**3GPP TSG- Meeting #**

**, , - , 2024**

|  |
| --- |
| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
|  |
|  | **38.331** | **CR** |   | **rev** | **2** | **Current version:** | **18.1.0** |  |
|  |
| *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 |  |

|  |
| --- |
|  |
| ***Title:***  | Corrections and Updates to UE capabilities for RAN1 feature group 55-6 |
|  |  |
| ***Source to WG:*** | Intel Corporation |
| ***Source to TSG:*** |  |
|  |  |
| ***Work item code:*** | NR\_L1enh\_URLLC-Core, TEI18 |  | ***Date:*** | 2024-05-27 |
|  |  |  |  |  |
| ***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 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-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19) Rel-20 (Release 20)* |
|  |  |
| ***Reason for change:*** | Capture further Release-18 UE capabilities FG55-6a/b/c/d/e/f/g/h based on the RAN1 UE feature list (R1-2403703). |
|  |  |
| ***Summary of change:*** | New Release-18 capabilities FG55-6a/b/c/d/e/f/g/h from RAN1 are added based on the latest RAN1 feature lists. |
|  |  |
| ***Consequences if not approved:*** | New capabilities and editorial corrections will not be captured in specifications |
|  |  |
| ***Clauses affected:*** | 6.3.3 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** | **X** |  |  Other core specifications  | TS38.306 CR ...  |
| ***affected:*** |  |  |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  |  |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

***1st Modified section***

## 6.3 RRC information elements

### 6.3.3 UE capability information elements

#### – *CA-ParametersNR*

The IE *CA-ParametersNR* contains carrier aggregation and inter-frequency DAPS handover related capabilities that are defined per band combination.

*CA-ParametersNR* information element

-- ASN1START

-- TAG-CA-PARAMETERSNR-START

CA-ParametersNR ::= SEQUENCE {

 dummy ENUMERATED {supported} OPTIONAL,

 parallelTxSRS-PUCCH-PUSCH ENUMERATED {supported} OPTIONAL,

 parallelTxPRACH-SRS-PUCCH-PUSCH ENUMERATED {supported} OPTIONAL,

 simultaneousRxTxInterBandCA ENUMERATED {supported} OPTIONAL,

 simultaneousRxTxSUL ENUMERATED {supported} OPTIONAL,

 diffNumerologyAcrossPUCCH-Group ENUMERATED {supported} OPTIONAL,

 diffNumerologyWithinPUCCH-GroupSmallerSCS ENUMERATED {supported} OPTIONAL,

 supportedNumberTAG ENUMERATED {n2, n3, n4} OPTIONAL,

 ...

}

CA-ParametersNR-v1540 ::= SEQUENCE {

 simultaneousSRS-AssocCSI-RS-AllCC INTEGER (5..32) OPTIONAL,

 csi-RS-IM-ReceptionForFeedbackPerBandComb SEQUENCE {

 maxNumberSimultaneousNZP-CSI-RS-ActBWP-AllCC INTEGER (1..64) OPTIONAL,

 totalNumberPortsSimultaneousNZP-CSI-RS-ActBWP-AllCC INTEGER (2..256) OPTIONAL

 } OPTIONAL,

 simultaneousCSI-ReportsAllCC INTEGER (5..32) OPTIONAL,

 dualPA-Architecture ENUMERATED {supported} OPTIONAL

}

CA-ParametersNR-v1550 ::= SEQUENCE {

 dummy ENUMERATED {supported} OPTIONAL

}

CA-ParametersNR-v1560 ::= SEQUENCE {

 diffNumerologyWithinPUCCH-GroupLargerSCS ENUMERATED {supported} OPTIONAL

}

CA-ParametersNR-v15g0 ::= SEQUENCE {

 simultaneousRxTxInterBandCAPerBandPair SimultaneousRxTxPerBandPair OPTIONAL,

 simultaneousRxTxSULPerBandPair SimultaneousRxTxPerBandPair OPTIONAL

}

CA-ParametersNR-v1610 ::= SEQUENCE {

 -- R1 9-3: Parallel MsgA and SRS/PUCCH/PUSCH transmissions across CCs in inter-band CA

 parallelTxMsgA-SRS-PUCCH-PUSCH-r16 ENUMERATED {supported} OPTIONAL,

 -- R1 9-4: MsgA operation in a band combination including SUL

 msgA-SUL-r16 ENUMERATED {supported} OPTIONAL,

 -- R1 10-9c: Joint search space group switching across multiple cells

 jointSearchSpaceSwitchAcrossCells-r16 ENUMERATED {supported} OPTIONAL,

 -- R1 14-5: Half-duplex UE behaviour in TDD CA for same SCS

 half-DuplexTDD-CA-SameSCS-r16 ENUMERATED {supported} OPTIONAL,

 -- R1 18-4: SCell dormancy within active time

 scellDormancyWithinActiveTime-r16 ENUMERATED {supported} OPTIONAL,

 -- R1 18-4a: SCell dormancy outside active time

 scellDormancyOutsideActiveTime-r16 ENUMERATED {supported} OPTIONAL,

 -- R1 18-6: Cross-carrier A-CSI RS triggering with different SCS

 crossCarrierA-CSI-trigDiffSCS-r16 ENUMERATED {higherA-CSI-SCS,lowerA-CSI-SCS,both} OPTIONAL,

