**3GPP TSG-RAN WG2 Meeting #124 *R2-2313634***

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

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **38.331** | **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)* | |
|  |  | | | | | | | | | |
| ***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: Reuse the agreed Rel-18 UE capability bit for MUSIM gap priority configuration and preference to indicate whether the UE supports providing the UE preference of “keep solution” in MUSIM assistance information.  2: 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 | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 6.3.3 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | | **x** |  | Other core specifications | | | | TS 38.306 | | |
| ***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

6.3.3 UE capability information elements

*– UE-NR-Capability*

The IE *UE-NR-Capability* is used to convey the NR UE Radio Access Capability Parameters, see TS 38.306 [26].

***UE-NR-Capability* information element**

-- ASN1START

-- TAG-UE-NR-CAPABILITY-START

UE-NR-Capability ::= SEQUENCE {

accessStratumRelease AccessStratumRelease,

pdcp-Parameters PDCP-Parameters,

rlc-Parameters RLC-Parameters OPTIONAL,

mac-Parameters MAC-Parameters OPTIONAL,

phy-Parameters Phy-Parameters,

rf-Parameters RF-Parameters,

measAndMobParameters MeasAndMobParameters OPTIONAL,

fdd-Add-UE-NR-Capabilities UE-NR-CapabilityAddXDD-Mode OPTIONAL,

tdd-Add-UE-NR-Capabilities UE-NR-CapabilityAddXDD-Mode OPTIONAL,

fr1-Add-UE-NR-Capabilities UE-NR-CapabilityAddFRX-Mode OPTIONAL,

fr2-Add-UE-NR-Capabilities UE-NR-CapabilityAddFRX-Mode OPTIONAL,

featureSets FeatureSets OPTIONAL,

featureSetCombinations SEQUENCE (SIZE (1..maxFeatureSetCombinations)) OF FeatureSetCombination OPTIONAL,

lateNonCriticalExtension OCTET STRING (CONTAINING UE-NR-Capability-v15c0) OPTIONAL,

nonCriticalExtension UE-NR-Capability-v1530 OPTIONAL

}

-- Regular non-critical Rel-15 extensions:

UE-NR-Capability-v1530 ::= SEQUENCE {

fdd-Add-UE-NR-Capabilities-v1530 UE-NR-CapabilityAddXDD-Mode-v1530 OPTIONAL,

tdd-Add-UE-NR-Capabilities-v1530 UE-NR-CapabilityAddXDD-Mode-v1530 OPTIONAL,

dummy ENUMERATED {supported} OPTIONAL,

interRAT-Parameters InterRAT-Parameters OPTIONAL,

inactiveState ENUMERATED {supported} OPTIONAL,

delayBudgetReporting ENUMERATED {supported} OPTIONAL,

nonCriticalExtension UE-NR-Capability-v1540 OPTIONAL

}

UE-NR-Capability-v1540 ::= SEQUENCE {

sdap-Parameters SDAP-Parameters OPTIONAL,

overheatingInd ENUMERATED {supported} OPTIONAL,

ims-Parameters IMS-Parameters OPTIONAL,

fr1-Add-UE-NR-Capabilities-v1540 UE-NR-CapabilityAddFRX-Mode-v1540 OPTIONAL,

fr2-Add-UE-NR-Capabilities-v1540 UE-NR-CapabilityAddFRX-Mode-v1540 OPTIONAL,

fr1-fr2-Add-UE-NR-Capabilities UE-NR-CapabilityAddFRX-Mode OPTIONAL,

nonCriticalExtension UE-NR-Capability-v1550 OPTIONAL

}

UE-NR-Capability-v1550 ::= SEQUENCE {

reducedCP-Latency ENUMERATED {supported} OPTIONAL,

nonCriticalExtension UE-NR-Capability-v1560 OPTIONAL

}

UE-NR-Capability-v1560 ::= SEQUENCE {

nrdc-Parameters NRDC-Parameters OPTIONAL,

receivedFilters OCTET STRING (CONTAINING UECapabilityEnquiry-v1560-IEs) OPTIONAL,

nonCriticalExtension UE-NR-Capability-v1570 OPTIONAL

}

UE-NR-Capability-v1570 ::= SEQUENCE {

nrdc-Parameters-v1570 NRDC-Parameters-v1570 OPTIONAL,

nonCriticalExtension UE-NR-Capability-v1610 OPTIONAL

}

-- Late non-critical Rel-15 extensions:

UE-NR-Capability-v15c0 ::= SEQUENCE {

nrdc-Parameters-v15c0 NRDC-Parameters-v15c0 OPTIONAL,

partialFR2-FallbackRX-Req ENUMERATED {true} OPTIONAL,

nonCriticalExtension UE-NR-Capability-v15g0 OPTIONAL

}

UE-NR-Capability-v15g0 ::= SEQUENCE {

rf-Parameters-v15g0 RF-Parameters-v15g0 OPTIONAL,

nonCriticalExtension UE-NR-Capability-v15j0 OPTIONAL

}

UE-NR-Capability-v15j0 ::= SEQUENCE {

-- Following field is only for REL-15 late non-critical extensions

lateNonCriticalExtension OCTET STRING OPTIONAL,

nonCriticalExtension UE-NR-Capability-v16a0 OPTIONAL

}

-- Regular non-critical Rel-16 extensions:

