**3GPP TSG-RAN WG2 Meeting #124 *R2-231xxxx***

**Chicago, USA, 13th - 17th November 2023**

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **38.306** | **CR** | **draftCR** | **rev** | **-** | **Current version:** | **17.6.0** |  |
|  | | | | | | | | |
| *For* [***HELP***](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:*** | Introduction of R18 MUSIM UE Capabilities | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Huawei, HiSilicon | | | | | | | | | |
| ***Source to TSG:*** | R2 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_DualTxRx\_MUSIM-Core | | | | |  | ***Date:*** | | | 2023-11-20 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | | Rel-18 |
|  | *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 can be 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-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
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| ***Reason for change:*** | | Feature addition for R18 MUSIM devices support | | | | | | | | |
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| ***Summary of change:*** | | Capture the UE capabilities agreements from RAN2#121bis and RAN2#124 for R18 MUSIM devices.  **Agreements in RAN2#121bis**  1: Introduce 1 optional per-UE capability bit (without xDD/FRx differentiation) to indicate MUSIM gap priority configuration and preference. A UE supporting this feature shall also support musim-GapPreference-r17  **Agreements in RAN2#124**  1: Introduce 1 optional per-UE capability bit without xDD/FRx differentiation to indicate whether the UE supports providing MUSIM assistance information with temporary capability restriction and early indication in Msg5. | | | | | | | | |
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| ***Consequences if not approved:*** | | No UE capabilities for R18 MUSIM are defined | | | | | | | | |
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| ***Clauses affected:*** | | 4.2.2 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | | **x** |  | Other core specifications | | | | TS 38.331 CR | | |
| ***affected:*** | |  | **x** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **x** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

