**3GPP TSG-RAN WG2 Meeting #111-e *draft R2-200xxxx***

**Online, August 17th – 28th 2020**

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| *CR-Form-v12.0* | | | | | | | | |
| **DRAFT CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **38.331** | **CR** |  | **rev** | **-** | **Current version:** | **16.1.0** |  |
|  | | | | | | | | |
| *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:*** | Corrections on FRX/XDD-Diff UE capabilities for NR\_Mob\_enh | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | China Telecom | | | | | | | | | |
| ***Source to TSG:*** | R2 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_Mob\_enh-Core | | | | |  | ***Date:*** | | | 2020-08-28 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | | Rel-16 |
|  | *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-12 (Release 12)* *Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | 1. condHandoverParameters (i.e. condHandover-r16, condHandoverFailure-r16 and condHandoverTwoTriggerEvents-r16) defined under both MeasAndMobParametersXDD-Diff-r16 and MeasAndMobParametersFRX-Diff-r16 need to be support all cases including FR1 FDD FR2 TDD case. Keep them FRX-Diff and XDD-Diff and change their type to per band. UE shall set the capability value consistently for all FDD-FR1 bands, all TDD-FR1 bands and all TDD-FR2 bands respectively. 2. condPSCellChangeParameters (i.e. condPSCellChange-r16, condPSCellChangeTwoTriggerEvents-r16) defined under both MeasAndMobParametersMRDCXDD-Diff-v1610 and MeasAndMobParametersMRDCFRX-Diff-v1610 need to be support all cases including FR1 FDD FR2 TDD case. Keep them FRX-Diff and XDD-Diff and change their type to per band. UE shall set the capability value consistently for all FDD-FR1 bands, all TDD-FR1 bands and all TDD-FR2 bands respectively. 3. For pcellT312-r16, pscellT312-r16, remove FRX-Diff and XDD-Diff and keep their type as per UE. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | 1. To define condHandoverParameters (i.e. condHandover-r16, condHandoverFailure-r16 and condHandoverTwoTriggerEvents-r16) under bandNR and remove from the current places. 2. To define condPSCellChangeParameters (i.e. condPSCellChange-r16, condPSCellChangeTwoTriggerEvents-r16) under bandNR and remove from the current places. 3. To define pcellT312-r16 under MeasAndMobParametersCommon and remove from the current places. 4. To define pscellT312-r16 under MeasAndMobParametersMRDC-Common-v1610 and remove from the current places. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | If the changes are not approved, UE capability signaling for NR\_Mob\_enh is not clearly completed. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 6.3.3 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | | **x** |  | Other core specifications | | | | TS 38.306 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 changes

### 6.3.3 UE capability information elements

#### – *MeasAndMobParameters*

The IE *MeasAndMobParameters* is used to convey UE capabilities related to measurements for radio resource management (RRM), radio link monitoring (RLM) and mobility (e.g. handover).

