN. For this reason, if the multicast MBS traffic is transmitted via NTN, the UE starts the drx-RetransmissionTimerDL before escaping the RTT because the HARQ-RTT-TimerDL-PTM and HARQ-RTT-TimerDL are shorter than the RTT. Therefore, the UE in NTN cannot receive the retransmission of the MAC PDU for MBS.In order to indicate whether or not the exention of the the drx-HARQ-RTT-TiimerDL and drx-HARQ-RTT-TimerDL-PTM for multicast DRX is suppored, the UE needs to send the capability for it.  |
|  |  |
| ***Summary of change:*** | Intorduce a new capability to indicate whether the extension of the the drx-HARQ-RTT-TiimerDL and drx-HARQ-RTT-TimerDL-PTM for multicast DRX is suppored or not. **Impact analysis**Impacted functionality:MBSInter-operability: 1. If the network is implemented according to the CR and the UE is not, the desynchronization of the UE’s ActiveTime happens. (To be updated)
2. If the UE is implemented according to the CR and the network is not, the desynchronization of the UE’s ActiveTime happens. (To be updated)
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| ***Consequences if not approved:*** | The network cannot know whether the UE supports the extension of the the drx-HARQ-RTT-TiimerDL and drx-HARQ-RTT-TimerDL-PTM for multicast DRX |
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| ***Clauses affected:*** | 6.3.3 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **x** |  Other core specifications  | TS/TR ... CR ... To be updated |
| ***affected:*** |  | **x** |  Test specifications | TS/TR ... CR ... To be updated |
| ***(show related CRs)*** |  | **x** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

START OF CHANGES

#### – *MAC-Parameters*

The IE *MAC-Parameters* is used to convey capabilities related to MAC.

