**3GPP TSG-** **RAN WG2 Meeting #125 *R2-2401578***

**Athens, Greece, Feb. 26th - Mar. 1st, 2024**

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| *CR-Form-v12.2* |
| **CHANGE REQUEST** |
|  |
|  | **38.331** | **CR** | **Draft** | **rev** | **-** | **Current version:** | **18.0.0** |  |
|  |
| *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:***  | UE capability for Rel-18 Multi-carrier enhancements |
|  |  |
| ***Source to WG:*** | Huawei, HiSilicon, NTT DOCOMO INC. |
| ***Source to TSG:*** | R2 |
|  |  |
| ***Work item code:*** | NR\_MC\_enh-Core |  | ***Date:*** | 2024-03-04 |
|  |  |  |  |  |
| ***Category:*** | F |  | ***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 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)* |
|  |  |
| ***Reason for change:*** | To capture the RAN2 #125 agreement related to MC cenh:* For a given BC supporting UL Tx switching across up to 4 bands:
* When the optional capability is not reported, it means all the fallback BCs are supported by the UE as legacy with the same switching capabilities reported in the parent BC including switching period as legacy.
* When the optional capability is reported, it means all the fallback BCs are supported by the UE with the largest switching period value, i.e. 210us.
* No matter the optional capability is reported or not, the UE can advertise fallback band combinations with different/same switching period by separate BandCombination entries as legacy in case of different fallback.
 |
|  |  |
| ***Summary of change:*** | In *BandCombination-UplinkTxSwitch*,* *Add switchingPeriodRestriction*
 |
|  |  |
| ***Consequences if not approved:*** | Without this new UE capability, the UE can not indicate it can only support fallback combination with the largest switching period value. |
|  |  |
| ***Clauses affected:*** | 6.3.3  |
|  |  |
|  | **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 ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

-----------------Start of the changes------------------------------------------------------------------------------------------------------------------------

### 6.3.3 UE capability information elements

<skip unrelated part>

#### – *BandCombinationList*

The IE *BandCombinationList* contains a list of NR CA, NR non-CA and/or MR-DC band combinations (also including DL only or UL only band).

*BandCombinationList* information element

-- ASN1START

-- TAG-BANDCOMBINATIONLIST-START

BandCombinationList ::= SEQUENCE (SIZE (1..maxBandComb)) OF BandCombination

BandCombinationList-v1540 ::= SEQUENCE (SIZE (1..maxBandComb)) OF BandCombination-v1540

BandCombinationList-v1550 ::= SEQUENCE (SIZE (1..maxBandComb)) OF BandCombination-v1550

BandCombinationList-v1560 ::= SEQUENCE (SIZE (1..maxBandComb)) OF BandCombination-v1560

BandCombinationList-v1570 ::= SEQUENCE (SIZE (1..maxBandComb)) OF BandCombination-v1570

BandCombinationList-v1580 ::= SEQUENCE (SIZE (1..maxBandComb)) OF BandCombination-v1580

BandCombinationList-v1590 ::= SEQUENCE (SIZE (1..maxBandComb)) OF BandCombination-v1590

BandCombinationList-v15g0 ::= SEQUENCE (SIZE (1..maxBandComb)) OF BandCombination-v15g0

BandCombinationList-v15n0 ::= SEQUENCE (SIZE (1..maxBandComb)) OF BandCombination-v15n0

BandCombinationList-v1610 ::= SEQUENCE (SIZE (1..maxBandComb)) OF BandCombination-v1610

BandCombinationList-v1630 ::= SEQUENCE (SIZE (1..maxBandComb)) OF BandCombination-v1630

BandCombinationList-v1640 ::= SEQUENCE (SIZE (1..maxBandComb)) OF BandCombination-v1640

BandCombinationList-v1650 ::= SEQUENCE (SIZE (1..maxBandComb)) OF BandCombination-v1650

BandCombinationList-v1680 ::= SEQUENCE (SIZE (1..maxBandComb)) OF BandCombination-v1680

BandCombinationList-v1690 ::= SEQUENCE (SIZE (1..maxBandComb)) OF BandCombination-v1690

BandCombinationList-v16a0 ::= SEQUENCE (SIZE (1..maxBandComb)) OF BandCombination-v16a0

BandCombinationList-v1700 ::= SEQUENCE (SIZE (1..maxBandComb)) OF BandCombination-v1700