*MeasAndMobParameters* information element

-- ASN1START

-- TAG-MEASANDMOBPARAMETERS-START

MeasAndMobParameters ::= SEQUENCE {

measAndMobParametersCommon MeasAndMobParametersCommon OPTIONAL,

measAndMobParametersXDD-Diff MeasAndMobParametersXDD-Diff OPTIONAL,

measAndMobParametersFRX-Diff MeasAndMobParametersFRX-Diff OPTIONAL

}

MeasAndMobParametersCommon ::= SEQUENCE {

supportedGapPattern BIT STRING (SIZE (22)) OPTIONAL,

ssb-RLM ENUMERATED {supported} OPTIONAL,

ssb-AndCSI-RS-RLM ENUMERATED {supported} OPTIONAL,

...,

[[

eventB-MeasAndReport ENUMERATED {supported} OPTIONAL,

handoverFDD-TDD ENUMERATED {supported} OPTIONAL,

eutra-CGI-Reporting ENUMERATED {supported} OPTIONAL,

nr-CGI-Reporting ENUMERATED {supported} OPTIONAL

]],

[[

independentGapConfig ENUMERATED {supported} OPTIONAL,

periodicEUTRA-MeasAndReport ENUMERATED {supported} OPTIONAL,

handoverFR1-FR2 ENUMERATED {supported} OPTIONAL,

maxNumberCSI-RS-RRM-RS-SINR ENUMERATED {n4, n8, n16, n32, n64, n96} OPTIONAL

]],

[[

nr-CGI-Reporting-ENDC ENUMERATED {supported} OPTIONAL

]],

[[

eutra-CGI-Reporting-NEDC ENUMERATED {supported} OPTIONAL,

eutra-CGI-Reporting-NRDC ENUMERATED {supported} OPTIONAL,

nr-CGI-Reporting-NEDC ENUMERATED {supported} OPTIONAL,

nr-CGI-Reporting-NRDC ENUMERATED {supported} OPTIONAL

]],

[[

reportAddNeighMeasForPeriodic-r16 ENUMERATED {supported} OPTIONAL,

condHandoverParametersCommon-r16 SEQUENCE {

condHandoverFDD-TDD-r16 ENUMERATED {supported} OPTIONAL,

condHandoverFR1-FR2-r16 ENUMERATED {supported} OPTIONAL

} OPTIONAL,

nr-NeedForGap-Reporting-r16 ENUMERATED {supported} OPTIONAL,

supportedGapPattern-NRonly-r16 BIT STRING (SIZE (10)) OPTIONAL,

supportedGapPattern-NRonly-NEDC-r16 ENUMERATED {supported} OPTIONAL,

maxNumberCLI-RSSI-r16 ENUMERATED {n8, n16, n32, n64} OPTIONAL,

maxNumberCLI-SRS-RSRP-r16 ENUMERATED {n4, n8, n16, n32} OPTIONAL,

maxNumberPerSlotCLI-SRS-RSRP-r16 ENUMERATED {n2, n4, n8} OPTIONAL,

mfbi-IAB-r16 ENUMERATED {supported} OPTIONAL,

multipleNS-And-Pmax-IAB-r16 ENUMERATED {supported} OPTIONAL,

nr-CGI-Reporting-NPN-r16 ENUMERATED {supported} OPTIONAL,

idleInactiveEUTRA-MeasReport-r16 ENUMERATED {supported} OPTIONAL,

idleInactive-ValidityArea-r16 ENUMERATED {supported} OPTIONAL

]],

[[

pcellT312-r16 ENUMERATED {supported} OPTIONAL

]]

}

MeasAndMobParametersXDD-Diff ::= SEQUENCE {

intraAndInterF-MeasAndReport ENUMERATED {supported} OPTIONAL,

eventA-MeasAndReport ENUMERATED {supported} OPTIONAL,

...,

[[

handoverInterF ENUMERATED {supported} OPTIONAL,

handoverLTE-EPC ENUMERATED {supported} OPTIONAL,

handoverLTE-5GC ENUMERATED {supported} OPTIONAL

]],

[[

sftd-MeasNR-Neigh ENUMERATED {supported} OPTIONAL,

sftd-MeasNR-Neigh-DRX ENUMERATED {supported} OPTIONAL

]],

[[

handoverIntraF-IAB-r16 ENUMERATED {supported} OPTIONAL,

eutra-AutonomousGaps-r16 ENUMERATED {supported} OPTIONAL,

eutra-AutonomousGapsNEDC-r16 ENUMERATED {supported} OPTIONAL,

eutra-AutonomousGapsNRDC-r16 ENUMERATED {supported} OPTIONAL,

nr-AutonomousGaps-r16 ENUMERATED {supported} OPTIONAL,

nr-AutonomousGaps-ENDC-r16 ENUMERATED {supported} OPTIONAL,

nr-AutonomousGapsNEDC-r16 ENUMERATED {supported} OPTIONAL,

nr-AutonomousGapsNRDC-r16 ENUMERATED {supported} OPTIONAL,

handoverUTRA-FDD-r16 ENUMERATED {supported} OPTIONAL

]]

