6.3.3 UE capability information elements

*–* *BandCombinationList*

The IE *BandCombinationList* contains a list of NR CA and/or MR-DC band combinations.

***BandCombinationList* information element**

-- ASN1START

-- TAG-BAND-COMBINATION-LIST-START

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

BandCombination ::= SEQUENCE {

 bandAndDL-ParametersList BandAndDL-ParametersList,

 bandCombinationsUL BIT STRING (SIZE (1.. maxBandCombUL)) OPTIONAL,

 bandCombinationParametersList SEQUENCE (SIZE (1..maxBandCombUL)) OF BandCombinationParameters

}

-- Bands and DL band parameters

BandAndDL-ParametersList ::= SEQUENCE (SIZE (1..maxSimultaneousBands)) OF BandAndDL-Parameters

BandAndDL-Parameters ::= CHOICE {

 bandAndDL-ParametersEUTRA BandAndDL-ParametersEUTRA,

 bandAndDL-ParametersNR BandAndDL-ParametersNR

}

BandCombinationParameters ::= SEQUENCE {

 ca-ParametersNR CA-ParametersNR OPTIONAL,

 mrdc-Parameters MRDC-Parameters OPTIONAL

}

CA-ParametersNR ::= SEQUENCE {

 multipleTimingAdvances ENUMERATED {supported} OPTIONAL,

-- R4 2-5: Simultaneous reception and transmission for inter band CA (TDD-TDD or TDD-FDD)

 simultaneousRxTxInterBandCA ENUMERATED {supported} OPTIONAL,

-- BCS related to R4 2-1 and Updated CA BW class in R4-1803374

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

}

MRDC-Parameters ::= SEQUENCE {

 singleUL-Transmission ENUMERATED {supported} OPTIONAL,

-- R4 1-10: Support of EN-DC with LTE-NR coexistence in UL sharing from UE perspective

 ul-SharingEUTRA-NR ENUMERATED {supported} OPTIONAL,

-- R4 1-11: Switching time between LTE UL and NR UL for EN-DC with LTE-NR coexistence in UL sharing from UE perspective

 ul-SwitchingTimeEUTRA-NR ENUMERATED {type1, type2} OPTIONAL,

-- R4 2-4: Simultaneous reception and transmission for inter-band EN-DC (TDD-TDD or TDD-FDD)

 simultaneousRxTxInterBandENDC ENUMERATED {supported} OPTIONAL,

-- R4 2-6: Asynchronous FDD-FDD intra-band EN-DC

 asyncIntraBandENDC ENUMERATED {supported} OPTIONAL

}

-- Others

BandAndDL-ParametersEUTRA ::= SEQUENCE {

 bandEUTRA FreqBandIndicatorEUTRA,

 ca-BandwidthClassDL-EUTRA CA-BandwidthClassEUTRA

 intraBandContiguousCC-InfoDL-EUTRA-List SEQUENCE (SIZE (1..maxServCell)) OF IntraBandContiguousCC-InfoDL-EUTRA

}

BandAndDL-ParametersNR ::= SEQUENCE {

 bandNR FreqBandIndicator,

 ca-BandwidthClassDL CA-BandwidthClass,

 scalingFactor0dot75 ENUMERATED {supported} OPTIONAL, -- FFS dependent on RAN1 confirmation

-- R4 2-3: Non-contiguous intra-band CA frequency separation class for FR2 as in the RAN4 LS R4-1803363

 intraBandFreqSeparationDL FreqSeparationClass OPTIONAL,

 intraBandContiguousCC-InfoDL-List SEQUENCE (SIZE (1..maxServCell)) OF IntraBandContiguousCC-InfoDL

}

IntraBandContiguousCC-InfoDL ::= SEQUENCE {

-- Related to RAN4 LS R2-1804078

 maxNumberMIMO-LayersPDSCH ENUMERATED {twoLayers, fourLayers, eightLayers} OPTIONAL

}

IntraBandContiguousCC-InfoDL-EUTRA ::= SEQUENCE {

-- Related to RAN4 LS R2-1804078

 MIMO-CapabilityDL ENUMERATED {twoLayers, fourLayers, eightLayers} OPTIONAL

}

-- TAG-BAND-COMBINATION-LIST-STOP

-- ASN1STOP

|  |
| --- |
|  |
|  |

*– BandCombinationParametersUL-List*

The IE *BandCombinationParametersUL-List* is used to contain list of NR and/or E-UTRA frequency UL band parameters combination for the supported NR CA and/or MR-DC band combinations included in supportedBandCombination in RF-Parameters and/or RF-Parameters-MRDC.

-- ASN1START

-- TAG-BAND-COMBINATION-PARAMETERS-UL-LIST-START

BandCombinationParametersUL-List ::= SEQUENCE (SIZE (1..maxBandCombUL)) OF BandCombinationParametersUL

BandCombinationParametersUL ::= SEQUENCE (SIZE (1.. maxSimultaneousBands)) OF BandParametersUL

BandParametersUL ::= CHOICE {

 bandParametersUL-EUTRA BandParametersUL-EUTRA,

 bandParametersUL-NR BandParametersUL-NR

}

BandParametersUL-EUTRA ::= SEQUENCE {

 ca-BandwidthClassUL-EUTRA CA-BandwidthClassEUTRA

 intraBandContiguousCC-InfoUL-EUTRA-List SEQUENCE (SIZE (1..maxServCell)) OF IntraBandContiguousCC-InfoUL-EUTRA

}

BandParametersUL-NR ::= SEQUENCE {

 ca-BandwidthClassUL CA-BandwidthClass,

 scalingFactor0dot75 ENUMERATED {supported} OPTIONAL, -- FFS dependent on RAN1 confirmation

-- R4 2-3: Non-contiguous intra-band CA frequency separation class for FR2 as in the RAN4 LS R4-1803363

 intraBandFreqSeparationUL FreqSeparationClass OPTIONAL,

 intraBandContiguousCC-InfoUL-List SEQUENCE (SIZE (1..maxServCell)) OF IntraBandContiguousCC-InfoUL

}

IntraBandContiguousCC-InfoUL ::= SEQUENCE {

-- Related to RAN4 LS R2-1804078

 maxNumberMIMO-LayersCB-PUSCH ENUMERATED {oneLayer, twoLayers, fourLayers} OPTIONAL,

 maxNumberMIMO-LayersNonCB-PUSCH ENUMERATED {oneLayer, twoLayers, fourLayers} OPTIONAL

}

IntraBandContiguousCC-InfoUL-EUTRA ::= SEQUENCE {

-- Related to RAN4 LS R2-1804078

 MIMO-CapabilityUL ENUMERATED {twoLayers, fourLayers} OPTIONAL

}

-- TAG-BAND-COMBINATION-PARAMETERS-UL-LIST-STOP

-- ASN1STOP

*– FreqBandList*

The IE *FreqBandList* is used to contain list of NR and/or E-UTRA frequency bands for which the UE is requested to provide its supported NR CA and/or MR-DC band combinations (i.e. within the UE capability containers for NR and MR-DC, as requested by E-UTRA).