BandCombinationList-v1720 ::= SEQUENCE (SIZE (1..maxBandComb)) OF BandCombination-v1720

BandCombinationList-v1730 ::= SEQUENCE (SIZE (1..maxBandComb)) OF BandCombination-v1730

BandCombinationList-v1740 ::= SEQUENCE (SIZE (1..maxBandComb)) OF BandCombination-v1740

BandCombinationList-v1760 ::= SEQUENCE (SIZE (1..maxBandComb)) OF BandCombination-v1760

BandCombinationList-v1770 ::= SEQUENCE (SIZE (1..maxBandComb)) OF BandCombination-v1770

BandCombinationList-v1800 ::= SEQUENCE (SIZE (1..maxBandComb)) OF BandCombination-v1800

BandCombinationList-UplinkTxSwitch-r16 ::= SEQUENCE (SIZE (1..maxBandComb)) OF BandCombination-UplinkTxSwitch-r16

BandCombinationList-UplinkTxSwitch-v1630 ::= SEQUENCE (SIZE (1..maxBandComb)) OF BandCombination-UplinkTxSwitch-v1630

BandCombinationList-UplinkTxSwitch-v1640 ::= SEQUENCE (SIZE (1..maxBandComb)) OF BandCombination-UplinkTxSwitch-v1640

BandCombinationList-UplinkTxSwitch-v1650 ::= SEQUENCE (SIZE (1..maxBandComb)) OF BandCombination-UplinkTxSwitch-v1650

BandCombinationList-UplinkTxSwitch-v1670 ::= SEQUENCE (SIZE (1..maxBandComb)) OF BandCombination-UplinkTxSwitch-v1670

BandCombinationList-UplinkTxSwitch-v1690 ::= SEQUENCE (SIZE (1..maxBandComb)) OF BandCombination-UplinkTxSwitch-v1690

BandCombinationList-UplinkTxSwitch-v16a0 ::= SEQUENCE (SIZE (1..maxBandComb)) OF BandCombination-UplinkTxSwitch-v16a0

BandCombinationList-UplinkTxSwitch-v16e0 ::= SEQUENCE (SIZE (1..maxBandComb)) OF BandCombination-UplinkTxSwitch-v16e0

BandCombinationList-UplinkTxSwitch-v1700 ::= SEQUENCE (SIZE (1..maxBandComb)) OF BandCombination-UplinkTxSwitch-v1700

BandCombinationList-UplinkTxSwitch-v1720 ::= SEQUENCE (SIZE (1..maxBandComb)) OF BandCombination-UplinkTxSwitch-v1720

BandCombinationList-UplinkTxSwitch-v1730 ::= SEQUENCE (SIZE (1..maxBandComb)) OF BandCombination-UplinkTxSwitch-v1730

BandCombinationList-UplinkTxSwitch-v1740 ::= SEQUENCE (SIZE (1..maxBandComb)) OF BandCombination-UplinkTxSwitch-v1740

BandCombinationList-UplinkTxSwitch-v1760 ::= SEQUENCE (SIZE (1..maxBandComb)) OF BandCombination-UplinkTxSwitch-v1760

BandCombinationList-UplinkTxSwitch-v1770 ::= SEQUENCE (SIZE (1..maxBandComb)) OF BandCombination-UplinkTxSwitch-v1770

BandCombinationList-UplinkTxSwitch-v1800 ::= SEQUENCE (SIZE (1..maxBandComb)) OF BandCombination-UplinkTxSwitch-v1800

BandCombination ::= SEQUENCE {

 bandList SEQUENCE (SIZE (1..maxSimultaneousBands)) OF BandParameters,

 featureSetCombination FeatureSetCombinationId,

 ca-ParametersEUTRA CA-ParametersEUTRA OPTIONAL,

 ca-ParametersNR CA-ParametersNR OPTIONAL,

 mrdc-Parameters MRDC-Parameters OPTIONAL,

 supportedBandwidthCombinationSet BIT STRING (SIZE (1..32)) OPTIONAL,

 powerClass-v1530 ENUMERATED {pc2} OPTIONAL

}

BandCombination-v1540::= SEQUENCE {

 bandList-v1540 SEQUENCE (SIZE (1..maxSimultaneousBands)) OF BandParameters-v1540,