*MAC-Parameters* information element

-- ASN1START

-- TAG-MAC-PARAMETERS-START

MAC-Parameters ::= SEQUENCE {

 mac-ParametersCommon MAC-ParametersCommon OPTIONAL,

 mac-ParametersXDD-Diff MAC-ParametersXDD-Diff OPTIONAL

}

MAC-Parameters-v1610 ::= SEQUENCE {

 mac-ParametersFRX-Diff-r16 MAC-ParametersFRX-Diff-r16 OPTIONAL

}

MAC-Parameters-v1700 ::= SEQUENCE {

 mac-ParametersFR2-2-r17 MAC-ParametersFR2-2-r17 OPTIONAL

}

MAC-ParametersCommon ::= SEQUENCE {

 lcp-Restriction ENUMERATED {supported} OPTIONAL,

 dummy ENUMERATED {supported} OPTIONAL,

 lch-ToSCellRestriction ENUMERATED {supported} OPTIONAL,

 ...,

 [[

 recommendedBitRate ENUMERATED {supported} OPTIONAL,

 recommendedBitRateQuery ENUMERATED {supported} OPTIONAL

 ]],

 [[

 recommendedBitRateMultiplier-r16 ENUMERATED {supported} OPTIONAL,

 preEmptiveBSR-r16 ENUMERATED {supported} OPTIONAL,

 autonomousTransmission-r16 ENUMERATED {supported} OPTIONAL,

 lch-PriorityBasedPrioritization-r16 ENUMERATED {supported} OPTIONAL,

 lch-ToConfiguredGrantMapping-r16 ENUMERATED {supported} OPTIONAL,

 lch-ToGrantPriorityRestriction-r16 ENUMERATED {supported} OPTIONAL,

 singlePHR-P-r16 ENUMERATED {supported} OPTIONAL,

 ul-LBT-FailureDetectionRecovery-r16 ENUMERATED {supported} OPTIONAL,

 -- R4 8-1: MPE

 tdd-MPE-P-MPR-Reporting-r16 ENUMERATED {supported} OPTIONAL,

 lcid-ExtensionIAB-r16 ENUMERATED {supported} OPTIONAL

 ]],

 [[

 spCell-BFR-CBRA-r16 ENUMERATED {supported} OPTIONAL

 ]],

 [[

 srs-ResourceId-Ext-r16 ENUMERATED {supported} OPTIONAL

 ]],

 [[

 enhancedUuDRX-forSidelink-r17 ENUMERATED {supported} OPTIONAL,

 --27-10: Support of UL MAC CE based MG activation request for PRS measurements

 mg-ActivationRequestPRS-Meas-r17 ENUMERATED {supported} OPTIONAL,

 --27-11: Support of DL MAC CE based MG activation request for PRS measurements

 mg-ActivationCommPRS-Meas-r17 ENUMERATED {supported} OPTIONAL,

 intraCG-Prioritization-r17 ENUMERATED {supported} OPTIONAL,

 jointPrioritizationCG-Retx-Timer-r17 ENUMERATED {supported} OPTIONAL,

 survivalTime-r17 ENUMERATED {supported} OPTIONAL,

 lcg-ExtensionIAB-r17 ENUMERATED {supported} OPTIONAL,

 harq-FeedbackDisabled-r17 ENUMERATED {supported} OPTIONAL,

 uplink-Harq-ModeB-r17 ENUMERATED {supported} OPTIONAL,

 sr-TriggeredBy-TA-Report-r17 ENUMERATED {supported} OPTIONAL,

 extendedDRX-CycleInactive-r17 ENUMERATED {supported} OPTIONAL,

 simultaneousSR-PUSCH-DiffPUCCH-groups-r17 ENUMERATED {supported} OPTIONAL,

 lastTransmissionUL-r17 ENUMERATED {supported} OPTIONAL

 ]],

 [[

 extension-HARQ-RTT-TimerDL-MulticastMBS-r17 ENUMERATED {supported} OPTIONAL

 ]],

 [[

 sr-TriggeredByTA-ReportATG-r18 ENUMERATED {supported} OPTIONAL,

 -- similar to R1 26-4: UE reporting of information related to TA pre-compensation defined for ATG

 uplinkTA-ReportingATG-r18 ENUMERATED {supported} OPTIONAL,

 extendedDRX-CycleInactive-r18 ENUMERATED {supported} OPTIONAL,

 additionalBS-Table-r18 ENUMERATED {supported} OPTIONAL,

 delayStatusReport-r18 ENUMERATED {supported} OPTIONAL,

 disableCG-RetransmissionMonitoring-r18 ENUMERATED {supported} OPTIONAL,

 non-IntegerDRX-r18 ENUMERATED {supported} OPTIONAL

 ]],

 [[

 extension-HARQ-RTT-TimerDLForMulticastMBS-r17 ENUMERATED {supported} OPTIONAL

 ]]

}

MAC-ParametersFRX-Diff-r16 ::= SEQUENCE {

 directMCG-SCellActivation-r16 ENUMERATED {supported} OPTIONAL,

 directMCG-SCellActivationResume-r16 ENUMERATED {supported} OPTIONAL,

 directSCG-SCellActivation-r16 ENUMERATED {supported} OPTIONAL,

 directSCG-SCellActivationResume-r16 ENUMERATED {supported} OPTIONAL,

 -- R1 19-1: DRX Adaptation

 drx-Adaptation-r16 SEQUENCE {

 non-SharedSpectrumChAccess-r16 MinTimeGap-r16 OPTIONAL,

 sharedSpectrumChAccess-r16 MinTimeGap-r16 OPTIONAL

 } OPTIONAL,

 ...

}

MAC-ParametersFR2-2-r17 ::= SEQUENCE {

 directMCG-SCellActivation-r17 ENUMERATED {supported} OPTIONAL,

 directMCG-SCellActivationResume-r17 ENUMERATED {supported} OPTIONAL,

 directSCG-SCellActivation-r17 ENUMERATED {supported} OPTIONAL,

 directSCG-SCellActivationResume-r17 ENUMERATED {supported} OPTIONAL,

 drx-Adaptation-r17 SEQUENCE {

 non-SharedSpectrumChAccess-r17 MinTimeGapFR2-2-r17 OPTIONAL,

 sharedSpectrumChAccess-r17 MinTimeGapFR2-2-r17 OPTIONAL

 } OPTIONAL,

 ...

}

MAC-ParametersXDD-Diff ::= SEQUENCE {

 skipUplinkTxDynamic ENUMERATED {supported} OPTIONAL,

 logicalChannelSR-DelayTimer ENUMERATED {supported} OPTIONAL,

 longDRX-Cycle ENUMERATED {supported} OPTIONAL,

 shortDRX-Cycle ENUMERATED {supported} OPTIONAL,

 multipleSR-Configurations ENUMERATED {supported} OPTIONAL,

 multipleConfiguredGrants ENUMERATED {supported} OPTIONAL,

 ...,

 [[

 secondaryDRX-Group-r16 ENUMERATED {supported} OPTIONAL

 ]],

 [[

 enhancedSkipUplinkTxDynamic-r16 ENUMERATED {supported} OPTIONAL,

 enhancedSkipUplinkTxConfigured-r16 ENUMERATED {supported} OPTIONAL

 ]],

 [[

 ptm-Retransmission-r18 ENUMERATED {supported} OPTIONAL,

 ptm-RetransmissionInactive-r18 ENUMERATED {supported} OPTIONAL

 ]]

}

MinTimeGap-r16 ::= SEQUENCE {

 scs-15kHz-r16 ENUMERATED {sl1, sl3} OPTIONAL,

 scs-30kHz-r16 ENUMERATED {sl1, sl6} OPTIONAL,

 scs-60kHz-r16 ENUMERATED {sl1, sl12} OPTIONAL,

 scs-120kHz-r16 ENUMERATED {sl2, sl24} OPTIONAL

}

MinTimeGapFR2-2-r17 ::= SEQUENCE {

 scs-120kHz-r17 ENUMERATED {sl2, sl24} OPTIONAL,

 scs-480kHz-r17 ENUMERATED {sl8, sl96} OPTIONAL,

 scs-960kHz-r17 ENUMERATED {sl16, sl192} OPTIONAL

}

-- TAG-MAC-PARAMETERS-STOP

-- ASN1STOP