UE-NR-Capability-v1610 ::= SEQUENCE {

inDeviceCoexInd-r16 ENUMERATED {supported} OPTIONAL,

dl-DedicatedMessageSegmentation-r16 ENUMERATED {supported} OPTIONAL,

nrdc-Parameters-v1610 NRDC-Parameters-v1610 OPTIONAL,

powSav-Parameters-r16 PowSav-Parameters-r16 OPTIONAL,

fr1-Add-UE-NR-Capabilities-v1610 UE-NR-CapabilityAddFRX-Mode-v1610 OPTIONAL,

fr2-Add-UE-NR-Capabilities-v1610 UE-NR-CapabilityAddFRX-Mode-v1610 OPTIONAL,

bh-RLF-Indication-r16 ENUMERATED {supported} OPTIONAL,

directSN-AdditionFirstRRC-IAB-r16 ENUMERATED {supported} OPTIONAL,

bap-Parameters-r16 BAP-Parameters-r16 OPTIONAL,

referenceTimeProvision-r16 ENUMERATED {supported} OPTIONAL,

sidelinkParameters-r16 SidelinkParameters-r16 OPTIONAL,

highSpeedParameters-r16 HighSpeedParameters-r16 OPTIONAL,

mac-Parameters-v1610 MAC-Parameters-v1610 OPTIONAL,

mcgRLF-RecoveryViaSCG-r16 ENUMERATED {supported} OPTIONAL,

resumeWithStoredMCG-SCells-r16 ENUMERATED {supported} OPTIONAL,

resumeWithStoredSCG-r16 ENUMERATED {supported} OPTIONAL,

resumeWithSCG-Config-r16 ENUMERATED {supported} OPTIONAL,

ue-BasedPerfMeas-Parameters-r16 UE-BasedPerfMeas-Parameters-r16 OPTIONAL,

son-Parameters-r16 SON-Parameters-r16 OPTIONAL,

onDemandSIB-Connected-r16 ENUMERATED {supported} OPTIONAL,

nonCriticalExtension UE-NR-Capability-v1640 OPTIONAL

}

UE-NR-Capability-v1640 ::= SEQUENCE {

redirectAtResumeByNAS-r16 ENUMERATED {supported} OPTIONAL,

phy-ParametersSharedSpectrumChAccess-r16 Phy-ParametersSharedSpectrumChAccess-r16 OPTIONAL,

nonCriticalExtension UE-NR-Capability-v1650 OPTIONAL

}

UE-NR-Capability-v1650 ::= SEQUENCE {

mpsPriorityIndication-r16 ENUMERATED {supported} OPTIONAL,

highSpeedParameters-v1650 HighSpeedParameters-v1650 OPTIONAL,

nonCriticalExtension UE-NR-Capability-v1690 OPTIONAL

}

UE-NR-Capability-v1690 ::= SEQUENCE {

ul-RRC-Segmentation-r16 ENUMERATED {supported} OPTIONAL,

nonCriticalExtension UE-NR-Capability-v1700 OPTIONAL

}

-- Late non-critical extensions from Rel-16 onwards:

UE-NR-Capability-v16a0 ::= SEQUENCE {

phy-Parameters-v16a0 Phy-Parameters-v16a0 OPTIONAL,

rf-Parameters-v16a0 RF-Parameters-v16a0 OPTIONAL,

nonCriticalExtension UE-NR-Capability-v16c0 OPTIONAL

}

UE-NR-Capability-v16c0 ::= SEQUENCE {

rf-Parameters-v16c0 RF-Parameters-v16c0 OPTIONAL,

nonCriticalExtension UE-NR-Capability-v16d0 OPTIONAL

}

UE-NR-Capability-v16d0 ::= SEQUENCE {

featureSets-v16d0 FeatureSets-v16d0 OPTIONAL,

nonCriticalExtension SEQUENCE {} OPTIONAL

}

-- Regular non-critical Rel-17 extensions:

UE-NR-Capability-v1700 ::= SEQUENCE {

inactiveStatePO-Determination-r17 ENUMERATED {supported} OPTIONAL,

highSpeedParameters-v1700 HighSpeedParameters-v1700 OPTIONAL,

powSav-Parameters-v1700 PowSav-Parameters-v1700 OPTIONAL,

mac-Parameters-v1700 MAC-Parameters-v1700 OPTIONAL,

ims-Parameters-v1700 IMS-Parameters-v1700 OPTIONAL,

measAndMobParameters-v1700 MeasAndMobParameters-v1700,

appLayerMeasParameters-r17 AppLayerMeasParameters-r17 OPTIONAL,

redCapParameters-r17 RedCapParameters-r17 OPTIONAL,

ra-SDT-r17 ENUMERATED {supported} OPTIONAL,

srb-SDT-r17 ENUMERATED {supported} OPTIONAL,

gNB-SideRTT-BasedPDC-r17 ENUMERATED {supported} OPTIONAL,

bh-RLF-DetectionRecovery-Indication-r17 ENUMERATED {supported} OPTIONAL,

nrdc-Parameters-v1700 NRDC-Parameters-v1700 OPTIONAL,

bap-Parameters-v1700 BAP-Parameters-v1700 OPTIONAL,

musim-GapPreference-r17 ENUMERATED {supported} OPTIONAL,

musimLeaveConnected-r17 ENUMERATED {supported} OPTIONAL,

mbs-Parameters-r17 MBS-Parameters-r17,

nonTerrestrialNetwork-r17 ENUMERATED {supported} OPTIONAL,

ntn-ScenarioSupport-r17 ENUMERATED {gso, ngso} OPTIONAL,

sliceInfoforCellReselection-r17 ENUMERATED {supported} OPTIONAL,

ue-RadioPagingInfo-r17 UE-RadioPagingInfo-r17 OPTIONAL,

-- R4 17-2 UL gap pattern for Tx power management

ul-GapFR2-Pattern-r17 BIT STRING (SIZE (4)) OPTIONAL,

ntn-Parameters-r17 NTN-Parameters-r17 OPTIONAL,

nonCriticalExtension UE-NR-Capability-v1740 OPTIONAL

}

UE-NR-Capability-v1740 ::= SEQUENCE {

redCapParameters-v1740 RedCapParameters-v1740,

nonCriticalExtension UE-NR-Capability-v1750 OPTIONAL

}

UE-NR-Capability-v1750 ::= SEQUENCE {

crossCarrierSchedulingConfigurationRelease-r17 ENUMERATED {supported} OPTIONAL,

nonCriticalExtension UE-NR-Capability-v18xy OPTIONAL

}

UE-NR-Capability-v18xy ::= SEQUENCE {

musim-GapPriorityPreference-r18 ENUMERATED {supported} OPTIONAL,

musim-CapabilityRestriction-r18 ENUMERATED {supported} OPTIONAL,

nonCriticalExtension SEQUENCE {} OPTIONAL

}

UE-NR-CapabilityAddXDD-Mode ::= SEQUENCE {

phy-ParametersXDD-Diff Phy-ParametersXDD-Diff OPTIONAL,

mac-ParametersXDD-Diff MAC-ParametersXDD-Diff OPTIONAL,

measAndMobParametersXDD-Diff MeasAndMobParametersXDD-Diff OPTIONAL

}

UE-NR-CapabilityAddXDD-Mode-v1530 ::= SEQUENCE {

eutra-ParametersXDD-Diff EUTRA-ParametersXDD-Diff

}

UE-NR-CapabilityAddFRX-Mode ::= SEQUENCE {

phy-ParametersFRX-Diff Phy-ParametersFRX-Diff OPTIONAL,

measAndMobParametersFRX-Diff MeasAndMobParametersFRX-Diff OPTIONAL

}

UE-NR-CapabilityAddFRX-Mode-v1540 ::= SEQUENCE {

ims-ParametersFRX-Diff IMS-ParametersFRX-Diff OPTIONAL

}

UE-NR-CapabilityAddFRX-Mode-v1610 ::= SEQUENCE {

powSav-ParametersFRX-Diff-r16 PowSav-ParametersFRX-Diff-r16 OPTIONAL,

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

}

BAP-Parameters-r16 ::= SEQUENCE {

flowControlBH-RLC-ChannelBased-r16 ENUMERATED {supported} OPTIONAL,

flowControlRouting-ID-Based-r16 ENUMERATED {supported} OPTIONAL

}

BAP-Parameters-v1700 ::= SEQUENCE {

bapHeaderRewriting-Rerouting-r17 ENUMERATED {supported} OPTIONAL,

bapHeaderRewriting-Routing-r17 ENUMERATED {supported} OPTIONAL

}

MBS-Parameters-r17 ::= SEQUENCE {

maxMRB-Add-r17 INTEGER (1..16) OPTIONAL

}

-- TAG-UE-NR-CAPABILITY-STOP

-- ASN1STOP

|  |
| --- |
| ***UE-NR-Capability* field descriptions** |
| ***featureSetCombinations***  A list of *FeatureSetCombination:s* for *supportedBandCombinationList* in *UE-NR-Capability*. The *FeatureSetDownlink:s* and *FeatureSetUplink:s* referred to from these *FeatureSetCombination:s* are defined in the *featureSets* list in *UE-NR-Capability*. |

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| ***UE-NR-Capability-v1540 field descriptions*** |
| ***fr1-fr2-Add-UE-NR-Capabilities***  This instance of *UE-NR-CapabilityAddFRX-Mode* does not include any other fields than *csi-RS-IM-ReceptionForFeedback*/ *csi-RS-ProcFrameworkForSRS*/ *csi-ReportFramework*. |

END OF CHANGE