 ca-ParametersNR-v1540 CA-ParametersNR-v1540 OPTIONAL

}

BandCombination-v1550 ::= SEQUENCE {

 ca-ParametersNR-v1550 CA-ParametersNR-v1550

}

BandCombination-v1560::= SEQUENCE {

 ne-DC-BC ENUMERATED {supported} OPTIONAL,

 ca-ParametersNRDC CA-ParametersNRDC OPTIONAL,

 ca-ParametersEUTRA-v1560 CA-ParametersEUTRA-v1560 OPTIONAL,

 ca-ParametersNR-v1560 CA-ParametersNR-v1560 OPTIONAL

}

BandCombination-v1570 ::= SEQUENCE {

 ca-ParametersEUTRA-v1570 CA-ParametersEUTRA-v1570

}

BandCombination-v1580 ::= SEQUENCE {

 mrdc-Parameters-v1580 MRDC-Parameters-v1580

}

BandCombination-v1590::= SEQUENCE {

 supportedBandwidthCombinationSetIntraENDC BIT STRING (SIZE (1..32)) OPTIONAL,

 mrdc-Parameters-v1590 MRDC-Parameters-v1590

}

BandCombination-v15g0::= SEQUENCE {

 ca-ParametersNR-v15g0 CA-ParametersNR-v15g0 OPTIONAL,

 ca-ParametersNRDC-v15g0 CA-ParametersNRDC-v15g0 OPTIONAL,

 mrdc-Parameters-v15g0 MRDC-Parameters-v15g0 OPTIONAL

}

BandCombination-v15n0::= SEQUENCE {

 mrdc-Parameters-v15n0 MRDC-Parameters-v15n0

}

BandCombination-v1610 ::= SEQUENCE {

 bandList-v1610 SEQUENCE (SIZE (1..maxSimultaneousBands)) OF BandParameters-v1610 OPTIONAL,

 ca-ParametersNR-v1610 CA-ParametersNR-v1610 OPTIONAL,

 ca-ParametersNRDC-v1610 CA-ParametersNRDC-v1610 OPTIONAL,

 powerClass-v1610 ENUMERATED {pc1dot5} OPTIONAL,

 powerClassNRPart-r16 ENUMERATED {pc1, pc2, pc3, pc5} OPTIONAL,

 featureSetCombinationDAPS-r16 FeatureSetCombinationId OPTIONAL,

 mrdc-Parameters-v1620 MRDC-Parameters-v1620 OPTIONAL

}

BandCombination-v1630 ::= SEQUENCE {

 ca-ParametersNR-v1630 CA-ParametersNR-v1630 OPTIONAL,

 ca-ParametersNRDC-v1630 CA-ParametersNRDC-v1630 OPTIONAL,

 mrdc-Parameters-v1630 MRDC-Parameters-v1630 OPTIONAL,

 supportedTxBandCombListPerBC-Sidelink-r16 BIT STRING (SIZE (1..maxBandComb)) OPTIONAL,

 supportedRxBandCombListPerBC-Sidelink-r16 BIT STRING (SIZE (1..maxBandComb)) OPTIONAL,

 scalingFactorTxSidelink-r16 SEQUENCE (SIZE (1..maxBandComb)) OF ScalingFactorSidelink-r16 OPTIONAL,

 scalingFactorRxSidelink-r16 SEQUENCE (SIZE (1..maxBandComb)) OF ScalingFactorSidelink-r16 OPTIONAL

}

BandCombination-v1640 ::= SEQUENCE {

 ca-ParametersNR-v1640 CA-ParametersNR-v1640 OPTIONAL,

 ca-ParametersNRDC-v1640 CA-ParametersNRDC-v1640 OPTIONAL

}

BandCombination-v1650 ::= SEQUENCE {

 ca-ParametersNRDC-v1650 CA-ParametersNRDC-v1650 OPTIONAL

}

BandCombination-v1680 ::= SEQUENCE {

 intrabandConcurrentOperationPowerClass-r16 SEQUENCE (SIZE (1..maxBandComb)) OF IntraBandPowerClass-r16 OPTIONAL