START OF CHANGE

### 4.2.2 General parameters

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| --- | --- | --- | --- | --- |
| Definitions for parameters | Per | M | FDD-TDD DIFF | **FR1-FR2**  DIFF |
| ***accessStratumRelease***  Indicates the access stratum release the UE supports as specified in TS 38.331 [9]. | UE | Yes | No | No |
| ***crossCarrierSchedulingConfigurationRelease-r17***  Indicates whether the UE supports using *crossCarrierSchedulingConfigRelease* to release the configurations configured by *crossCarrierSchedulingConfig*. | UE | No | No | No |
| ***delayBudgetReporting***  Indicates whether the UE supports delay budget reporting as specified in TS 38.331 [9]. | UE | No | No | No |
| ***dl-DedicatedMessageSegmentation-r16***  Indicates whether the UE supports reception of segmented DL RRC messages. | UE | No | No | No |
| ***drx-Preference-r16***  Indicates whether the UE supports providing its preference of a cell group on DRX parameters for power saving in RRC\_CONNECTED, as specified in TS 38.331 [9]. | UE | No | No | No |
| ***gNB-SideRTT-BasedPDC-r17***  Indicates whether the UE supports gNB-side RTT-based PDC, as specified in TS 38.300 [28]. A UE supporting this feature shall also support *rtt-BasedPDC-CSI-RS-ForTracking-r17* and/or *rtt-BasedPDC-PRS-r17*. | UE | No | No | No |
| ***inactiveState***  Indicates whether the UE supports RRC\_INACTIVE as specified in TS 38.331 [9]. | UE | Yes | No | No |
| ***inactiveStateNTN-r17***  Indicates whether the UE supports RRC\_INACTIVE in NTN as specified in TS 38.331 [9]. It is mandated if the UE indicates the support of *nonTerrestrialNetwork-r17*. | UE | CY | No | No | |
| ***inactiveStatePO-Determination-r17***  Indicates whether the UE supports to use the same i\_s to determine PO in RRC\_INACTIVE state as in RRC\_IDLE state. | UE | No | No | No |
| ***inDeviceCoexInd-r16***  Indicates whether the UE supports IDC (In-Device Coexistence) assistance information as specified in TS 38.331 [9]. | UE | No | No | No |
| ***maxBW-Preference-r16, maxBW-Preference-r17***  Indicates whether the UE supports providing its preference of a cell group on the maximum aggregated bandwidth for power saving in RRC\_CONNECTED, as specified in TS 38.331 [9]. | UE | No | No | Yes  (Incl FR2-2 DIFF) |
| ***maxCC-Preference-r16***  Indicates whether the UE supports providing its preference of a cell group on the maximum number of secondary component carriers for power saving in RRC\_CONNECTED, as specified in TS 38.331 [9]. | UE | No | No | No |
| ***maxMIMO-LayerPreference-r16, maxMIMO-LayerPreference-r17***  Indicates whether the UE supports providing its preference of a cell group on the maximum number of MIMO layers for power saving in RRC\_CONNECTED, as specified in TS 38.331 [9]. | UE | No | No | Yes  (Incl FR2-2 DIFF) |
| ***maxMRB-Add-r17***  Indicates the additional maximum number of MRBs that the UE supports for MBS multicast reception as specified in TS 38.331 [9]. | UE | No | No | No |
| ***mcgRLF-RecoveryViaSCG-r16***  Indicates whether the UE supports recovery from MCG RLF via split SRB1 (if supported) and via SRB3 (if supported) as specified in TS 38.331[9]. | UE | No | No | No |
| ***minSchedulingOffsetPreference-r16***  Indicates whether the UE supports providing its preference on the minimum scheduling offset for cross-slot scheduling of the cell group for power saving in RRC\_CONNECTED, as specified in TS 38.331 [9]. | UE | No | No | No |
| ***mpsPriorityIndication-r16***  Indicates whether the UE supports *mpsPriorityIndication* on RRC release with redirect as defined in TS 38.331 [9]. | UE | No | No | No |
| ***musim-GapPreference-r17***  Indicates whether the UE supports providing MUSIM assistance information with MUSIM gap preference and related MUSIM gap configuration, as defined in TS 38.331 [9]. UE supporting this feature supports 3 periodic gaps and 1 aperiodic gap. | UE | No | No | No |
| ***musimLeaveConnected-r17***  Indicates whether the UE supports providing MUSIM assistance information with indication of leaving RRC\_CONNECTED state as defined in TS 38.331 [9]. | UE | No | No | No |
| ***musim-GapPriorityPreference-r18***  Indicates whether the UE supports providing MUSIM assistance information with periodic MUSIM gap priority preference and related periodic MUSIM gap priority configuration, as defined in TS 38.331 [9]. A UE supporting this feature shall support *musim-GapPreference-r17.* | UE | No | No | No |
| ***musim-CapabilityRestrictionAndIndication-r18***  Indicates whether the UE supports providing MUSIM assistance information with temporary capability restriction and capability restriction indication, as defined in TS 38.331 [9]. | UE | No | No | No |
| ***nonTerrestrialNetwork-r17***  Indicates whether the UE supports NR NTN access. If the UE indicates this capability the UE shall support the following NTN essential features, e.g., timer extension in MAC/RLC/PDCP layers and RACH adaptation to handle long RTT, acquiring NTN specific SIB and more than one TAC per PLMN broadcast in one cell. | UE | No | No | No |
| ***ntn-ScenarioSupport-r17***  Indicates whether the UE supports the NTN features in GSO scenario or NGSO scenario. If a UE does not include this field but includes *nonTerrestrialNetwork-r17*, the UE supports the NTN features for both GSO and NGSO scenarios, and also supports mobility between GSO and NGSO scenarios. | UE | No | No | No |
| ***onDemandSIB-Connected-r16***  Indicates whether the UE supports the on-demand request procedure of SIB(s) or posSIB(s) while in RRC\_CONNECTED, as specified in TS 38.331 [9]. | UE | No | No | No |
| ***overheatingInd***  Indicates whether the UE supports overheating assistance information. | UE | No | No | No |