 -- R1 18-6a: Default QCL assumption for cross-carrier A-CSI-RS triggering

 defaultQCL-CrossCarrierA-CSI-Trig-r16 ENUMERATED {diffOnly, both} OPTIONAL,

 -- R1 18-7: CA with non-aligned frame boundaries for inter-band CA

 interCA-NonAlignedFrame-r16 ENUMERATED {supported} OPTIONAL,

 simul-SRS-Trans-BC-r16 ENUMERATED {n2} OPTIONAL,

 interFreqDAPS-r16 SEQUENCE {

 interFreqAsyncDAPS-r16 ENUMERATED {supported} OPTIONAL,

 interFreqDiffSCS-DAPS-r16 ENUMERATED {supported} OPTIONAL,

 interFreqMultiUL-TransmissionDAPS-r16 ENUMERATED {supported} OPTIONAL,

 interFreqSemiStaticPowerSharingDAPS-Mode1-r16 ENUMERATED {supported} OPTIONAL,

 interFreqSemiStaticPowerSharingDAPS-Mode2-r16 ENUMERATED {supported} OPTIONAL,

 interFreqDynamicPowerSharingDAPS-r16 ENUMERATED {short, long} OPTIONAL,

 interFreqUL-TransCancellationDAPS-r16 ENUMERATED {supported} OPTIONAL

 } OPTIONAL,

 codebookParametersPerBC-r16 CodebookParameters-v1610 OPTIONAL,

 -- R1 16-2a-10 Value of R for BD/CCE

 blindDetectFactor-r16 INTEGER (1..2) OPTIONAL,

 -- R1 11-2a: Capability on the number of CCs for monitoring a maximum number of BDs and non-overlapped CCEs per span when configured

 -- with DL CA with Rel-16 PDCCH monitoring capability on all the serving cells

 pdcch-MonitoringCA-r16 SEQUENCE {

 maxNumberOfMonitoringCC-r16 INTEGER (2..16),

 supportedSpanArrangement-r16 ENUMERATED {alignedOnly, alignedAndNonAligned}

 } OPTIONAL,

 -- R1 11-2c: Number of carriers for CCE/BD scaling with DL CA with mix of Rel. 16 and Rel. 15 PDCCH monitoring capabilities on

 -- different carriers

 pdcch-BlindDetectionCA-Mixed-r16 SEQUENCE {

 pdcch-BlindDetectionCA1-r16 INTEGER (1..15),

 pdcch-BlindDetectionCA2-r16 INTEGER (1..15),

 supportedSpanArrangement-r16 ENUMERATED {alignedOnly, alignedAndNonAligned}

 } OPTIONAL,

 -- R1 11-2d: Capability on the number of CCs for monitoring a maximum number of BDs and non-overlapped CCEs per span for MCG and for

 -- SCG when configured for NR-DC operation with Rel-16 PDCCH monitoring capability on all the serving cells

 pdcch-BlindDetectionMCG-UE-r16 INTEGER (1..14) OPTIONAL,

 pdcch-BlindDetectionSCG-UE-r16 INTEGER (1..14) OPTIONAL,

 -- R1 11-2e: Number of carriers for CCE/BD scaling for MCG and for SCG when configured for NR-DC operation with mix of Rel. 16 and

 -- Rel. 15 PDCCH monitoring capabilities on different carriers

 pdcch-BlindDetectionMCG-UE-Mixed-r16 SEQUENCE {

 pdcch-BlindDetectionMCG-UE1-r16 INTEGER (0..15),

 pdcch-BlindDetectionMCG-UE2-r16 INTEGER (0..15)

 } OPTIONAL,

 pdcch-BlindDetectionSCG-UE-Mixed-r16 SEQUENCE {

 pdcch-BlindDetectionSCG-UE1-r16 INTEGER (0..15),

 pdcch-BlindDetectionSCG-UE2-r16 INTEGER (0..15)

 } OPTIONAL,

 -- R1 18-5 cross-carrier scheduling with different SCS in DL CA

 crossCarrierSchedulingDL-DiffSCS-r16 ENUMERATED {low-to-high, high-to-low, both} OPTIONAL,

 -- R1 18-5a Default QCL assumption for cross-carrier scheduling

 crossCarrierSchedulingDefaultQCL-r16 ENUMERATED {diff-only, both} OPTIONAL,

 -- R1 18-5b cross-carrier scheduling with different SCS in UL CA

 crossCarrierSchedulingUL-DiffSCS-r16 ENUMERATED {low-to-high, high-to-low, both} OPTIONAL,

 -- R1 13.19a Simultaneous positioning SRS and MIMO SRS transmission for a given BC

 simul-SRS-MIMO-Trans-BC-r16 ENUMERATED {n2} OPTIONAL,

 -- R1 16-3a, 16-3a-1, 16-3b, 16-3b-1: New Individual Codebook

 codebookParametersAdditionPerBC-r16 CodebookParametersAdditionPerBC-r16 OPTIONAL,

 -- R1 16-8: Mixed codebook

 codebookComboParametersAdditionPerBC-r16 CodebookComboParametersAdditionPerBC-r16 OPTIONAL

}

CA-ParametersNR-v1630 ::= SEQUENCE {

 -- R1 22-5b: Simultaneous transmission of SRS for antenna switching and SRS for CB/NCB /BM for inter-band UL CA

 -- R1 22-5d: Simultaneous transmission of SRS for antenna switching for inter-band UL CA

 simulTX-SRS-AntSwitchingInterBandUL-CA-r16 SimulSRS-ForAntennaSwitching-r16 OPTIONAL,

 -- R4 8-5: supported beam management type for inter-band CA

 beamManagementType-r16 ENUMERATED {ibm, dummy} OPTIONAL,

 -- R4 7-3a: UL frequency separation class with aggregate BW and Gap BW

 intraBandFreqSeparationUL-AggBW-GapBW-r16 ENUMERATED {classI, classII, classIII} OPTIONAL,