}

BandCombination-v1690 ::= SEQUENCE {

 ca-ParametersNR-v1690 CA-ParametersNR-v1690 OPTIONAL

}

BandCombination-v16a0 ::= SEQUENCE {

 ca-ParametersNR-v16a0 CA-ParametersNR-v16a0 OPTIONAL,

 ca-ParametersNRDC-v16a0 CA-ParametersNRDC-v16a0 OPTIONAL

}

BandCombination-v1700 ::= SEQUENCE {

 ca-ParametersNR-v1700 CA-ParametersNR-v1700 OPTIONAL,

 ca-ParametersNRDC-v1700 CA-ParametersNRDC-v1700 OPTIONAL,

 mrdc-Parameters-v1700 MRDC-Parameters-v1700 OPTIONAL,

 bandList-v1710 SEQUENCE (SIZE (1..maxSimultaneousBands)) OF BandParameters-v1710 OPTIONAL,

 supportedBandCombListPerBC-SL-RelayDiscovery-r17 BIT STRING (SIZE (1..maxBandComb)) OPTIONAL,

 supportedBandCombListPerBC-SL-NonRelayDiscovery-r17 BIT STRING (SIZE (1..maxBandComb)) OPTIONAL

}

BandCombination-v1720 ::= SEQUENCE {

 ca-ParametersNR-v1720 CA-ParametersNR-v1720 OPTIONAL,

 ca-ParametersNRDC-v1720 CA-ParametersNRDC-v1720 OPTIONAL

}

BandCombination-v1730 ::= SEQUENCE {

 ca-ParametersNR-v1730 CA-ParametersNR-v1730 OPTIONAL,

 ca-ParametersNRDC-v1730 CA-ParametersNRDC-v1730 OPTIONAL,

 bandList-v1730 SEQUENCE (SIZE (1..maxSimultaneousBands)) OF BandParameters-v1730 OPTIONAL

}

BandCombination-v1740 ::= SEQUENCE {

 ca-ParametersNR-v1740 CA-ParametersNR-v1740 OPTIONAL

}

BandCombination-v1760 ::= SEQUENCE {

 ca-ParametersNR-v1760 CA-ParametersNR-v1760,

 ca-ParametersNRDC-v1760 CA-ParametersNRDC-v1760

}

BandCombination-v1770::= SEQUENCE {

 bandList-v1770 SEQUENCE (SIZE (1..maxSimultaneousBands)) OF BandParameters-v1770,

 mrdc-Parameters-v1770 MRDC-Parameters-v1770 OPTIONAL,

 ca-ParametersNR-v1770 CA-ParametersNR-v1770 OPTIONAL

}

BandCombination-v1800 ::= SEQUENCE {

 ca-ParametersNR-v1800 CA-ParametersNR-v1800 OPTIONAL,

 ca-ParametersNRDC-v1800 CA-ParametersNRDC-v1800 OPTIONAL,

 supportedBandCombListPerBC-SL-U2U-RelayDiscovery-r18 BIT STRING (SIZE (1..maxBandComb)) OPTIONAL

}

BandCombination-UplinkTxSwitch-r16 ::= SEQUENCE {

 bandCombination-r16 BandCombination,

 bandCombination-v1540 BandCombination-v1540 OPTIONAL,

 bandCombination-v1560 BandCombination-v1560 OPTIONAL,

 bandCombination-v1570 BandCombination-v1570 OPTIONAL,

 bandCombination-v1580 BandCombination-v1580 OPTIONAL,

 bandCombination-v1590 BandCombination-v1590 OPTIONAL,

 bandCombination-v1610 BandCombination-v1610 OPTIONAL,

 supportedBandPairListNR-r16 SEQUENCE (SIZE (1..maxULTxSwitchingBandPairs)) OF ULTxSwitchingBandPair-r16,

 uplinkTxSwitching-OptionSupport-r16 ENUMERATED {switchedUL, dualUL, both} OPTIONAL,

 uplinkTxSwitching-PowerBoosting-r16 ENUMERATED {supported} OPTIONAL,

 ...,

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 -- R4 16-5 UL-MIMO coherence capability for dynamic Tx switching between 3CC 1Tx-2Tx switching

 uplinkTxSwitching-PUSCH-TransCoherence-r16 ENUMERATED {nonCoherent, fullCoherent} OPTIONAL

 ]]