***FreqBandList* information element**

-- ASN1START

-- TAG-FREQ-BAND-LIST-START

FreqBandList ::= SEQUENCE (SIZE (1..maxRequestedBands)) OF FreqBandInformation

FreqBandInformation ::= CHOICE {

 bandEUTRA FreqBandIndicatorEUTRA,

 bandNR FreqBandIndicator

}

-- TAG-FREQ-BAND-LIST-STOP

-- ASN1STOP

*– FreqSeparationClass*

The IE FreqSeparationClass is used for an intra-band non-contiguous CA band combination to indicate frequency separation between lower edge of lowest CC and upper edge of highest CC in a frequency band.

***FrequencySeparationClass* information element**

-- ASN1START

-- TAG-RAT-TYPE-START

FreqSeparationClass ::= ENUMERATED {c1, c2, c3, ...}

-- TAG-RAT-TYPE-STOP

-- ASN1STOP

*– RAT-Type*

The IE *RAT-Type* is used to indicate the radio access technology (RAT), including NR, of the requested/transferred UE capabilities.

***RAT-Type* information element**

-- ASN1START

-- TAG-RAT-TYPE-START

RAT-Type ::= ENUMERATED {nr, eutra-nr, spare2, spare1, ...}

-- TAG-RAT-TYPE-STOP

-- ASN1STOP

*– SupportedBasebandProcessingCombination*

-- ASN1START

-- TAG-SUPPORTED-BASEBAND-PROCESSING-COMBINATION-START

SupportedBasebandProcessingCombination ::= SEQUENCE (SIZE (1..maxBasebandProcComb)) OF BasebandProcessingCombination

BasebandProcessingCombination ::= SEQUENCE {

 basebandParametersPerBand SEQUENCE (SIZE (1..maxSimultaneousBands)) OF BasebandParametersPerBand

 -- FFS on other parameters

}

BasebandParametersPerBand ::= SEQUENCE {

 ca-BandwidthClassDL CA-BandwidthClass,

 ca-BandwidthClassUL CA-BandwidthClass,

 freqRange ENUMERATED {fr1, fr2},

 basebandParametersPerCC SEQUENCE (SIZE (1..maxNrofCC)) OF BasebandParametersPerCC,

 -- FFS on other parameters

}

BasebandParametersPerCC ::= SEQUENCE {

-- R4 2-2: Simultaneous reception or transmission with same or different numerologies in CA

-- It is expressed by the combination of SCS whether simultaneous RxTx is supported or not.

 supportedSubcarrierSpacingDL SubcarrierSpacing,

 supportedSubcarrierSpacingUL SubcarrierSpacing,

-- R1 2-2: PDSCH beam switching

 timeDurationForQCL SEQUENCE {

 scs-60kHz ENUMERATED {s7, s14, s28} OPTIONAL,

 sch-120kHz ENUMERATED {s14, s28} OPTIONAL

 } OPTIONAL,

-- R1 1-10: Support of SCell without SS/PBCH block

 scellWithoutSSB ENUMERATED {supported} OPTIONAL,

-- R1 1-11: Support of CSI-RS RRM measurement for SCell without SS/PBCH block

 csi-RS-MeasSCellWithoutSSB ENUMERATED {supported} OPTIONAL,

-- R1 2-3: PDSCH MIMO layers. Absence of this field implies support of one layer.

 maxNumberMIMO-LayersPDSCH ENUMERATED {twoLayers, fourLayers, eightLayers} OPTIONAL,

-- R1 2-14: Codebook based PUSCH MIMO transmission. Absence of this field implies that CB-based PUSCH is not supported.

 maxNumberMIMO-LayersCB-PUSCH ENUMERATED {oneLayer, twoLayers, fourLayers} OPTIONAL,

-- R1 2-15: Non-codebook based PUSCH MIMO transmission. Absence of this field implies that Non-CB-based PUSCH is not supported.

 maxNumberMIMO-LayersNonCB-PUSCH ENUMERATED {oneLayer, twoLayers, fourLayers} OPTIONAL,

-- Accoding to the RAN4 LS R4-1803563, modulation order is added per CC granularity in BPC

-- FFS whether all of modulation order specified in the spec need to be signalled.

-- FFS how to address the requirements agreed by RAN4, e.g. mandaotry w/o capabiltiy for 64QAM. mandaotry with capabiltiy for DL 256QAM in FR1.

 supportedModulationOrderDL ModulationOrder OPTIONAL,

 supportedModulationOrderUL ModulationOrder OPTIONAL,

-- R1 2-15a: Association between CSI-RS and SRS

 srs-AssocCSI-RS ENUMERATED {supported} OPTIONAL,

-- R1 2-53: SRS resources

 supportedSRS-Resources SRS-Resources OPTIONAL,

-- R1 2-55: SRS Tx switch

 srs-TxSwitch SRS-TxSwitch OPTIONAL,

-- R1 2-57: Support low latency CSI feedback

 lowLatencyCSI-Feedback ENUMERATED {supported} OPTIONAL,

-- R1 3-1a: For type 1 CSS with dedicated RRC configuration and for type 3 CSS, UE specific SS, CORESET resource allocation of 6RB bit-map and duration 3 OFDM symbols for FR2

 type1-3-CSS ENUMERATED {supported} OPTIONAL,

-- R1 3-5 & 3-5a: For type 1 with dedicated RRC configuration, type 3, and UE-SS,, monitoring occasion can be any OFDM symbol(s) of a slot for Case 2 (with a DCI gap)