 -- RAN 89: Case B in case of Inter-band CA with non-aligned frame boundaries

 interCA-NonAlignedFrame-B-r16 ENUMERATED {supported} OPTIONAL

}

CA-ParametersNR-v1640 ::= SEQUENCE {

 -- R4 7-5: Support of reporting UL Tx DC locations for uplink intra-band CA.

 uplinkTxDC-TwoCarrierReport-r16 ENUMERATED {supported} OPTIONAL,

 -- RAN 22-6: Support of up to 3 different numerologies in the same NR PUCCH group for NR part of EN-DC, NGEN-DC, NE-DC and NR-CA

 -- where UE is not configured with two NR PUCCH groups

 maxUpTo3Diff-NumerologiesConfigSinglePUCCH-grp-r16 PUCCH-Grp-CarrierTypes-r16 OPTIONAL,

 -- RAN 22-6a: Support of up to 4 different numerologies in the same NR PUCCH group for NR part of EN-DC, NGEN-DC, NE-DC and NR-CA

 -- where UE is not configured with two NR PUCCH groups

 maxUpTo4Diff-NumerologiesConfigSinglePUCCH-grp-r16 PUCCH-Grp-CarrierTypes-r16 OPTIONAL,

 -- RAN 22-7: Support two PUCCH groups for NR-CA with 3 or more bands with at least two carrier types

 twoPUCCH-Grp-ConfigurationsList-r16 SEQUENCE (SIZE (1..maxTwoPUCCH-Grp-ConfigList-r16)) OF TwoPUCCH-Grp-Configurations-r16 OPTIONAL,

 -- R1 22-7a: Different numerology across NR PUCCH groups

 diffNumerologyAcrossPUCCH-Group-CarrierTypes-r16 ENUMERATED {supported} OPTIONAL,

 -- R1 22-7b: Different numerologies across NR carriers within the same NR PUCCH group, with PUCCH on a carrier of smaller SCS

 diffNumerologyWithinPUCCH-GroupSmallerSCS-CarrierTypes-r16 ENUMERATED {supported} OPTIONAL,

 -- R1 22-7c: Different numerologies across NR carriers within the same NR PUCCH group, with PUCCH on a carrier of larger SCS

 diffNumerologyWithinPUCCH-GroupLargerSCS-CarrierTypes-r16 ENUMERATED {supported} OPTIONAL,

 -- R1 11-2f: add the replicated FGs of 11-2a/c with restriction for non-aligned span case

 -- with DL CA with Rel-16 PDCCH monitoring capability on all the serving cells

 pdcch-MonitoringCA-NonAlignedSpan-r16 INTEGER (2..16) OPTIONAL,

 -- R1 11-2g: add the replicated FGs of 11-2a/c with restriction for non-aligned span case

 pdcch-BlindDetectionCA-Mixed-NonAlignedSpan-r16 SEQUENCE {

 pdcch-BlindDetectionCA1-r16 INTEGER (1..15),

 pdcch-BlindDetectionCA2-r16 INTEGER (1..15)

 } OPTIONAL

}

CA-ParametersNR-v1690 ::= SEQUENCE {

 csi-ReportingCrossPUCCH-Grp-r16 SEQUENCE {

 computationTimeForA-CSI-r16 ENUMERATED {sameAsNoCross, relaxed},

 additionalSymbols-r16 SEQUENCE {

 scs-15kHz-additionalSymbols-r16 ENUMERATED {s14, s28} OPTIONAL,

 scs-30kHz-additionalSymbols-r16 ENUMERATED {s14, s28} OPTIONAL,

 scs-60kHz-additionalSymbols-r16 ENUMERATED {s14, s28, s56} OPTIONAL,

 scs-120kHz-additionalSymbols-r16 ENUMERATED {s14, s28, s56} OPTIONAL

 } OPTIONAL,

 sp-CSI-ReportingOnPUCCH-r16 ENUMERATED {supported} OPTIONAL,

 sp-CSI-ReportingOnPUSCH-r16 ENUMERATED {supported} OPTIONAL,

 carrierTypePairList-r16 SEQUENCE (SIZE (1..maxCarrierTypePairList-r16)) OF CarrierTypePair-r16

 } OPTIONAL

}

CA-ParametersNR-v16a0 ::= SEQUENCE {

 pdcch-BlindDetectionMixedList-r16 SEQUENCE(SIZE(1..maxNrofPdcch-BlindDetectionMixed-1-r16)) OF PDCCH-BlindDetectionMixedList-r16

}

CA-ParametersNR-v1700 ::= SEQUENCE {

 -- R1 23-9-1: Basic Features of Further Enhanced Port-Selection Type II Codebook (FeType-II) per band combination information

 codebookParametersfetype2PerBC-r17 CodebookParametersfetype2PerBC-r17 OPTIONAL,

 -- R4 18-4: Support of enhanced Demodulation requirements for CA in HST SFN FR1

 demodulationEnhancementCA-r17 ENUMERATED {supported} OPTIONAL,

 -- R4 20-1: Maximum uplink duty cycle for NR inter-band CA power class 2

 maxUplinkDutyCycle-interBandCA-PC2-r17 ENUMERATED {n50, n60, n70, n80, n90, n100} OPTIONAL,

 -- R4 20-2: Maximum uplink duty cycle for NR SUL combination power class 2

 maxUplinkDutyCycle-SULcombination-PC2-r17 ENUMERATED {n50, n60, n70, n80, n90, n100} OPTIONAL,

 beamManagementType-CBM-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 25-18: Parallel PUCCH and PUSCH transmission across CCs in inter-band CA

 parallelTxPUCCH-PUSCH-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 23-9-5 Active CSI-RS resources and ports for mixed codebook types in any slot per band combination

 codebookComboParameterMixedTypePerBC-r17 CodebookComboParameterMixedTypePerBC-r17 OPTIONAL,