}

BandCombination-UplinkTxSwitch-v1630 ::= SEQUENCE {

 bandCombination-v1630 BandCombination-v1630 OPTIONAL

}

BandCombination-UplinkTxSwitch-v1640 ::= SEQUENCE {

 bandCombination-v1640 BandCombination-v1640 OPTIONAL

}

BandCombination-UplinkTxSwitch-v1650 ::= SEQUENCE {

 bandCombination-v1650 BandCombination-v1650 OPTIONAL

}

BandCombination-UplinkTxSwitch-v1670 ::= SEQUENCE {

 bandCombination-v15g0 BandCombination-v15g0 OPTIONAL

}

BandCombination-UplinkTxSwitch-v1690 ::= SEQUENCE {

 bandCombination-v1690 BandCombination-v1690 OPTIONAL

}

BandCombination-UplinkTxSwitch-v16a0 ::= SEQUENCE {

 bandCombination-v16a0 BandCombination-v16a0 OPTIONAL

}

BandCombination-UplinkTxSwitch-v16e0 ::= SEQUENCE {

 bandCombination-v15n0 BandCombination-v15n0 OPTIONAL

}

BandCombination-UplinkTxSwitch-v1700 ::= SEQUENCE {

 bandCombination-v1700 BandCombination-v1700 OPTIONAL,

 -- R4 16-1/16-2/16-3 Dynamic Tx switching between 2CC/3CC 2Tx-2Tx/1Tx-2Tx switching

 supportedBandPairListNR-v1700 SEQUENCE (SIZE (1..maxULTxSwitchingBandPairs)) OF ULTxSwitchingBandPair-v1700 OPTIONAL,

 -- R4 16-6: UL-MIMO coherence capability for dynamic Tx switching between 2Tx-2Tx switching

 uplinkTxSwitchingBandParametersList-v1700 SEQUENCE (SIZE (1.. maxSimultaneousBands)) OF UplinkTxSwitchingBandParameters-v1700 OPTIONAL

}

BandCombination-UplinkTxSwitch-v1720 ::= SEQUENCE {

 bandCombination-v1720 BandCombination-v1720 OPTIONAL,

 uplinkTxSwitching-OptionSupport2T2T-r17 ENUMERATED {switchedUL, dualUL, both} OPTIONAL

}

BandCombination-UplinkTxSwitch-v1730 ::= SEQUENCE {

 bandCombination-v1730 BandCombination-v1730 OPTIONAL

}

BandCombination-UplinkTxSwitch-v1740 ::= SEQUENCE {

 bandCombination-v1740 BandCombination-v1740 OPTIONAL

}

BandCombination-UplinkTxSwitch-v1760 ::= SEQUENCE {

 bandCombination-v1760 BandCombination-v1760 OPTIONAL

}

BandCombination-UplinkTxSwitch-v1770 ::= SEQUENCE {

 bandCombination-v1770 BandCombination-v1770 OPTIONAL

}

BandCombination-UplinkTxSwitch-v1800 ::= SEQUENCE {

 supportedBandPairListNR-r18 SEQUENCE (SIZE (1..maxULTxSwitchingBandPairs)) OF ULTxSwitchingBandPair-r18 OPTIONAL,

 -- R1 49-Y: Minimum separation time for two uplink switching on more than 2 bands within any two consecutive reference slots

 uplinkTxSwitchingMinimumSeparationTime-r18 ENUMERATED {n0us, n500us} OPTIONAL,

 -- R4 38-3: [Additional switching Period for Dual UL]

 uplinkTxSwitchingAdditionalPeriodDualUL-List-r18 SEQUENCE (SIZE (1..maxULTxSwitchingBetweenBandPairs-r18)) OF

 UplinkTxSwitchingAdditionalPeriodDualUL-r18 OPTIONAL,

 switchingPeriodRestriction-r18 ENUMERATED {true} OPTIONAL

}

ULTxSwitchingBandPair-r16 ::= SEQUENCE {

 bandIndexUL1-r16 INTEGER(1..maxSimultaneousBands),

 bandIndexUL2-r16 INTEGER(1..maxSimultaneousBands),

 uplinkTxSwitchingPeriod-r16 ENUMERATED {n35us, n140us, n210us},

 uplinkTxSwitching-DL-Interruption-r16 BIT STRING (SIZE(1..maxSimultaneousBands)) OPTIONAL