 pdcchMonitoringAnyOccasions ENUMERATED {withoutDCI-gap, withDCI-gap} OPTIONAL,

-- R1 5-1a: UE specific RRC configure UL/DL assignment

 ue-SpecificUL-DL-Assignment ENUMERATED {supported} OPTIONAL,

-- R1 5-11 & 5-11a: Up to 2/7 unicast PDSCHs per slot for different TBs

 pdsch-DifferentTB-PerSlot SEQUENCE {

 scs-15kHz ENUMERATED {upto2, upto7} OPTIONAL,

 scs-30kHz ENUMERATED {upto2, upto7} OPTIONAL,

 scs-60kHz ENUMERATED {upto2, upto7} OPTIONAL,

 scs-120kHz ENUMERATED {upto2, upto7} OPTIONAL

 } OPTIONAL,

-- R1 5-12 & 5-12a: Up to 2/7 PUSCHs per slot for different TBs

 pusch-DifferentTB-PerSlot SEQUENCE {

 scs-15kHz ENUMERATED {upto2, upto7} OPTIONAL,

 scs-30kHz ENUMERATED {upto2, upto7} OPTIONAL,

 scs-60kHz ENUMERATED {upto2, upto7} OPTIONAL,

 scs-120kHz ENUMERATED {upto2, upto7} OPTIONAL

 } OPTIONAL,

-- R1 6-7: Two PUCCH group

 twoPUCCH-Group ENUMERATED {supported} OPTIONAL,

-- R1 6-8: Different numerology across PUCCH groups

 diffNumerologyAcrossPUCCH-Group ENUMERATED {supported} OPTIONAL,

-- R1 6-9: Different numerologies across carriers within the same PUCCH group

 diffNumerologyWithinPUCCH-Group ENUMERATED {supported} OPTIONAL,

-- R1 6-10: Cross carrier scheduling

 crossCarrierScheduling ENUMERATED {supported} OPTIONAL,

-- R1 6-11: Number of supported TAGs

 supportedNumberTAG ENUMERATED {n2, n3, n4} OPTIONAL,

-- R1 6-18: Supplemental uplink with dynamic switch

 dynamicSwitchSUL ENUMERATED {supported} OPTIONAL,

-- R1 6-19: Simultaneous transmission of SRS on an SUL/non-SUL carrier and PUSCH/PUCCH/SRS/PRACH on the other UL carrier in the same cell

-- Details on the channel/signal combination are to be described in TS 38.306

 simultaneousTxSUL-NonSUL ENUMERATED {supported} OPTIONAL,

-- R1 6-21 & 6-22: DL/UL search space sharing for CA

 searchSpaceSharingCA BIT STRING (SIZE (2)) OPTIONAL

}

-- Updated based on R4-1803374

CA-BandwidthClass ::= ENUMERATED {a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q, ...}

ModulationOrder ::= ENUMERATED {bpsk-halfpi, bpsk, qpsk, qam16, qam64, qam256}

-- TAG-SUPPORTED-BASEBAND-PROCESSING-COMBINATION-STOP

-- ASN1STOP

*–* *UE-CapabilityRAT-ContainerList*

The IE *UE-CapabilityRAT-ContainerList* contains a list of containers, one for each RAT for which UE capabilities are transferred, if any.

***UE-CapabilityRAT-ContainerList* information element**

-- ASN1START

-- TAG-UE-CAPABILITY-RAT-CONTAINER-LIST-START

UE-CapabilityRAT-ContainerList ::=SEQUENCE (SIZE (0.. maxRAT-CapabilityContainers)) OF UE-CapabilityRAT-Container

UE-CapabilityRAT-Container ::= SEQUENCE {

 rat-Type RAT-Type,

 ue-CapabilityRAT-Container OCTET STRING

}

-- TAG-UE-CAPABILITY-RAT-CONTAINER-LIST-STOP

-- ASN1STOP

|  |
| --- |
| ***UE-CapabilityRAT-ContainerList field descriptions*** |
| ***ue-CapabilityRAT-Container***Container for the UE capabilities of the indicated RAT. The encoding is defined in the specification of each RAT:For NR: the encoding of UE capabilities is defined in UE-NR-Capability.For EUTRA-NR: the encoding of UE capabilities is defined in UE-MRDC-Capability |

*– UE-MRDC-Capability*

The IE *UE-MRDC-Capability* is used to convey the UE Radio Access Capability Parameters for MR-DC, see TS 38.306 [yy].

***UE-MRDC-Capability* information element**

-- ASN1START

-- TAG-UE-MRDC-CAPABILITY-START

UE-MRDC-Capability ::= SEQUENCE {

 measParameters-MRDC MeasParameters-MRDC,

 rf-Parameters-MRDC RF-Parameters-MRDC,

 phy-Parameters-MRDC Phy-Parameters-MRDC OPTIONAL, -- FFS dependent on other parameters (e.g. L1 feature list)

 generalParameters-MRDC GeneralParameters-MRDC-XDD-Diff OPTIONAL,

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

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

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

 fr2-Add-UE-MRDC-Capabilities UE-MRDC-CapabilityAddFRX-Mode OPTIONAL

 -- FFS on other parameters

}

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

 phy-Parameters-MRDC-XDD-Diff Phy-Parameters-MRDC-XDD-Diff OPTIONAL,

 measParameters-MRDC-XDD-Diff MeasParameters-MRDC-XDD-Diff OPTIONAL,

 generalParameters-MRDC-XDD-Diff GeneralParameters-MRDC-XDD-Diff OPTIONAL

}

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

 phy-Parameters-MRDC-FRX-Diff Phy-Parameters-MRDC-FRX-Diff OPTIONAL

}

RF-Parameters-MRDC ::= SEQUENCE {

 supportedBandCombination BandCombinationList,

 bandCombinationParametersUL-List BandCombinationParametersUL-List,

 -- FFS on other parameters

}

Phy-Parameters-MRDC ::= SEQUENCE {

 phy-Parameters-MRDC-Common Phy-Parameters-MRDC-Common,

 phy-Parameters-MRDC-XDD-Diff Phy-Parameters-MRDC-XDD-Diff OPTIONAL,

 phy-Parameters-MRDC-FRX-Diff Phy-Parameters-MRDC-FRX-Diff OPTIONAL

}

Phy-Parameters-MRDC-Common ::= SEQUENCE {

 supportedBasebandProcessingCombination-MRDC BasebandProcessingCombination-MRDC OPTIONAL

}

Phy-Parameters-MRDC-XDD-Diff ::= SEQUENCE {

}

Phy-Parameters-MRDC-FRX-Diff ::= SEQUENCE {

 dynamicPowerSharing ENUMERATED {supported} OPTIONAL,

 tdm-Pattern ENUMERATED {supported} OPTIONAL

}

BasebandProcessingCombination-MRDC ::= SEQUENCE (SIZE (1..maxBasebandProcComb)) OF LinkedBasebandProcessingCombination