 -- R1 23-7-1 Basic Features of CSI Enhancement for Multi-TRP

 mTRP-CSI-EnhancementPerBC-r17 SEQUENCE {

 maxNumNZP-CSI-RS-r17 INTEGER (2..8),

 cSI-Report-mode-r17 ENUMERATED {mode1, mode2, both},

 supportedComboAcrossCCs-r17 SEQUENCE (SIZE (1..16)) OF CSI-MultiTRP-SupportedCombinations-r17,

 codebookMode-NCJT-r17 ENUMERATED{mode1,mode1And2}

 } OPTIONAL,

 -- R1 23-7-1b Active CSI-RS resources and ports in the presence of multi-TRP CSI

 codebookComboParameterMultiTRP-PerBC-r17 CodebookComboParameterMultiTRP-PerBC-r17 OPTIONAL,

 -- R1 24-8b: 32 DL HARQ processes for FR 2-2 - maximum number of component carriers

 maxCC-32-DL-HARQ-ProcessFR2-2-r17 ENUMERATED {n1, n2, n3, n4, n6, n8, n16, n32} OPTIONAL,

 -- R1 24-9b: 32 UL HARQ processes for FR 2-2 - maximum number of component carriers

 maxCC-32-UL-HARQ-ProcessFR2-2-r17 ENUMERATED {n1, n2, n3, n4, n5, n8, n16, n32} OPTIONAL,

 -- R1 34-2: Cross-carrier scheduling from SCell to PCell/PSCell (Type B)

 crossCarrierSchedulingSCell-SpCellTypeB-r17 CrossCarrierSchedulingSCell-SpCell-r17 OPTIONAL,

-- R1 34-1: Cross-carrier scheduling from SCell to PCell/PSCell with search space restrictions (Type A)

 crossCarrierSchedulingSCell-SpCellTypeA-r17 CrossCarrierSchedulingSCell-SpCell-r17 OPTIONAL,

 -- R1 34-1a: DCI formats on PCell/PSCell USS set(s) support

 dci-FormatsPCellPSCellUSS-Sets-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 34-3: Disabling scaling factor alpha when sSCell is deactivated

 disablingScalingFactorDeactSCell-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 34-4: Disabling scaling factor alpha when sSCell is deactivated

 disablingScalingFactorDormantSCell-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 34-5: Non-aligned frame boundaries between PCell/PSCell and sSCell

 non-AlignedFrameBoundaries-r17 SEQUENCE {

 scs15kHz-15kHz-r17 BIT STRING (SIZE (1..496)) OPTIONAL,

 scs15kHz-30kHz-r17 BIT STRING (SIZE (1..496)) OPTIONAL,

 scs15kHz-60kHz-r17 BIT STRING (SIZE (1..496)) OPTIONAL,

 scs30kHz-30kHz-r17 BIT STRING (SIZE (1..496)) OPTIONAL,

 scs30kHz-60kHz-r17 BIT STRING (SIZE (1..496)) OPTIONAL,

 scs60kHz-60kHz-r17 BIT STRING (SIZE (1..496)) OPTIONAL

 } OPTIONAL

}

CA-ParametersNR-v1720 ::= SEQUENCE {

 -- R1 39-1: Parallel SRS and PUCCH/PUSCH transmission across CCs in intra-band non-contiguous CA

 parallelTxSRS-PUCCH-PUSCH-intraBand-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 39-2: Parallel PRACH and SRS/PUCCH/PUSCH transmissions across CCs in intra-band non-contiguous CA

 parallelTxPRACH-SRS-PUCCH-PUSCH-intraBand-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 25-9: Semi-static PUCCH cell switching for a single PUCCH group only

 semiStaticPUCCH-CellSwitchSingleGroup-r17 SEQUENCE {

 pucch-Group-r17 ENUMERATED {primaryGroupOnly, secondaryGroupOnly, eitherPrimaryOrSecondaryGroup},

 pucch-Group-Config-r17 PUCCH-Group-Config-r17

 } OPTIONAL,

 -- R1 25-9a: Semi-static PUCCH cell switching for two PUCCH groups

 semiStaticPUCCH-CellSwitchTwoGroups-r17 SEQUENCE (SIZE (1..maxTwoPUCCH-Grp-ConfigList-r17)) OF TwoPUCCH-Grp-Configurations-r17 OPTIONAL,

 -- R1 25-10: PUCCH cell switching based on dynamic indication for same length of overlapping PUCCH slots/sub-slots for a single

 -- PUCCH group only

 dynamicPUCCH-CellSwitchSameLengthSingleGroup-r17 SEQUENCE {

 pucch-Group-r17 ENUMERATED {primaryGroupOnly, secondaryGroupOnly, eitherPrimaryOrSecondaryGroup},

 pucch-Group-Config-r17 PUCCH-Group-Config-r17

 } OPTIONAL,

 -- R1 25-10a: PUCCH cell switching based on dynamic indication for different length of overlapping PUCCH slots/sub-slots

 -- for a single PUCCH group only

 dynamicPUCCH-CellSwitchDiffLengthSingleGroup-r17 SEQUENCE {

 pucch-Group-r17 ENUMERATED {primaryGroupOnly, secondaryGroupOnly, eitherPrimaryOrSecondaryGroup},

 pucch-Group-Config-r17 PUCCH-Group-Config-r17

 } OPTIONAL,

 -- R1 25-10b: PUCCH cell switching based on dynamic indication for same length of overlapping PUCCH slots/sub-slots for two PUCCH