}

MeasAndMobParametersFRX-Diff ::= SEQUENCE {

ss-SINR-Meas ENUMERATED {supported} OPTIONAL,

csi-RSRP-AndRSRQ-MeasWithSSB ENUMERATED {supported} OPTIONAL,

csi-RSRP-AndRSRQ-MeasWithoutSSB ENUMERATED {supported} OPTIONAL,

csi-SINR-Meas ENUMERATED {supported} OPTIONAL,

csi-RS-RLM ENUMERATED {supported} OPTIONAL,

...,

[[

handoverInterF ENUMERATED {supported} OPTIONAL,

handoverLTE-EPC ENUMERATED {supported} OPTIONAL,

handoverLTE-5GC ENUMERATED {supported} OPTIONAL

]],

[[

maxNumberResource-CSI-RS-RLM ENUMERATED {n2, n4, n6, n8} OPTIONAL

]],

[[

simultaneousRxDataSSB-DiffNumerology ENUMERATED {supported} OPTIONAL

]],

[[

nr-AutonomousGaps-r16 ENUMERATED {supported} OPTIONAL,

nr-AutonomousGaps-ENDC-r16 ENUMERATED {supported} OPTIONAL,

handoverUTRA-FDD-r16 ENUMERATED {supported} OPTIONAL,

cli-RSSI-Meas-r16 ENUMERATED {supported} OPTIONAL,

cli-SRS-RSRP-Meas-r16 ENUMERATED {supported} OPTIONAL,

interFrequencyMeas-Nogap-r16 ENUMERATED {supported} OPTIONAL,

simultaneousRxDataSSB-DiffNumerology-Inter-r16 ENUMERATED {supported} OPTIONAL,

handoverIntraF-IAB-r16 ENUMERATED {supported} OPTIONAL,

idleInactiveNR-MeasReport-r16 ENUMERATED {supported} OPTIONAL

]]

}

-- TAG-MEASANDMOBPARAMETERS-STOP

-- ASN1STOP

#### – *MeasAndMobParametersMRDC*

The IE *MeasAndMobParametersMRDC* is used to convey capability parameters related to RRM measurements and RRC mobility.

*MeasAndMobParametersMRDC* information element

-- ASN1START

-- TAG-MEASANDMOBPARAMETERSMRDC-START

MeasAndMobParametersMRDC ::= SEQUENCE {

measAndMobParametersMRDC-Common MeasAndMobParametersMRDC-Common OPTIONAL,

measAndMobParametersMRDC-XDD-Diff MeasAndMobParametersMRDC-XDD-Diff OPTIONAL,

measAndMobParametersMRDC-FRX-Diff MeasAndMobParametersMRDC-FRX-Diff OPTIONAL

}

MeasAndMobParametersMRDC-v1560 ::= SEQUENCE {

measAndMobParametersMRDC-XDD-Diff-v1560 MeasAndMobParametersMRDC-XDD-Diff-v1560 OPTIONAL

}

MeasAndMobParametersMRDC-v1610 ::= SEQUENCE {

measAndMobParametersMRDC-Common-v1610 MeasAndMobParametersMRDC-Common-v1610 OPTIONAL,

measAndMobParametersMRDC-XDD-Diff-v1610 MeasAndMobParametersMRDC-XDD-Diff-v1610 OPTIONAL,

measAndMobParametersMRDC-FRX-Diff-v1610 MeasAndMobParametersMRDC-FRX-Diff-v1610 OPTIONAL,

interNR-MeasEUTRA-IAB-r16 ENUMERATED {supported} OPTIONAL

}

MeasAndMobParametersMRDC-Common ::= SEQUENCE {

independentGapConfig ENUMERATED {supported} OPTIONAL

}

MeasAndMobParametersMRDC-Common-v1610 ::= SEQUENCE {

condPSCellChangeParametersCommon-r16 SEQUENCE {

condPSCellChangeFDD-TDD-r16 ENUMERATED {supported} OPTIONAL,

condPSCellChangeFR1-FR2-r16 ENUMERATED {supported} OPTIONAL

} OPTIONAL,

pscellT312-r16 ENUMERATED {supported} OPTIONAL

}

MeasAndMobParametersMRDC-XDD-Diff ::= SEQUENCE {

sftd-MeasPSCell ENUMERATED {supported} OPTIONAL,

sftd-MeasNR-Cell ENUMERATED {supported} OPTIONAL

}

MeasAndMobParametersMRDC-XDD-Diff-v1560 ::= SEQUENCE {

sftd-MeasPSCell-NEDC ENUMERATED {supported} OPTIONAL

}

MeasAndMobParametersMRDC-FRX-Diff ::= SEQUENCE {

simultaneousRxDataSSB-DiffNumerology ENUMERATED {supported} OPTIONAL

}

-- TAG-MEASANDMOBPARAMETERSMRDC-STOP

-- ASN1STOP

– *RF-Parameters*

The IE *RF-Parameters* is used to convey RF-related capabilities for NR operation.