LinkedBasebandProcessingCombination ::= SEQUENCE {

 basebandProcessingCombinationIndexMN BasebandProcessingCombinationIndex,

 basebandProcessingCombinationLinkedIndexSN SEQUENCE (SIZE (1..maxBasebandProcComb)) OF BasebandProcessingCombinationIndex

}

BasebandProcessingCombinationIndex ::= INTEGER (1..maxBasebandProcComb)

MeasParameters-MRDC ::= SEQUENCE {

 measParameters-MRDC-Common MeasParameters-MRDC-Common,

 measParameters-MRDC-XDD-Diff MeasParameters-MRDC-XDD-Diff OPTIONAL

}

MeasParameters-MRDC-Common ::= SEQUENCE {

-- R4 3-1: Independent measurement gap configurations for FR1 and FR2

}

MeasParameters-MRDC-XDD-Diff ::= SEQUENCE {

 sstd-Meas-DC ENUMERATED {supported} OPTIONAL,

-- R4 3-2: Simultaneous reception of data and SS block with different numerologies when UE conducts the serving cell measurement or intra-frequency measurement

 simultaneousRxDataSSB-DiffNumerology ENUMERATED {supported} OPTIONAL

}

GeneralParameters-MRDC-XDD-Diff ::= SEQUENCE {

 splitSRB-WithOneUL-Path ENUMERATED {supported} OPTIONAL,

 splitDRB-withUL-Both-MCG-SCG ENUMERATED {supported} OPTIONAL,

 srb3 ENUMERATED {supported} OPTIONAL

}

-- TAG-UE-MRDC-CAPABILITY-STOP

-- ASN1STOP

*– UE-NR-Capability*

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

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

-- ASN1START

-- TAG-UE-NR-CAPABILITY-START

UE-NR-Capability ::= SEQUENCE {

 pdcp-Parameters PDCP-Parameters,

 rlc-Parameters RLC-Parameters, -- FFS OPTIONAL

 mac-Parameters MAC-Parameters, -- FFS OPTIONAL

 phy-Parameters Phy-Parameters,

 rf-Parameters RF-Parameters,

 measParameters MeasParameters 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,

 nonCriticalExtension SEQUENCE {} OPTIONAL

}

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

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

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

 measParametersXDD-Diff MeasParametersXDD-Diff OPTIONAL

}

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

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

 measParametersFRX-Diff MeasParametersFRX-Diff OPTIONAL

}

Phy-Parameters ::= SEQUENCE {

 phy-ParametersCommon Phy-ParametersCommon OPTIONAL,

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

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

 phy-ParametersFR1 Phy-ParametersFR1 OPTIONAL,

 phy-ParametersFR2 Phy-ParametersFR2 OPTIONAL

 supportedBasebandProcessingCombination SupportedBasebandProcessingCombination

 -- FFS on other parameters

}

Phy-ParametersCommon ::= SEQUENCE {

-- R1 1-9: CSI-RS based CFRA for HO

 csi-RS-CFRA-ForHO ENUMERATED {supported} OPTIONAL,

-- R1 2-11: Downlink dynamic PRB bundling (DL)

 dynamicPRB-BundlingDL ENUMERATED {supported} OPTIONAL,

-- R1 2-32a: Semi-persistent CSI report on PUCCH

 sp-CSI-ReportPUCCH ENUMERATED {supported} OPTIONAL,

-- R1 2-32b: Semi-persistent CSI report on PUSCH

 sp-CSI-ReportPUSCH ENUMERATED {supported} OPTIONAL,

-- R1 2-34: NZP-CSI-RS based interference measurement

 nzp-CSI-RS-IntefMgmt ENUMERATED {supported} OPTIONAL,

-- R1 2-42: Support Type II SP-CSI feedback on long PUCCH

 type2-SP-CSI-Feedback-LongPUCCH ENUMERATED {supported} OPTIONAL,

-- R1 3-3: More than one CORESET per BWP (in addition to CORESET #0)

 multipleCORESET ENUMERATED {supported} OPTIONAL,

-- R1 3-6: Dynamic SFI monitoring and dynamic UL/DL determination

 dynamicSFI ENUMERATED {supported} OPTIONAL,

-- R1 3-7: Precoder-granularity of CORESET size

 precoderGranularityCORESET ENUMERATED {supported} OPTIONAL,

-- R1 4-10: Dynamic HARQ-ACK codebook

 dynamicHARQ-ACK-Codebook ENUMERATED {supported} OPTIONAL,

-- R1 4-11: Semi-static HARQ-ACK codebook

 semiStaticHARQ-ACK-Codebook ENUMERATED {supported} OPTIONAL,

-- R1 4-12: HARQ-ACK spatial bundling for PUCCH or PUSCH per PUCCH group

 spatialBundlingHARQ-ACK ENUMERATED {supported} OPTIONAL,

-- R1 4-21: Dynamic beta-offset configuration and indication for HARQ-ACK and/or CSI

 dynamicBetaOffsetInd-HARQ-ACK-CSI ENUMERATED {supported} OPTIONAL,

-- R1 4-23: Repetitions for PUCCH format 1, 3,and 4 over multiple slots with K = 1, 2, 4, 8