 -- groups

 dynamicPUCCH-CellSwitchSameLengthTwoGroups-r17 SEQUENCE (SIZE (1..maxTwoPUCCH-Grp-ConfigList-r17)) OF TwoPUCCH-Grp-Configurations-r17

 OPTIONAL,

 -- R1 25-10c: PUCCH cell switching based on dynamic indication for different length of overlapping PUCCH slots/sub-slots for two

 -- PUCCH groups

 dynamicPUCCH-CellSwitchDiffLengthTwoGroups-r17 SEQUENCE (SIZE (1..maxTwoPUCCH-Grp-ConfigList-r17)) OF TwoPUCCH-Grp-Configurations-r17

 OPTIONAL,

 -- R1 33-2a: ACK/NACK based HARQ-ACK feedback and RRC-based enabling/disabling ACK/NACK-based

 -- feedback for dynamic scheduling for multicast

 ack-NACK-FeedbackForMulticast-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 33-2d: PTP retransmission for multicast dynamic scheduling

 ptp-Retx-Multicast-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 33-4: NACK-only based HARQ-ACK feedback for RRC-based enabling/disabling multicast with ACK/NACK transforming

 nack-OnlyFeedbackForMulticast-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 33-4a: NACK-only based HARQ-ACK feedback for multicast corresponding to a specific sequence or a PUCCH transmission

 nack-OnlyFeedbackSpecificResourceForMulticast-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 33-5-1a: ACK/NACK based HARQ-ACK feedback and RRC-based enabling/disabling ACK/NACK-based feedback

 -- for SPS group-common PDSCH for multicast

 ack-NACK-FeedbackForSPS-Multicast-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 33-5-1d: PTP retransmission for SPS group-common PDSCH for multicast

 ptp-Retx-SPS-Multicast-r17 ENUMERATED {supported} OPTIONAL,

 -- R4 26-1: Higher Power Limit CA DC

 higherPowerLimit-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 39-4: Parallel MsgA and SRS/PUCCH/PUSCH transmissions across CCs in intra-band non-contiguous CA

 parallelTxMsgA-SRS-PUCCH-PUSCH-intraBand-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 24-11a: Capability on the number of CCs for monitoring a maximum number of BDs and non-overlapped CCEs per span when

 -- configured with DL CA with Rel-17 PDCCH monitoring capability on all the serving cells

 pdcch-MonitoringCA-r17 INTEGER (4..16) OPTIONAL,

 -- R1 24-11f: Capability on the number of CCs for monitoring a maximum number of BDs and non-overlapped CCEs for MCG and for SCG

 -- when configured for NR-DC operation with Rel-17 PDCCH monitoring capability on all the serving cells

 pdcch-BlindDetectionMCG-SCG-List-r17 SEQUENCE(SIZE(1..maxNrofPdcch-BlindDetection-r17)) OF PDCCH-BlindDetectionMCG-SCG-r17

 OPTIONAL,

 -- R1 24-11c: Number of carriers for CCE/BD scaling with DL CA with mix of Rel. 17 and Rel. 15 PDCCH monitoring capabilities on

 -- different Carriers

 -- R1 24-11g: Number of carriers for CCE/BD scaling for MCG and for SCG when configured for NR-DC operation with mix of Rel. 17 and

 -- Rel. 15 PDCCH monitoring capabilities on different carriers

 pdcch-BlindDetectionMixedList1-r17 SEQUENCE(SIZE(1..maxNrofPdcch-BlindDetection-r17)) OF PDCCH-BlindDetectionMixed-r17

 OPTIONAL,

 -- R1 24-11d: Number of carriers for CCE/BD scaling with DL CA with mix of Rel. 17 and Rel. 16 PDCCH monitoring capabilities on

 -- different Carriers

 -- R1 24-11h: Number of carriers for CCE/BD scaling for MCG and for SCG when configured for NR-DC operation with mix of Rel. 17 and

 -- Rel. 16 PDCCH monitoring capabilities on different carriers

 pdcch-BlindDetectionMixedList2-r17 SEQUENCE(SIZE(1..maxNrofPdcch-BlindDetection-r17)) OF PDCCH-BlindDetectionMixed-r17

 OPTIONAL,

 -- R1 24-11e: Number of carriers for CCE/BD scaling with DL CA with mix of Rel. 17, Rel. 16 and Rel. 15 PDCCH monitoring

 -- capabilities on different carriers

 -- R1 24-11i: Number of carriers for CCE/BD scaling for MCG and for SCG when configured for NR-DC operation with mix of Rel. 17,

 -- Rel. 16 and Rel. 15 PDCCH monitoring capabilities on different carriers

 pdcch-BlindDetectionMixedList3-r17 SEQUENCE(SIZE(1..maxNrofPdcch-BlindDetection-r17)) OF PDCCH-BlindDetectionMixed1-r17