}

ULTxSwitchingBandPair-v1700 ::= SEQUENCE {

 uplinkTxSwitchingPeriod2T2T-r17 ENUMERATED {n35us, n140us, n210us} OPTIONAL

}

ULTxSwitchingBandPair-r18 ::= SEQUENCE {

 bandCombination-v1800 BandCombination-v1800 OPTIONAL,

 bandIndexUL1-r18 INTEGER(1..maxSimultaneousBands),

 bandIndexUL2-r18 INTEGER(1..maxSimultaneousBands),

 uplinkTxSwitchingOptionForBandPair-r18 ENUMERATED {switchedUL, dualUL, both},

 -- R4 38-1: Switching period for dynamic UL Tx switching across up to 4 bands in case of inter-band CA, SUL up to two TAGs

 uplinkTxSwitchingPeriodForBandPair-r18 SEQUENCE {

 switchingPeriodFor2T-r18 ENUMERATED {n35us, n140us, n210us} OPTIONAL,

 switchingPeriodFor1T-r18 ENUMERATED {n35us, n140us, n210us}

 },

 -- R4 38-2: Application of DL interruptions due to dynamic UL Tx switching

 uplinkTxSwitching-DL-Interruption-r18 BIT STRING (SIZE(1..maxSimultaneousBands)) OPTIONAL,

 -- R4 38-3: Switching Period for unaffected Band for Dual UL

 uplinkTxSwitchingPeriodUnaffectedBandDualUL-List-r18 SEQUENCE (SIZE (1..maxSimultaneousBands-2-r18)) OF

 SwitchingPeriodUnaffectedBandDualUL-r18 OPTIONAL

}

UplinkTxSwitchingBandParameters-v1700 ::= SEQUENCE {

 bandIndex-r17 INTEGER(1..maxSimultaneousBands),

 -- R4 38-3: UL-MIMO coherence capability for dynamic Tx switching between 2Tx-2Tx switching among up to 4 bands

 uplinkTxSwitching2T2T-PUSCH-TransCoherence-r17 ENUMERATED {nonCoherent, fullCoherent} OPTIONAL

}

UplinkTxSwitchingAdditionalPeriodDualUL-r18::= SEQUENCE {

 uplinkTxSwitchingBetweenBandPairs-r18 SEQUENCE {

 bandPairIndex1-r18 INTEGER(1.. maxULTxSwitchingBandPairs),

 anotherBandPairOrBand-r18 CHOICE {

 bandPairIndex2-r18 INTEGER(1.. maxULTxSwitchingBandPairs),

 bandIndex-r18 INTEGER(1..maxSimultaneousBands)

 }

 },

 switchingAdditionalPeriodDualUL-r18 ENUMERATED {n35us, n140us, n210us}

}

SwitchingPeriodUnaffectedBandDualUL-r18::= SEQUENCE {

 bandIndexUnaffected-r18 INTEGER(1..maxSimultaneousBands),

 periodUnaffectedBandDualUL-r18 CHOICE {

 maintainedUL-Trans-r18 NULL,

 periodOnULBands-r18 ENUMERATED {n35us, n140us, n210us}

 }

}

CombinationCarrierType-r18 ::= SEQUENCE {

 schedulingCellCarrierType-r18 ENUMERATED {licensed-fdd-fr1, licensed-tdd-fr1, unlicensed-tdd-fr1, fr2-1, fr2-2},

 scheduledCellCarrierType-r18 ENUMERATED {licensed-fdd-fr1, licensed-tdd-fr1, unlicensed-tdd-fr1, fr2-1, fr2-2}

}

BandParameters ::= CHOICE {

 eutra SEQUENCE {

 bandEUTRA FreqBandIndicatorEUTRA,

 ca-BandwidthClassDL-EUTRA CA-BandwidthClassEUTRA OPTIONAL,

 ca-BandwidthClassUL-EUTRA CA-BandwidthClassEUTRA OPTIONAL

 },

 nr SEQUENCE {

 bandNR FreqBandIndicatorNR,

 ca-BandwidthClassDL-NR CA-BandwidthClassNR OPTIONAL,

 ca-BandwidthClassUL-NR CA-BandwidthClassNR OPTIONAL

 }

}

BandParameters-v1540 ::= SEQUENCE {

 srs-CarrierSwitch CHOICE {

 nr SEQUENCE {

 srs-SwitchingTimesListNR SEQUENCE (SIZE (1..maxSimultaneousBands)) OF SRS-SwitchingTimeNR

 },

 eutra SEQUENCE {

 srs-SwitchingTimesListEUTRA SEQUENCE (SIZE (1..maxSimultaneousBands)) OF SRS-SwitchingTimeEUTRA