 pucch-Repetition-F1-3-4 ENUMERATED {supported} OPTIONAL,

-- R1 5-2: RA type 0 for PUSCH

 ra-Type0-PUSCH ENUMERATED {supported} OPTIONAL,

-- R1 5-3: Dynamic switching between RA type 0 and RA type 1 for PDSCH

 dynamicSwitchRA-Type0-1-PDSCH ENUMERATED {supported} OPTIONAL,

-- R1 5-4: Dynamic switching between RA type 0 andRA type 1 for PUSCH

 dynamicSwitchRA-Type0-1-PUSCH ENUMERATED {supported} OPTIONAL,

-- R1 5-6: PDSCH mapping type A with less than 7 OFDM symbols

 pdsch-MappingTypeA ENUMERATED {supported} OPTIONAL,

-- R1 5-6a: PDSCH mapping type B

 pdsch-MappingTypeB ENUMERATED {supported} OPTIONAL,

-- R1 5-7: Interleaving for VRB-to-PRB mapping for PDSCH

 interleavingVRB-ToPRB-PDSCH ENUMERATED {supported} OPTIONAL,

-- R1 5-8: Interleaving for VRB-to-PRB mapping for PUSCH

 interleavingVRB-ToPRB-PUSCH ENUMERATED {supported} OPTIONAL,

-- R1 5-10: Inter-slot frequency hopping for PUSCH

 interSlotFreqHopping-PUSCH ENUMERATED {supported} OPTIONAL,

-- R1 5-13: Type 1 configured PUSCH repetitions within a slot

 type1-PUSCH-RepetitionOneSlot ENUMERATED {supported} OPTIONAL,

-- R1 5-14: Type 1 configured PUSCH repetitions over multiple slots

 type1-PUSCH-RepettitionMultiSlots ENUMERATED {supported} OPTIONAL,

-- R1 5-15: Type 2 configured PUSCH repetitions within a slot

 type2-PUSCH-RepetitionOneSlot ENUMERATED {supported} OPTIONAL,

-- R1 5-16: Type 2 configured PUSCH repetitions over multiple slots

 type1-PUSCH-RepettitionMultiSlots ENUMERATED {supported} OPTIONAL,

-- R1 5-17: PUSCH repetitions over multiple slots

 pusch-RepetitionMultiSlots ENUMERATED {supported} OPTIONAL,

-- R1 5-17a: PDSCH repetitions over multiple slots

 pdsch-RepetitionMultiSlots ENUMERATED {supported} OPTIONAL,

-- R1 5-18: DL SPS

 downlinkSPS ENUMERATED {supported} OPTIONAL,

-- R1 5-19: Type 1 Configured UL grant

 configuredUL-GrantType1 ENUMERATED {supported} OPTIONAL,

-- R1 5-20: Type 2 Configured UL grant

 configuredUL-GrantType2 ENUMERATED {supported} OPTIONAL,

-- R1 5-21: Pre-emption indication for DL

 pre-EmptIndication-DL ENUMERATED {supported} OPTIONAL,

-- R1 5-22 & 5-25: CBG-based re-transmission for DL/UL using CBGTI

 cbg-TransIndication BIT STRING (SIZE (2)) OPTIONAL,

-- R1 5-23: CBGFI for CBG-based re-transmission for DL

 cbg-FlushIndication-DL ENUMERATED {supported} OPTIONAL,

-- R1 5-24: Dynamic HARQ-ACK codebook using sub-codebooks for CBG-based re-transmission for DL

 dynamicHARQ-ACK-CodeB-CBG-Retx-DL ENUMERATED {supported} OPTIONAL,

-- R1 5-26: Semi-static rate-matching resource set configuration for DL

 rateMatchingResrcSetSemi-Static ENUMERATED {supported} OPTIONAL,

-- R1 5-27: Dynamic rate-matching resource set configuration for DL

 rateMatchingResrcSetDynamic ENUMERATED {supported} OPTIONAL,

-- R1 5-28: Rate-matching around LTE CRS

 rateMatchingLTE-CRS ENUMERATED {supported} OPTIONAL,

-- R4 1-8: BWP switching delay

 bwp-SwitchingDelay ENUMERATED {type1, type2} OPTIONAL

}

Phy-ParametersXDD-Diff ::= SEQUENCE {

-- R1 4-2: 2 PUCCH of format 0 or 2 in consecutive symbols

 twoPUCCH-F0-2-ConsecSymbols ENUMERATED {supported} OPTIONAL,

-- R1 8-7: UL power control with 2 PUSCH closed loops

 twoDifferentTPC-Loop-PUSCH ENUMERATED {supported} OPTIONAL,

-- R1 8-8: UL power control with 2 PUCCH closed loops

 twoDifferentTPC-Loop-PUCCH ENUMERATED {supported} OPTIONAL

}

Phy-ParametersFRX-Diff ::= SEQUENCE {

-- R1 2-6 & 2-16b: Support 1+2 DMRS (DL/UL)

 oneFL-DMRS-TwoAdditionalDMRS BIT STRING (SIZE (2)) OPTIONAL,

-- R1 2-7 & 2-18: Supported 2 symbols front-loaded DMRS(DL/UL)

 twoFL-DMRS BIT STRING (SIZE (2)) OPTIONAL,

-- R1 2-8 & 2-18a: Supported 2 symbols front-loaded +2 symbols additional DMRS(DL/UL)

 twoFL-DMRS-TwoAdditionalDMRS BIT STRING (SIZE (2)) OPTIONAL,

-- R1 2-9 & 2-19: Support 1+3 DMRS (DL/UL)

 oneFL-DMRS-ThreeAdditionalDMRS BIT STRING (SIZE (2)) OPTIONAL,

-- R1 2-10: Support DMRS type (DL)

 supportedDMRS-TypeDL ENUMERATED {type1, type2} OPTIONAL,

-- R1 2-17: Support DMRS type (UL)

 supportedDMRS-TypeUL ENUMERATED {type1, type2} OPTIONAL,

-- R1 2-37: Support Semi-open loop CSI

 semiOpenLoopCSI ENUMERATED {supported} OPTIONAL,

-- R1 2-38: CSI report without PMI

 csi-ReportWithoutPMI ENUMERATED {supported} OPTIONAL,

-- R1 2-39: CSI report with CRI

 csi-ReportWithCRI ENUMERATED {supported} OPTIONAL,

-- R1 2-39a: CSI report without CQI

 csi-ReportWithoutCQI ENUMERATED {supported} OPTIONAL,

-- R1 2-44 & 2-47: 1 port of DL/UL PTRS

 onePortsPTRS BIT STRING (SIZE (2)) OPTIONAL,

-- R1 4-2: 2 PUCCH of format 0 or 2 in consecutive symbols

 twoPUCCH-F0-2-ConsecSymbols ENUMERATED {supported} OPTIONAL,

-- R1 4-3: PUCCH format 2 over 1 – 2 OFDM symbols once per slot with FH

 pucch-F2-WithFH ENUMERATED {supported} OPTIONAL,

-- R1 4-4: PUCCH format 3 over 4 – 14 OFDM symbols once per slot with FH

 pucch-F3-WithFH ENUMERATED {supported} OPTIONAL,

-- R1 4-5: PUCCH format 4 over 4 – 14 OFDM symbols once per slot with FH

 pucch-F4-WithFH ENUMERATED {supported} OPTIONAL,

-- R1 4-6: Non-frequency hopping for PUCCH formats 0 and 2

 freqHoppingPUCCH-F0-2 ENUMERATED {notSupported} OPTIONAL,

-- R1 4-7: Non-frequency hopping for PUCCH format 1, 3, and 4

 freqHoppingPUCCH-F1-3-4 ENUMERATED {notSupported} OPTIONAL,

-- R1 4-19: SR/HARQ-ACK/CSI multiplexing once per slot using a PUCCH (or piggybacked on a PUSCH)