 OPTIONAL

}

CA-ParametersNR-v1730 ::= SEQUENCE {

 -- R1 30-4a: DM-RS bundling for PUSCH repetition type A (per BC)

 dmrs-BundlingPUSCH-RepTypeAPerBC-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 30-4b: DM-RS bundling for PUSCH repetition type B(per BC)

 dmrs-BundlingPUSCH-RepTypeBPerBC-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 30-4c: DM-RS bundling for TB processing over multi-slot PUSCH(per BC)

 dmrs-BundlingPUSCH-multiSlotPerBC-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 30-4d: DMRS bundling for PUCCH repetitions(per BC)

 dmrs-BundlingPUCCH-RepPerBC-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 30-4g: Restart DM-RS bundling (per BC)

 dmrs-BundlingRestartPerBC-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 30-4h: DM-RS bundling for non-back-to-back transmission (per BC)

 dmrs-BundlingNonBackToBackTX-PerBC-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 39-3-1: Stay on the target CC for SRS carrier switching

 stayOnTargetCC-SRS-CarrierSwitch-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 33-3-3a: FDM-ed Type-1 and Type-2 HARQ-ACK codebooks for multiplexing HARQ-ACK for unicast and HARQ-ACK for multicast

 fdm-CodebookForMux-UnicastMulticastHARQ-ACK-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 33-3-3b: Mode 2 TDM-ed Type-1 and Type-2 HARQ-ACK codebook for multiplexing HARQ-ACK for unicast and HARQ-ACK for multicast

 mode2-TDM-CodebookForMux-UnicastMulticastHARQ-ACK-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 33-3-4: Mode 1 for type1 codebook generation

 mode1-ForType1-CodebookGeneration-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 33-5-1j: NACK-only based HARQ-ACK feedback for multicast corresponding to a specific sequence or a PUCCH transmission

 -- for SPS group-commmon PDSCH for multicast

 nack-OnlyFeedbackSpecificResourceForSPS-Multicast-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 33-8-2: Up to 2 PUCCH resources configuration for multicast feedback for dynamically scheduled multicast

 multiPUCCH-ConfigForMulticast-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 33-8-3: PUCCH resource configuration for multicast feedback for SPS GC-PDSCH

 pucch-ConfigForSPS-Multicast-r17 ENUMERATED {supported} OPTIONAL,

 -- The following parameter is associated with R1 33-2a, R1 33-3-3a, and R1 33-3-3b, and is not a RAN1 FG.

 maxNumberG-RNTI-HARQ-ACK-Codebook-r17 INTEGER (1..4) OPTIONAL,

 -- R1 33-3-5: Feedback multiplexing for unicast PDSCH and group-common PDSCH for multicast with same priority and different codebook

 -- type

 mux-HARQ-ACK-UnicastMulticast-r17 ENUMERATED {supported} OPTIONAL

}

CA-ParametersNR-v1740 ::= SEQUENCE {

 -- R1 33-5-1f: NACK-only based HARQ-ACK feedback for multicast RRC-based enabling/disabling NACK-only based feedback

 -- for SPS group-common PDSCH for multicast

 nack-OnlyFeedbackForSPS-Multicast-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 33-8-1: PUCCH resource configuration for multicast feedback for dynamically scheduled multicast

 singlePUCCH-ConfigForMulticast-r17 ENUMERATED {supported} OPTIONAL

}

CA-ParametersNR-v1760 ::= SEQUENCE {

 prioSCellPRACH-OverSP-PeriodicSRS-Support-r17 ENUMERATED {supported} OPTIONAL

}

CA-ParametersNR-v1770 ::= SEQUENCE {

 parallelTxPUCCH-PUSCH-SamePriority-r17 ENUMERATED {supported} OPTIONAL

}

CA-ParametersNR-v1780 ::= SEQUENCE {

 parallelTxPUCCH-PUSCH-SamePriority-r17 ENUMERATED {supported} OPTIONAL,

 supportedAggBW-FR1-r17 SEQUENCE {

 scalingFactorSCS-r17 ENUMERATED {true} OPTIONAL,

 supportedAggBW-FDD-DL-r17 SupportedAggBandwidth-r17 OPTIONAL,

 supportedAggBW-FDD-UL-r17 SupportedAggBandwidth-r17 OPTIONAL,

 supportedAggBW-TDD-DL-r17 SupportedAggBandwidth-r17 OPTIONAL,

 supportedAggBW-TDD-UL-r17 SupportedAggBandwidth-r17 OPTIONAL,

 supportedAggBW-TotalDL-r17 SupportedAggBandwidth-r17 OPTIONAL,

 supportedAggBW-TotalUL-r17 SupportedAggBandwidth-r17 OPTIONAL

 } OPTIONAL

}

CA-ParametersNR-v1800 ::= SEQUENCE {

 codebookParametersetype2DopplerCSI-PerBC-r18 CodebookParametersetype2DopplerCSI-r18 OPTIONAL,

 codebookParametersfetype2DopplerCSI-PerBC-r18 CodebookParametersfetype2DopplerCSI-r18 OPTIONAL,

 codebookParametersetype2CJT-PerBC-r18 CodebookParametersetype2CJT-r18 OPTIONAL,

 codebookParametersfetype2CJT-PerBC-r18 CodebookParametersfetype2CJT-r18 OPTIONAL,

 codebookComboParametersCJT-PerBC-r18 CodebookComboParametersCJT-r18 OPTIONAL,

 codebookParametersHARQ-ACK-PUSCH-PerBC-r18 CodebookParametersHARQ-ACK-PUSCH-r18 OPTIONAL,

 -- R1 40-2-8: Maximum number of TAGs across all CCs

 maxNumberTAG-AcrossCC-r18 INTEGER (2..4) OPTIONAL,

 -- R1 40-3-3-1: TDCP (Time Domain Channel Properties) report

 tdcp-ReportPerBC-r18 SEQUENCE {

 valueX-r18 INTEGER (1..2),

 maxNumberActiveResource-r18 INTEGER (2..32)

 } OPTIONAL,

 -- R1 40-3-3-5: Number of CSI-RS resources for TDCP

 tdcp-ResourcePerBC-r18 SEQUENCE {

 maxNumberConfigPerCC-r18 ENUMERATED {n2,n4,n6,n8,n10,n12},

 maxNumberConfigAcrossCC-r18 INTEGER (1..32),

 maxNumberSimultaneousPerCC-r18 ENUMERATED {n2, n4, n6, n8, n12, n16, n20, n24, n28, n32}