***RF-Parameters* information element**

-- ASN1START

-- TAG-RF-PARAMETERS-START

RF-Parameters ::= SEQUENCE {

supportedBandListNR SEQUENCE (SIZE (1..maxBands)) OF BandNR,

supportedBandCombinationList BandCombinationList OPTIONAL,

appliedFreqBandListFilter FreqBandList OPTIONAL,

...,

[[

supportedBandCombinationList-v1540 BandCombinationList-v1540 OPTIONAL,

srs-SwitchingTimeRequested ENUMERATED {true} OPTIONAL

]],

[[

supportedBandCombinationList-v1550 BandCombinationList-v1550 OPTIONAL

]],

[[

supportedBandCombinationList-v1560 BandCombinationList-v1560 OPTIONAL

]],

[[

supportedBandCombinationList-v1610 BandCombinationList-v1610 OPTIONAL,

supportedBandCombinationListSidelink-r16 BandCombinationListSidelink-r16 OPTIONAL,

supportedBandCombinationList-UplinkTxSwitch-r16 BandCombinationList-UplinkTxSwitch-r16 OPTIONAL

]]

}

BandNR ::= SEQUENCE {

bandNR FreqBandIndicatorNR,

modifiedMPR-Behaviour BIT STRING (SIZE (8)) OPTIONAL,

mimo-ParametersPerBand MIMO-ParametersPerBand OPTIONAL,

extendedCP ENUMERATED {supported} OPTIONAL,

multipleTCI ENUMERATED {supported} OPTIONAL,

bwp-WithoutRestriction ENUMERATED {supported} OPTIONAL,

bwp-SameNumerology ENUMERATED {upto2, upto4} OPTIONAL,

bwp-DiffNumerology ENUMERATED {upto4} OPTIONAL,

crossCarrierScheduling-SameSCS ENUMERATED {supported} OPTIONAL,

pdsch-256QAM-FR2 ENUMERATED {supported} OPTIONAL,

pusch-256QAM ENUMERATED {supported} OPTIONAL,

ue-PowerClass ENUMERATED {pc1, pc2, pc3, pc4} OPTIONAL,

rateMatchingLTE-CRS ENUMERATED {supported} OPTIONAL,

channelBWs-DL CHOICE {

fr1 SEQUENCE {

scs-15kHz BIT STRING (SIZE (10)) OPTIONAL,

scs-30kHz BIT STRING (SIZE (10)) OPTIONAL,

scs-60kHz BIT STRING (SIZE (10)) OPTIONAL

},

fr2 SEQUENCE {

scs-60kHz BIT STRING (SIZE (3)) OPTIONAL,

scs-120kHz BIT STRING (SIZE (3)) OPTIONAL

}

} OPTIONAL,

channelBWs-UL CHOICE {

fr1 SEQUENCE {

scs-15kHz BIT STRING (SIZE (10)) OPTIONAL,

scs-30kHz BIT STRING (SIZE (10)) OPTIONAL,

scs-60kHz BIT STRING (SIZE (10)) OPTIONAL

},

fr2 SEQUENCE {

scs-60kHz BIT STRING (SIZE (3)) OPTIONAL,

scs-120kHz BIT STRING (SIZE (3)) OPTIONAL

}

} OPTIONAL,

...,

[[

maxUplinkDutyCycle-PC2-FR1 ENUMERATED {n60, n70, n80, n90, n100} OPTIONAL

]],

[[

pucch-SpatialRelInfoMAC-CE ENUMERATED {supported} OPTIONAL,

powerBoosting-pi2BPSK ENUMERATED {supported} OPTIONAL

]],

[[

maxUplinkDutyCycle-FR2 ENUMERATED {n15, n20, n25, n30, n40, n50, n60, n70, n80, n90, n100} OPTIONAL

]],

[[

channelBWs-DL-v1590 CHOICE {

fr1 SEQUENCE {

scs-15kHz BIT STRING (SIZE (16)) OPTIONAL,

scs-30kHz BIT STRING (SIZE (16)) OPTIONAL,

scs-60kHz BIT STRING (SIZE (16)) OPTIONAL

},

fr2 SEQUENCE {

scs-60kHz BIT STRING (SIZE (8)) OPTIONAL,

scs-120kHz BIT STRING (SIZE (8)) OPTIONAL

}

} OPTIONAL,

channelBWs-UL-v1590 CHOICE {

fr1 SEQUENCE {

scs-15kHz BIT STRING (SIZE (16)) OPTIONAL,

scs-30kHz BIT STRING (SIZE (16)) OPTIONAL,

scs-60kHz BIT STRING (SIZE (16)) OPTIONAL

},

fr2 SEQUENCE {

scs-60kHz BIT STRING (SIZE (8)) OPTIONAL,

scs-120kHz BIT STRING (SIZE (8)) OPTIONAL

}

} OPTIONAL

]],

[[

asymmetricBandwidthCombinationSet BIT STRING (SIZE (1..32)) OPTIONAL

]],

[[

-- R1 10: NR-unlicensed

unlicensedParametersPerBand-r16 UnlicensedParametersPerBand-r16 OPTIONAL,

-- R1 11-7b: Independent cancellation of the overlapping PUSCHs in an intra-band UL CA

cancelOverlappingPUSCH-r16 ENUMERATED {supported} OPTIONAL,

-- R1 14-1: Multiple LTE-CRS rate matching patterns

multipleRateMatchingEUTRA-CRS-r16 SEQUENCE {

maxNumberPatterns-r16 INTEGER (2..6),

maxNumberNon-OverlapPatterns-r16 INTEGER (1..3)