 mux-SR-HARQ-ACK-CSI-PUCCH ENUMERATED {supported} OPTIONAL,

-- R1 4-20: UCI code-block segmentation

 uci-CodeBlockSegmentation ENUMERATED {supported} OPTIONAL,

-- R1 4-22: 1 long PUCCH format and 1 short PUCCH format in the same slot

 onePUCCH-LongAndShortFormat ENUMERATED {supported} OPTIONAL,

-- R1 4-22a: 2 PUCCH transmissions in the same slot which are not covered by 4-22 and 4-2

 twoPUCCH-AnyOthersInSlot ENUMERATED {supported} OPTIONAL,

-- R1 5-9: Intra-slot frequency-hopping for PUSCH except for PUSCH scheduled by Type 1 before RRC connection

 intraSlotFreqHopping-PUSCH ENUMERATED {supported} OPTIONAL,

-- R1 5-25: LBRM for PUSCH

 pusch-LBRM ENUMERATED {supported} OPTIONAL,

-- R1 6-5a: PDCCH blind detection capability for CA

 pdcch-BlindDetectionCA ENUMERATED {supported} OPTIONAL,

-- R1 8-3: TPC-PUSCH-RNTI

 tpc-PUSCH-RNTI ENUMERATED {supported} OPTIONAL,

-- R1 8-4: TPC-PUCCH-RNTI

 tpc-PUCCH-RNTI ENUMERATED {supported} OPTIONAL,

-- R1 8-5: TPC-SRS-RNTI

 tpc-SRS-RNTI ENUMERATED {supported} OPTIONAL,

-- R1 8-6: Absolute TPC command mode

 absoluteTPC-Command ENUMERATED {supported} OPTIONAL

-- R1 8-7: UL power control with 2 PUSCH closed loops

 twoDifferentTPC-Loop-PUSCH ENUMERATED {supported} OPTIONAL,

-- R1 8-8: UL power control with 2 PUCCH closed loops

 twoDifferentTPC-Loop-PUCCH ENUMERATED {supported} OPTIONAL,

-- R4 1-6: pi/2-BPSK for PUSCH

 pusch-HalfPi-BPSK ENUMERATED {supported} OPTIONAL,

-- R4 1-7: pi/2-BPSK for PUCCH format 3/4

 pucch-F3-4-HalfPi-BPSK ENUMERATED {supported} OPTIONAL,

-- R4 1-9: 1-symbol GP in unpaired spectrum

 oneSymbolGP-TDD ENUMERATED {supported} OPTIONAL,

-- R4 2-7: Almost contiguous UL CP-OFDM

 almostContiguousCP-OFDM-UL ENUMERATED {supported} OPTIONAL

}

Phy-ParametersFR1 ::= SEQUENCE {

-- R1 3-2: Unicast PDCCH monitoring following Case 1-2

 pdcchMonitoringSingleOccasion ENUMERATED {supported} OPTIONAL,

-- R4 1-1: 60kHz of subcarrier spacing for FR1

 scs-60kHz ENUMERATED {supported} OPTIONAL,

-- R4 1-4: 256QAM for PDSCH in FR1

 pdsch-256QAM-FR1 ENUMERATED {supported} OPTIONAL

}

Phy-ParametersFR2 ::= SEQUENCE {

-- R4 2-8: PA calibration gap

 calibrationGapPA ENUMERATED {supported} OPTIONAL

}

RF-Parameters ::= SEQUENCE {

 supportedBandListNR SupportedBandListNR,

 supportedBandCombination BandCombinationList,

 bandCombinationParametersUL-List BandCombinationParametersUL-List

}

SupportedBandListNR ::= SEQUENCE (SIZE (1..maxBands)) OF BandNR

BandNR ::= SEQUENCE {

 bandNR FreqBandIndicator,

-- Modified MPR behaviour as in RAN4 LS R2-1804077, which is needed for NSA as well as SA

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

-- R4 2-1: Maximum channel bandwidth supported in each band for DL and UL separately and for each SCS that UE supports within a single CC

-- RAN4 agreed that 400 MHz is optional for FR2. The other values defined for FR1/fR2 in TS 38.101 are mandatory w/o capability bit.

 maxChannelBW-PerCC ENUMERATED {mhz400} OPTIONAL,

 mimo-ParametersPerBand MIMO-ParametersPerBand OPTIONAL,

-- R1 0-10: Extended CP

 extendedCP ENUMERATED {supported} OPTIONAL,

-- R1 0-13: Phase coherence across non-contiguous UL symbols in slot in the transmission of one channel

 phaseCoherenceUL ENUMERATED {supported} OPTIONAL,

-- R1 1-10: Support of SCell without SS/PBCH block

 scellWithoutSSB ENUMERATED {supported} OPTIONAL,

-- R1 1-11: Support of CSI-RS RRM measurement for SCell without SS/PBCH block

 csi-RS-MeasSCellWithoutSSB ENUMERATED {supported} OPTIONAL,

-- R1 2-15a: Association between CSI-RS and SRS

 srs-AssocCSI-RS ENUMERATED {supported} OPTIONAL,

-- R1 3-1a: For type 1 CSS with dedicated RRC configuration and for type 3 CSS, UE specific SS, CORESET resource allocation of 6RB bit-map and duration 3 OFDM symbols for FR2

 type1-3-CSS ENUMERATED {supported} OPTIONAL,

-- R1 3-4: More than one TCI state configurations per CORESET

 multipleTCI ENUMERATED {supported} OPTIONAL,

-- R1 3-5 & 3-5a: For type 1 with dedicated RRC configuration, type 3, and UE-SS,, monitoring occasion can be any OFDM symbol(s) of a slot for Case 2 (with a DCI gap)