 } OPTIONAL,

 -- R1 40-3-1-24: Timeline for regular eType-II-CJT CSI, or for port selection FeType-II-CJT CSI

 timelineRelax-CJT-CSI-CA-r18 ENUMERATED {n0,n2} OPTIONAL,

 -- R1 42-1: Spatial domain adaptation with CSI feedback based on CSI report sub-configuration(s) for periodic CSI reporting

 spatialAdaptation-CSI-FeedbackPerBC-r18 SEQUENCE {

 maxNumberCSI-ResourceAcrossCC-r18 SEQUENCE {

 sdType1-Resource-r18 ENUMERATED {n5, n6, n7, n8, n9, n10, n12, n14, n16, n18, n20, n22,

 n24, n26, n28, n30, n32, n34, n36, n38, n40, n42, n44,

 n46, n48, n50, n52, n54, n56, n58, n60, n62, n64},

 sdType2-Resource-r18 ENUMERATED {n5, n6, n7, n8, n9, n10, n12, n14, n16, n18, n20, n22,

 n24, n26, n28, n30, n32, n34, n36, n38, n40, n42, n44,

 n46, n48, n50, n52, n54, n56, n58, n60, n62, n64}

 },

 maxNumberPortsAcrossCC-r18 SEQUENCE {

 sdType1-Resource-r18 INTEGER (1..32),

 sdType2-Resource-r18 INTEGER (1..32)

 }

 } OPTIONAL,

 -- R1 42-1a: Spatial domain adaptation with CSI feedback based on CSI report sub-configuration(s) for periodic CSI reporting on

 -- PUSCH

 spatialAdaptation-CSI-FeedbackPUSCH-PerBC-r18 SEQUENCE {

 maxNumberCSI-ResourceAcrossCC-r18 ENUMERATED {n5, n6, n7, n8, n9, n10, n12, n14, n16, n18, n20, n22, n24, n26, n28,

 n30, n32, n34, n36, n38, n40, n42, n44, n46, n48, n50, n52, n54,

 n56, n58, n60, n62, n64},

 maxNumberPortsAcrossCC-r18 INTEGER (1..32)

 } OPTIONAL,

 -- R1 42-1b: Spatial domain adaptation with CSI feedback based on CSI report sub-configuration(s) for aperiodic CSI reporting

 spatialAdaptation-CSI-FeedbackAperiodicPerBC-r18 SEQUENCE {

 maxNumberCSI-ResourceAcrossCC-r18 SEQUENCE {

 sdType1-Resource-r18 ENUMERATED {n5, n6, n7, n8, n9, n10, n12, n14, n16, n18, n20, n22,

 n24, n26, n28, n30, n32, n34, n36, n38, n40, n42, n44,

 n46, n48, n50, n52, n54, n56, n58, n60, n62, n64},

 sdType2-Resource-r18 ENUMERATED {n5, n6, n7, n8, n9, n10, n12, n14, n16, n18, n20, n22,

 n24, n26, n28, n30, n32, n34, n36, n38, n40, n42, n44,

 n46, n48, n50, n52, n54, n56, n58, n60, n62, n64}

 },

 maxNumberPortsAcrossCC-r18 SEQUENCE {

 sdType1-Resource-r18 INTEGER (1..32),

 sdType2-Resource-r18 INTEGER (1..32) }

 } OPTIONAL,

 -- R1 42-1c: Spatial domain adaptation with CSI feedback based on CSI report sub-configuration(s) for semi-persistent CSI

 -- reporting on PUCCH

 spatialAdaptation-CSI-FeedbackPUCCH-PerBC-r18 SEQUENCE {

 maxNumberCSI-ResourceAcrossCC-r18 ENUMERATED {n5, n6, n7, n8, n9, n10, n12, n14, n16, n18, n20, n22, n24, n26, n28,

 n30, n32, n34, n36, n38, n40, n42, n44, n46, n48, n50, n52, n54,

 n56, n58, n60, n62, n64},

 maxNumberPortsAcrossCC-r18 INTEGER (1..32)

 } OPTIONAL,

 -- R1 42-2: Spatial domain adaptation with CSI feedback based on CSI report sub-configuration(s) for periodic CSI reporting

 powerAdaptation-CSI-FeedbackPerBC-r18 SEQUENCE {

 maxNumberCSI-ResourceAcrossCC-r18 ENUMERATED {n5, n6, n7, n8, n9, n10, n12, n14, n16, n18, n20, n22, n24, n26, n28,

 n30, n32, n34, n36, n38, n40, n42, n44, n46, n48, n50, n52, n54,

 n56, n58, n60, n62, n64},

 maxNumberPortsAcrossCC-r18 INTEGER (1..32)

 } OPTIONAL,

 -- R1 42-2a: Spatial domain adaptation with CSI feedback based on CSI report sub-configuration(s) for periodic CSI reporting on PUSCH

 powerAdaptation-CSI-FeedbackPUSCH-PerBC-r18 SEQUENCE {

 maxNumberCSI-ResourceAcrossCC-r18 ENUMERATED {n5, n6, n7, n8, n9, n10, n12, n14, n16, n18, n20, n22, n24, n26, n28,

 n30, n32, n34, n36, n38, n40, n42, n44, n46, n48, n50, n52, n54,

 n56, n58, n60, n62, n64},

 maxNumberPortsAcrossCC-r18 INTEGER (1..32)