} OPTIONAL,

-- R1 14-1a: Two LTE-CRS overlapping rate matching patterns within a part of NR carrier using 15 kHz overlapping with a LTE carrier

overlapRateMatchingEUTRA-CRS-r16 ENUMERATED {supported} OPTIONAL,

-- R1 14-2: PDSCH Type B mapping of length 9 and 10 OFDM symbols

pdsch-MappingTypeB-Alt-r16 ENUMERATED {supported} OPTIONAL,

-- R1 14-3: One slot periodic TRS configuration for FR1

oneShotPeriodicTRS-r16 ENUMERATED {supported} OPTIONAL,

olpc-SRS-Pos-r16 OLPC-SRS-Pos-r16 OPTIONAL,

spatialRelationsSRS-Pos-r16 SpatialRelationsSRS-Pos-r16 OPTIONAL,

simul-SRS-Trans-IntraBandCA-r16 INTEGER (1..2) OPTIONAL,

channelBW-DL-IAB-r16 CHOICE {

fr1-100mhz SEQUENCE {

scs-15kHz ENUMERATED {supported} OPTIONAL,

scs-30kHz ENUMERATED {supported} OPTIONAL,

scs-60kHz ENUMERATED {supported} OPTIONAL

},

fr2-200mhz SEQUENCE {

scs-60kHz ENUMERATED {supported} OPTIONAL,

scs-120kHz ENUMERATED {supported} OPTIONAL

}

} OPTIONAL,

channelBW-UL-IAB-r16 CHOICE {

fr1-100mhz SEQUENCE {

scs-15kHz ENUMERATED {supported} OPTIONAL,

scs-30kHz ENUMERATED {supported} OPTIONAL,

scs-60kHz ENUMERATED {supported} OPTIONAL

},

fr2-200mhz SEQUENCE {

scs-60kHz ENUMERATED {supported} OPTIONAL,

scs-120kHz ENUMERATED {supported} OPTIONAL

}

} OPTIONAL,

rasterShift7dot5-IAB-r16 ENUMERATED {supported} OPTIONAL,

ue-PowerClass-v1610 ENUMERATED {pc1dot5} OPTIONAL,

condHandover-r16 ENUMERATED {supported} OPTIONAL,

condHandoverFailure-r16 ENUMERATED {supported} OPTIONAL,

condHandoverTwoTriggerEvents-r16 ENUMERATED {supported} OPTIONAL,

condPSCellChange-r16 ENUMERATED {supported} OPTIONAL,

condPSCellChangeTwoTriggerEvents-r16 ENUMERATED {supported} OPTIONAL

]]

}

-- TAG-RF-PARAMETERS-STOP

-- ASN1STOP

|  |
| --- |
| ***RF-Parameters* field descriptions** |
| ***appliedFreqBandListFilter***  In this field the UE mirrors the *FreqBandList* that the NW provided in the capability enquiry, if any. The UE filtered the band combinations in the *supportedBandCombinationList* in accordance with this *appliedFreqBandListFilter*. The UE does not include this field if the UE capability is requested by E-UTRAN and the network request includes the field *eutra-nr-only* [10]. |
| ***supportedBandCombinationList***  A list of band combinations that the UE supports for NR (and NR-DC, if requested). The *FeatureSetCombinationId*:s in this list refer to the *FeatureSetCombination* entries in the *featureSetCombinations* list in the *UE-NR-Capability* IE. The UE does not include this field if the UE capability is requested by E-UTRAN and the network request includes the field *eutra-nr-only* [10]. |
| ***supportedBandCombinationList-UplinkTxSwitch***  A list of band combinations that the UE supports dynamic uplink Tx switching for NR UL CA and SUL. The *FeatureSetCombinationId*:s in this list refer to the *FeatureSetCombination* entries in the *featureSetCombinations* list in the *UE-NR-Capability* IE. The UE does not include this field if the UE capability is requested by E-UTRAN and the network request includes the field *eutra-nr-only* [10]. |

End of the change