 }

 } OPTIONAL,

 srs-TxSwitch SEQUENCE {

 supportedSRS-TxPortSwitch ENUMERATED {t1r2, t1r4, t2r4, t1r4-t2r4, t1r1, t2r2, t4r4, notSupported},

 txSwitchImpactToRx INTEGER (1..32) OPTIONAL,

 txSwitchWithAnotherBand INTEGER (1..32) OPTIONAL

 } OPTIONAL

}

BandParameters-v1610 ::= SEQUENCE {

 srs-TxSwitch-v1610 SEQUENCE {

 supportedSRS-TxPortSwitch-v1610 ENUMERATED {t1r1-t1r2, t1r1-t1r2-t1r4, t1r1-t1r2-t2r2-t2r4, t1r1-t1r2-t2r2-t1r4-t2r4,

 t1r1-t2r2, t1r1-t2r2-t4r4}

 } OPTIONAL

}

BandParameters-v1710 ::= SEQUENCE {

 -- R1 23-8-3 SRS Antenna switching for >4Rx

 srs-AntennaSwitchingBeyond4RX-r17 SEQUENCE {

 -- 1. Support of SRS antenna switching xTyR with y>4

 supportedSRS-TxPortSwitchBeyond4Rx-r17 BIT STRING (SIZE (11)),

 -- 2. Report the entry number of the first-listed band with UL in the band combination that affects this DL

 entryNumberAffectBeyond4Rx-r17 INTEGER (1..32) OPTIONAL,

 -- 3. Report the entry number of the first-listed band with UL in the band combination that switches together with this UL

 entryNumberSwitchBeyond4Rx-r17 INTEGER (1..32) OPTIONAL

 } OPTIONAL

}

BandParameters-v1730 ::= SEQUENCE {

 -- R1 39-3-2 Affected bands for inter-band CA during SRS carrier switching

 srs-SwitchingAffectedBandsListNR-r17 SEQUENCE (SIZE (1..maxSimultaneousBands)) OF SRS-SwitchingAffectedBandsNR-r17

}

BandParameters-v1770 ::= SEQUENCE {

 ca-BandwidthClassDL-NR-r17 CA-BandwidthClassNR-r17 OPTIONAL,

 ca-BandwidthClassUL-NR-r17 CA-BandwidthClassNR-r17 OPTIONAL

}

ScalingFactorSidelink-r16 ::= ENUMERATED {f0p4, f0p75, f0p8, f1}

IntraBandPowerClass-r16 ::= ENUMERATED {pc2, pc3, spare6, spare5, spare4, spare3, spare2, spare1}

SRS-SwitchingAffectedBandsNR-r17 ::= BIT STRING (SIZE (1..maxSimultaneousBands))