 pdcchMonitoringAnyOccasions ENUMERATED {withoutDCI-gap, withDCI-gap} OPTIONAL,

-- R1 5-1a: UE specific RRC configure UL/DL assignment

 ue-SpecificUL-DL-Assignment ENUMERATED {supported} OPTIONAL,

-- R1 5-11 & 5-11a: Up to 2/7 unicast PDSCHs per slot for different TBs

 pdsch-DifferentTB-PerSlot SEQUENCE {

 scs-15kHz ENUMERATED {upto2, upto7} OPTIONAL,

 scs-30kHz ENUMERATED {upto2, upto7} OPTIONAL,

 scs-60kHz ENUMERATED {upto2, upto7} OPTIONAL,

 scs-120kHz ENUMERATED {upto2, upto7} OPTIONAL,

 }, OPTIONAL,

-- R1 5-12 & 5-12a: Up to 2/7 PUSCHs per slot for different TBs

 pusch-DifferentTB-PerSlot SEQUENCE {

 scs-15kHz ENUMERATED {upto2, upto7} OPTIONAL,

 scs-30kHz ENUMERATED {upto2, upto7} OPTIONAL,

 scs-60kHz ENUMERATED {upto2, upto7} OPTIONAL,

 scs-120kHz ENUMERATED {upto2, upto7} OPTIONAL,

 }, OPTIONAL,

-- R1 6-2 & 6-3: Type A/B BWP adaptation (up to 2/4 BWPs) with same numerology

 bwp-SameNumerology ENUMERATED {upto2, upto4} OPTIONAL,

-- R1 6-4: BWP adaptation (up to 4 BWPs) with different numerologies

 bwp-DiffNumerology ENUMERATED {upto4} OPTIONAL,

-- R1 6-7: Two PUCCH group

 twoPUCCH-Group ENUMERATED {supported} OPTIONAL,

-- R1 6-8: Different numerology across PUCCH groups

 diffNumerologyAcrossPUCCH-Group ENUMERATED {supported} OPTIONAL,

-- R1 6-9: Different numerologies across carriers within the same PUCCH group

 diffNumerologyWithinPUCCH-Group ENUMERATED {supported} OPTIONAL,

-- R1 6-10: Cross carrier scheduling

 crossCarrierScheduling ENUMERATED {supported} OPTIONAL,

-- R1 6-11: Number of supported TAGs

 supportedNumberTAG ENUMERATED {n2, n3, n4} OPTIONAL,

-- R1 6-19: Simultaneous transmission of SRS on an SUL/non-SUL carrier and PUSCH/PUCCH/SRS/PRACH on the other UL carrier in the same cell

-- Details on the channel/signal combination are to be described in TS 38.306

 simultaneousTxSUL-NonSUL ENUMERATED {supported} OPTIONAL,

-- R1 6-21 & 6-22: DL/UL search space sharing for CA

 searchSpaceSharingCA BIT STRING (SIZE (2)) OPTIONAL

-- R4 1-4: 256QAM for PDSCH in FR2

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

-- R4 1-5: 256QAM for PUSCH

 pusch-256QAM ENUMERATED {supported} OPTIONAL

}

MIMO-ParametersPerBand ::= SEQUENCE {

-- R1 2-2: PDSCH beam switching

 timeDurationForQCL SEQUENCE {

 scs-60kHz ENUMERATED {s7, s14, s28} OPTIONAL,

 sch-120kHz ENUMERATED {s14, s28} OPTIONAL

 } OPTIONAL,

-- R1 2-3: PDSCH MIMO layers. Absence of this field implies support of one layer.

 maxNumberMIMO-LayersPDSCH ENUMERATED {twoLayers, fourLayers, eightLayers} OPTIONAL,

-- R1 2-14: Codebook based PUSCH MIMO transmission. Absence of this field implies that CB-based PUSCH is not supported.

 maxNumberMIMO-LayersCB-PUSCH ENUMERATED {oneLayer, twoLayers, fourLayers} OPTIONAL,

-- R1 2-15: Non-codebook based PUSCH MIMO transmission. Absence of this field implies that Non-CB-based PUSCH is not supported.

 maxNumberMIMO-LayersNonCB-PUSCH ENUMERATED {oneLayer, twoLayers, fourLayers} OPTIONAL,

-- R1 2-4: TCI states for PDSCH

 maxNumberConfiguredTCIstates ENUMERATED {n4, n8, n16, n32, n64} OPTIONAL,

 maxNumberActiveTCI-PerCC ENUMERATED {n1, n2, n4, n8} OPTIONAL,

-- R1 2-13: PUSCH transmission coherence

 pusch-TransCoherence ENUMERATED {nonCoherent, partialNonCoherent, fullCoherent} OPTIONAL,

-- R1 2-20: Beam correspondence

 beamCorrespondence ENUMERATED {supported} OPTIONAL,

-- R1 2-21: Periodic beam report on PUCCH

 periodicBeamReport ENUMERATED {supported} OPTIONAL,

-- R1 2-22: Aperiodic beam report on PUSCH

 apeioricBeamReport ENUMERATED {supported} OPTIONAL,

-- R1 2-23: Semi-persistent beam report on PUCCH

 sp-BeamReportPUCCH ENUMERATED {supported} OPTIONAL,

-- R1 2-23a: Semi-persistent beam report on PUSCH

 sp-BeamReportPUSCH ENUMERATED {supported} OPTIONAL,

-- R1 2-24: SSB/CSI-RS for beam management

 beamManagementSSB-CSI-RS BeamManagementSSB-CSI-RS OPTIONAL,

-- R1 2-26: Receiving beam selection using CSI-RS resource repetition “ON”

 maxNumberRxBeam INTEGER (2..8) OPTIONAL,

-- R1 2-27: Beam switching (including SSB and CSI-RS)

 maxNumberRxTxBeamSwitchDL SEQUENCE {

 scs-15kHz ENUMERATED {n4, n7, n14} OPTIONAL,

 scs-30kHz ENUMERATED {n4, n7, n14} OPTIONAL,

 scs-60kHz ENUMERATED {n4, n7, n14} OPTIONAL,

 scs-120kHz ENUMERATED {n4, n7, n14} OPTIONAL,

 scs-240kHz ENUMERATED {n4, n7, n14} OPTIONAL

 } OPTIONAL,

-- R1 2-29: Non-group based beam reporting

 maxNumberNonGroupBeamReporting ENUMERATED {n1, n2, n4} OPTIONAL,

-- R1 2-29a: Group based beam reporting

 groupBeamReporting ENUMERATED {supported} OPTIONAL,

-- R1 2-30: UL beam management

 uplinkBeamManagement SEQUENCE {

 maxNumberSRS-ResourcePerSet ENUMERATED {n8, n16, n32},

 maxNumberSRS-ResourceSet INTEGER (1..8)