| ***pei-SubgroupingSupportBandList-r17***  Indicates whether the UE supports receiving paging early indication in DCI format 2\_7 as specified in TS38.304 [21] for a list of frequency band. The UE shall support UEID based subgrouping for a frequency band if it indicates supporting of paging early indication reception for the frequency band. The set of OFDM symbols within a slot where UE can monitor the PEI PDCCH in Type 2A CSS is the same as the requirement for paging PDCCH in Type 2 CSS for IDLE and INACTIVE mode UEs. | UE | No | No | No |
| ***partialFR2-FallbackRX-Req***  Indicates whether the UE meets only a partial set of the UE minimum receiver requirements for the eligible FR2 fallback band combinations as defined in Clause 4.2 of TS 38.101-2 [3] and Clause 4.2 of TS 38.101-3 [4]. If not indicated, the UE shall meet all the UE minimum receiver requirements for all the FR2 fallback combinations in TS 38.101-2 [3] and TS 38.101-3 [4]. The UE shall support configuration of any of the FR2 fallback band combinations regardless of the presence or the absence of this field. | UE | No | No | No |
| ***ra-SDT-r17***  Indicates whether the UE supports transmission of data and/or signalling over allowed radio bearers in RRC\_INACTIVE state via Random Access procedure (i.e., RA-SDT) with 4-step RA type and if UE supports *twoStepRACH-r16,* with 2-step RA type, as specified in TS 38.331 [9]. | UE | No | No | No |
| ***ra-SDT-NTN-r17***  Indicates whether the UE supports transmission of data and/or signalling over allowed radio bearers in RRC\_INACTIVE state in NTN via Random Access procedure (i.e., RA-SDT) with 4-step RA type and if UE supports *twoStepRACH-r16* for NTN*,* with 2-step RA type, as specified in TS 38.331 [9]. A UE supporting this feature shall also indicate the support of *nonTerrestrialNetwork-r17*. | UE | No | No | No | |
| ***redirectAtResumeByNAS-r16***  Indicates whether the UE supports reception of *redirectedCarrierInfo* in an *RRCRelease* message in response to an *RRCResumeRequest* or *RRCResumeRequest1* which is triggered by the NAS layer, as specified in TS 38.331 [9]. | UE | No | No | No |
| ***reducedCP-Latency***  Indicates whether the UE supports reduced control plane latency as defined in TS 38.331 [9] | UE | No | No | No |
| ***referenceTimeProvision-r16***  Indicates whether the UE supports provision of referenceTimeInfo in *DLInformationTransfer* message and in SIB9 and reference time information preference indication via assistance information, as specified in TS 38.331 [9]. | UE | No | No | No |
| ***releasePreference-r16***  Indicates whether the UE supports providing its preference assistance information to transition out of RRC\_CONNECTED for power saving, as specified in TS 38.331 [9]. | UE | No | No | No |
| ***resumeWithStoredMCG-SCells-r16***  Indicates whether the UE supports not deleting the stored MCG SCell configuration when initiating the resume procedure. | UE | No | No | No |
| ***resumeWithStoredSCG-r16***  Indicates whether the UE supports not deleting the stored SCG configuration when initiating resume. The UE which indicates support for *resumeWithStoredSCG-r16* shall also indicate support for *resumeWithSCG-Config-r16*. | UE | No | No | No |
| ***resumeWithSCG-Config-r16***  Indicates whether the UE supports (re-)configuration of an SCG during the resume procedure. | UE | No | No | No |
| ***sliceInfoforCellReselection-r17***  Indicates whether the UE supports slice-based cell reselection information in SIB and on RRC release for slice-based cell reselection in RRC \_IDLE and RRC INACTIVE as defined in TS 38.304 [21]. | UE | No | No | No |
| ***splitSRB-WithOneUL-Path***  Indicates whether the UE supports UL transmission via MCG path and DL reception via either MCG path or SCG path, as specified for the split SRB in TS 37.340 [7]. The UE shall not set the FDD/TDD specific fields for this capability (i.e. it shall not include this field in *UE-MRDC-CapabilityAddXDD-Mode*). | UE | No | No | No |
| ***splitDRB-withUL-Both-MCG-SCG***  Indicates whether the UE supports UL transmission via both MCG path and SCG path for the split DRB as specified in TS 37.340 [7]. The UE shall not set the FDD/TDD specific fields for this capability (i.e. it shall not include this field in *UE-MRDC-CapabilityAddXDD-Mode*). | UE | Yes | No | No |
| ***srb3***  Indicates whether the UE supports direct SRB between the SN and the UE as specified in TS 37.340 [7]. The UE shall not set the FDD/TDD specific fields for this capability (i.e. it shall not include this field in *UE-MRDC-CapabilityAddXDD-Mode*). This field is not applied to NE-DC. | UE | Yes | No | No |
| ***srb-SDT-NTN-r17***  Indicates whether the UE supports the usage of signalling radio bearer SRB2 over RA-SDT or CG-SDT in NTN, as specified in TS 38.331 [9].  A UE supporting this feature shall also indicate support of *ra-SDT-NTN-r17*, *or cg-SDT-r17* in NTN bands. A UE supporting this feature shall also indicate the support of *nonTerrestrialNetwork-r17*. | UE | No | No | No | |
| ***srb-SDT-r17***  Indicates whether the UE supports the usage of signalling radio bearer SRB2 over RA-SDT or CG-SDT, as specified in TS 38.331 [9].  A UE supporting this feature shall also indicate support of *ra-SDT-r17 or cg-SDT-r17*. | UE | No | No | No |
| ***ul-GapFR2-Pattern-r17***  Indicates FR2 UL gap pattern(s) supported by the UE for NR SA, for NR-DC without FR2-FR2 band combination, for NE-DC, and for (NG)EN-DC, if UE supports a band in FR2. The leading / leftmost bit (bit 0) corresponds to the FR2 UL gap pattern 0, the next bit corresponds to the FR2 UL gap pattern 1, as specified in TS 38.133 [5] and so on. The UE shall set at least one of the bits to 1 for FR2 UL gap pattern 1 and 3, if the UE indicates support for *ul-GapFR2-r17* in an FR2 band. | UE | CY | No | FR2 only |
| ***ul-RRC-Segmentation-r16***  Indicates whether the UE supports uplink RRC segmentation of *UECapabilityInformation* as specified in TS 38.331 [9]. | UE | No | No | No |