-- TAG-BANDCOMBINATIONLIST-STOP

-- ASN1STOP

|  |
| --- |
| *BandCombination* field descriptions |
| ***BandCombinationList-v1540, BandCombinationList-v1550, BandCombinationList-v1560, BandCombinationList-v1570, BandCombinationList-v1580, BandCombinationList-v1590, BandCombinationList-v15g0, BandCombinationList-v15n0, BandCombinationList-v1610*, *BandCombinationList-v1630*, *BandCombinationList-v1640*, *BandCombinationList-v1650, BandCombinationList-v1680, BandCombinationList-v1690, BandCombinationList-v16a0, BandCombinationList-v1700, BandCombinationList-v1720, BandCombinationList-v1730, BandCombinationList-v1760, BandCombinationList-v1770, BandCombinationList-v1800***The UE shall include the same number of entries, and listed in the same order, as in *BandCombinationList* (without suffix). If the field is included in *supportedBandCombinationListNEDC-Only-v1610*, the UE shall include the same number of entries, and listed in the same order, as in *BandCombinationList* of *supportedBandCombinationListNEDC-Only* (without suffix) field.If the field is included in *supportedBandCombinationListNEDC-Only-v15a0*, the UE shall include the same number of entries, and listed in the same order, as in *BandCombinationList* (without suffix) of *supportedBandCombinationListNEDC-Only* (without suffix) field. |
| ***BandCombinationList-UplinkTxSwitch-r16, BandCombinationList-UplinkTxSwitch-v1630, BandCombinationList-UplinkTxSwitch-v1640, BandCombinationList-UplinkTxSwitch-v1650, BandCombinationList-UplinkTxSwitch-v1690, BandCombinationList-UplinkTxSwitch-v16a0, BandCombinationList-UplinkTxSwitch-v16e0, BandCombinationList-UplinkTxSwitch-v1700, BandCombinationList-UplinkTxSwitch-v1720, BandCombinationList-UplinkTxSwitch-v1730, BandCombinationList-UplinkTxSwitch-v1760, BandCombinationList-UplinkTxSwitch-v1770, BandCombination-UplinkTxSwitch-v1800***The UE shall include the same number of entries, and listed in the same order, as in *BandCombinationList-UplinkTxSwitch-r16*.For the field of *supportedBandCombinationList-UplinkTxSwitch-v1700*, if the UE does not support 2Tx-2Tx switching for a given band combination, the field of *supportedBandPairListNR-v1700* in the corresponding entry is absent. |
| ***ca-ParametersNRDC***If the field is included for a band combination in the NR capability container, the field indicates support of NR-DC. Otherwise, the field is absent. |
| ***featureSetCombinationDAPS***If this field is present for a band combination, it reports the feature set combination supported for the band combination when any DAPS bearer is configured. |
| ***ne-DC-BC***If the field is included for a band combination in the MR-DC capability container, the field indicates support of NE-DC. Otherwise, the field is absent. |
| ***supportedBandPairListNR-r16, supportedBandPairListNR-v1700***Indicates a list of band pair supporting UL Tx switching as defined in TS 38.101-1 [15] for a given band combination.A UE supporting 2Tx-2Tx switching should include both of *supportedBandPairListNR-r16* and *supportedBandPairListNR-v1700*. And the UE shall include the same number of entries listed in the same order as in *supportedBandPairListNR-r16*.If the UE does not support 2Tx-2Tx switching for a given band pair, the field of *uplinkTxSwitchingPeriod2T2T* in the corresponding entry is absent. |
| ***supportedBandPairListNR-r18***Indicates a list of band pair supporting UL Tx switching up to 4 bands as defined in TS 38.101-1 [15] for a given band combination. The UE shall include all the possible band pairs.For a band pair only supporting 1Tx-1Tx switching, the UE should include *switchingPeriodFor1T* in *ULTxSwitchingBandPair-r18*.For a band pair supporting 1Tx-2Tx switching, the UE always supports 1Tx-1Tx switching, and the UE should include *switchingPeriodFor1T* in *ULTxSwitchingBandPair-r18*.For a band pair supporting 2Tx-2Tx switching, the UE always supports 1Tx-2Tx switching and 1Tx-1Tx switching, the UE should include *switchingPeriodFor2T* as well as *switchingPeriodFor1T* in *ULTxSwitchingBandPair-r18*. |
| ***srs-SwitchingTimesListNR***Indicates, for a particular pair of NR bands, the RF retuning time when switching between a NR carrier corresponding to this band entry and another (PUSCH-less) NR carrier corresponding to the band entry in the order indicated below:- For the first NR band, the UE shall include the same number of entries for NR bands as in *bandList*, i.e. first entry corresponds to first NR band in *bandList* and so on,- For the second NR band, the UE shall include one entry less, i.e. first entry corresponds to the second NR band in *bandList* and so on- And so on |
| ***srs-SwitchingTimesListEUTRA***Indicates, for a particular pair of E-UTRA bands, the RF retuning time when switching between an E-UTRA carrier corresponding to this band entry and another (PUSCH-less) E-UTRA carrier corresponding to the band entry in the order indicated below:- For the first E-UTRA band, the UE shall include the same number of entries for E-UTRA bands as in *bandList,* i.e. first entry corresponds to first E-UTRA band in *bandList* and so on,- For the second E-UTRA band, the UE shall include one entry less, i.e. first entry corresponds to the second E-UTRA band in *bandList* and so on - And so on |
| ***srs-TxSwitch***Indicates supported SRS antenna switch capability for the associated band. If the UE indicates support of *SRS-SwitchingTimeNR*, the UE is allowed to set this field for a band with associated *FeatureSetUplinkId* set to 0 for SRS carrier switching. |
| ***uplinkTxSwitchingBandParametersList-v1700***Indicates a list of per band per band combination capabilities for UL Tx switching. |