 } OPTIONAL,

-- R1 2-31: Beam failure recovery

 maxNumberCSI-RS-BFR INTEGER (1..64) OPTIONAL,

 maxNumberSSB-BFR INTEGER (1..64) OPTIONAL,

 maxNumberCSI-RS-SSB-BFR INTEGER (1..256) OPTIONAL,

-- R1 2-45 & 2-48: 2 ports of DL/UL PTRS

 twoPortsPTRS BIT STRING (SIZE (2)) OPTIONAL,

-- R1 2-53: SRS resources

 supportedSRS-Resources SRS-Resources OPTIONAL,

-- R1 2-55: SRS Tx switch

 srs-TxSwitch SRS-TxSwitch OPTIONAL,

-- R1 2-54a: Simultaneous SRS Tx

 maxNumberSimultaneousSRS-PerCC INTEGER (1..4) OPTIONAL,

-- R1 2-57: Support low latency CSI feedback

 lowLatencyCSI-Feedback ENUMERATED {supported} OPTIONAL

}

-- R1 2-24: SSB/CSI-RS for beam management

BeamManagementSSB-CSI-RS ::= SEQUENCE {

 maxNumberSSB-CSI-RS-ResourceOneTx ENUMERATED {n8, n16, n32, n64},

 maxNumberSSB-CSI-RS-ResourceTwoTx ENUMERATED {n0, n4, n8, n16, n32, n64},

 supportedCSI-RS-Density ENUMERATED {one, three, oneAndThree}

}

-- R1 2-53: SRS resources

SRS-Resources ::= SEQUENCE {

 maxNumberAperiodicSRS-PerBWP ENUMERATED {n1, n2, n4, n8, n16},

 maxNumberAperiodicSRS-PerBWP-PerSlot INTEGER (1..6),

 maxNumberPeriodicSRS-PerBWP ENUMERATED {n1, n2, n4, n8, n16},

 maxNumberPeriodicSRS-PerBWP-PerSlot INTEGER (1..6),

 maxNumberSemiPerssitentSRS-PerBWP ENUMERATED {n0, n1, n2, n4, n8, n16},

 maxNumberSP-SRS-PerBWP-PerSlot INTEGER (0..6),

 maxNumberSRS-Ports-PerResource ENUMERATED {n1, n2, n4}

}

-- R1 2-55: SRS Tx switch

SRS-TxSwitch ::= SEQUENCE {

 supportedSRS-TxPortSwitch ENUMERATED {t1r2, t1r4, t2r4, t1r4-t2r4},

 txSwitchImpactToRx ENUMERATED {true} OPTIONAL

}

PDCP-Parameters ::= SEQUENCE {

 supportedROHC-Profiles SEQUENCE {

 profile0x0000 BOOLEAN,

 profile0x0001 BOOLEAN,

 profile0x0002 BOOLEAN,

 profile0x0003 BOOLEAN,

 profile0x0004 BOOLEAN,

 profile0x0006 BOOLEAN,

 profile0x0101 BOOLEAN,

 profile0x0102 BOOLEAN,

 profile0x0103 BOOLEAN,

 profile0x0104 BOOLEAN

 },

 maxNumberROHC-ContextSessions ENUMERATED {cs2, cs4, cs8, cs12, cs16, cs24, cs32, cs48, cs64, cs128, cs256, cs512, cs1024, cs16384, spare2, spare1},

 uplinkOnlyROHC-Profiles ENUMERATED {supported} OPTIONAL,

 continueROHC-Context ENUMERATED {supported} OPTIONAL,

 outOfOrderDelivery ENUMERATED {supported} OPTIONAL,

 shortSN ENUMERATED {supported} OPTIONAL

}

RLC-Parameters ::= SEQUENCE {

 am-WithShortSN ENUMERATED {supported} OPTIONAL,

 um-WithShortSN ENUMERATED {supported} OPTIONAL,

 um-WIthLongSN ENUMERATED {supported} OPTIONAL

}

MAC-Parameters ::= SEQUENCE {

 mac-ParametersCommon MAC-ParametersCommon, OPTIONAL,

 mac-ParametersXDD-Diff MAC-ParametersXDD-Diff OPTIONAL

}

MAC-ParametersCommon ::= SEQUENCE {

-- R1 4-24: PUCCH-spatialrelationinfo indication by a MAC CE per PUCCH resource

 pucch-SpatialRelInfoMAC-CE ENUMERATED {supported} 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, --

 -- If supported UE supports 8 SR configurations, otherwise 1 SR config is supported.

 -- FFS Whether to align the number to what the configuration signalling can support.

 multipleConfiguredGrantConfigurations ENUMERATED {supported} OPTIONAL

}

MeasParameters ::= SEQUENCE {

 measParametersCommon MeasParametersCommon OPTIONAL,

 measParametersXDD-Diff MeasParametersXDD-Diff OPTIONAL,

 measParametersFRX-Diff MeasParametersFRX-Diff OPTIONAL

}

MeasParametersCommon ::= SEQUENCE {

-- R1 1-4: SSB based RLM

 ssb-RLM ENUMERATED {supported} OPTIONAL,

-- R1 1-8: RLM based on a mix of SSB and CSI-RS

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

-- R1 1-12: E-UTRA RS-SINR measurement

 rs-SINR-MeasEUTRA ENUMERATED {supported} OPTIONAL

}

MeasParametersXDD-Diff ::= SEQUENCE {

 intraAndInterF-MeasAndReport ENUMERATED {supported} OPTIONAL,

 eventA-MeasAndReport ENUMERATED {supported} OPTIONAL

 -- FFS for need of capability/IOT signaling in LTE for support of the additional measurement gap configurations defined for Rel-15?}

}

MeasParametersFRX-Diff ::= SEQUENCE {

-- R1 1-3: SSB based SINR measurement

 ss-SINR-Meas ENUMERATED {supported} OPTIONAL,

-- R1 1-5: CSI-RS based RRM measurement with associated SS-block

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

-- R1 1-5a: CSI-RS based RRM measurement without associated SS-block

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

-- R1 1-6: CSI-RS based SINR measurement

 csi-SINR-Meas ENUMERATED {supported} OPTIONAL,

-- R1 1-7: CSI-RS based RLM

 csi-RS-RLM ENUMERATED {supported} OPTIONAL

}

-- TAG-UE-NR-CAPABILITY-STOP

-- ASN1STOP