END OF CHANGE

Annex 1: Introduction of R18 MUSIM UE Capabilities to 3GPP TS 38.822 V17.1.0

### 7.2.X NR\_DualTxRx\_MUSIM-Core

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Features | Index | Feature group | Components | Prerequisite feature groups | Field name in TS 38.331 [2] | Parent IE in TS 38.331 [2] | Need of FDD/TDD differentiation | Need of FR1/FR2 differentiation | Note | Mandatory/Optional |
| X. NR\_DualRxTx\_MUSIM-Core | X-1 | MUSIM Request for priorities for all MUSIM periodic gaps | Indicates whether the UE supports providing MUSIM assistance information with periodic MUSIM gap priority preference and related periodic MUSIM gap priority configuration, as defined in TS 38.331. |  | *musim-GapPriorityPreference-r18* | *UE-NR-Capability-v18xy* | No | No |  | Optional with capability signalling |
| X. NR\_DualRxTx\_MUSIM-Core | X-2 | MUSIM Request for temporary capability restriction and Indication of capability restriction | Indicates whether the UE supports providing MUSIM assistance information with temporary capability restriction and capability restriction indication, as defined in TS 38.331. |  | *musim-CapabilityRestrictionAndIndication-r18* | *UE-NR-Capability-v18xy* | No | No |  | Optional with capability signalling |