 } OPTIONAL,

 -- R1 42-2b: Spatial domain adaptation with CSI feedback based on CSI report sub-configuration(s) for aperiodic CSI reporting

 powerAdaptation-CSI-FeedbackAperiodicPerBC-r18 SEQUENCE {

 maxNumberCSI-ResourceAcrossCC-r18 ENUMERATED {n5, n6, n7, n8, n9, n10, n12, n14, n16, n18, n20, n22, n24, n26, n28,

 n30, n32, n34, n36, n38, n40, n42, n44, n46, n48, n50, n52, n54,

 n56, n58, n60, n62, n64},

 maxNumberPortsAcrossCC-r18 INTEGER (1..32)

 } OPTIONAL,

 -- R1 42-2c: Spatial domain adaptation with CSI feedback based on CSI report sub-configuration(s) for semi-persistent CSI

 -- reporting on PUCCH

 powerAdaptation-CSI-FeedbackPUCCH-PerBC-r18 SEQUENCE {

 maxNumberCSI-ResourceAcrossCC-r18 ENUMERATED {n5, n6, n7, n8, n9, n10, n12, n14, n16, n18, n20, n22, n24, n26, n28,

 n30, n32, n34, n36, n38, n40, n42, n44, n46, n48, n50, n52, n54,

 n56, n58, n60, n62, n64},

 maxNumberPortsAcrossCC-r18 INTEGER (1..32)

 } OPTIONAL,

 -- R1 42-7: Mixed codebook combination for spatial domain adaptation with CSI feedback based on CSI report sub-configuration(s),

 -- each containing one port subset configuration

 mixCodeBookSpatialAdaptationPerBC-r18 SEQUENCE (SIZE (1.. maxNrofCSI-RS-Resources)) OF SupportedCSI-RS-Resource OPTIONAL,

 -- R1 49-1: Multi-cell PDSCH scheduling by DCI format 1\_3 on a scheduling cell with same SCS between scheduling

 -- cell and cells in the set

 multiCell-PDSCH-DCI-1-3-SameSCS-r18 SEQUENCE {

 coScheduledCellSCS-r18 SEQUENCE {

 nonSharedSpectrum-fdd-fr1 ENUMERATED {supported} OPTIONAL,

 nonSharedSpectrum-tdd-fr1 ENUMERATED {supported} OPTIONAL,

 sharedSpectrum-tdd-fr1 ENUMERATED {supported} OPTIONAL,

 fr2-1 ENUMERATED {supported} OPTIONAL,

 fr2-2 ENUMERATED {supported} OPTIONAL

 },

 maxNumberCoScheduledCell-r18 INTEGER (2..4),

 maxNumberSetsOfCellAcrossPUCCH-Group-r18 INTEGER (1..8),

 maxNumberSetsOfCellScheduling-r18 INTEGER (1..4),

 harqFeedbackType-r18 ENUMERATED {type1, type2, type1And2},

 coScheduledCellIndicationScheme-r18 ENUMERATED {fdra,cellInd, both},

 supportOfSearchSpace-r18 ENUMERATED {supported} OPTIONAL,

 licensed-fdd-tdd-fr1-r18 ENUMERATED {supported} OPTIONAL

 } OPTIONAL,

 -- R1 49-1b: Multi-cell PDSCH scheduling by DCI format 1\_3 on a scheduling cell not included in a set of cells with different

 -- SCS/carrier type between scheduling cell and cells in the set

 multiCell-PDSCH-DCI-1-3-DiffSCS-r18 SEQUENCE {

 coScheduledCellSCS-r18 ENUMERATED {lowScheduling-highScheduled, highScheduling-lowScheduled, both},

 combinationCarrierType-r18 SEQUENCE (SIZE(1..maxSchedulingBandCombination-r18)) OF

 CombinationCarrierType-r18,

 maxNumberCoScheduledCell-r18 INTEGER (2..4),

 maxNumberSetsOfCellAcrossPUCCH-Group-r18 INTEGER (1..8),

 maxNumberSetsOfCellScheduling-r18 INTEGER (1..4),

 harqFeedbackType-r18 ENUMERATED {type1, type2, type1And2},

 coScheduledCellIndicationScheme-r18 ENUMERATED {fdra,cellInd, both}

 } OPTIONAL,

 -- R1 49-2: Multi-cell PUSCH scheduling by DCI format 0\_3 on a scheduling cell with same SCS between scheduling cell

 -- and cells in the set

 multiCell-PUSCH-DCI-0-3-SameSCS-r18 SEQUENCE {

 coScheduledCellSCS-r18 SEQUENCE {

 nonSharedSpectrum-fdd-fr1 ENUMERATED {supported} OPTIONAL,

 nonSharedSpectrum-tdd-fr1 ENUMERATED {supported} OPTIONAL,

 sharedSpectrum-tdd-fr1 ENUMERATED {supported} OPTIONAL,

 fr2-1 ENUMERATED {supported} OPTIONAL,

 fr2-2 ENUMERATED {supported} OPTIONAL

 }, maxNumberCoScheduledCell-r18 INTEGER (2..4),

 maxNumberSetsOfCellAcrossPUCCH-Group-r18 INTEGER (1..8),

 maxNumberSetsOfCellScheduling-r18 INTEGER (1..4),

 coScheduledCellIndicationScheme-r18 ENUMERATED {fdra,cellInd, both},

 supportOfSearchSpace-r18 ENUMERATED {supported} OPTIONAL,

 licensed-fdd-tdd-fr1-r18 ENUMERATED {supported} OPTIONAL

 } OPTIONAL,

 -- R1 49-2b: Multi-cell PUSCH scheduling by DCI format 0\_3 on a scheduling cell not included in a set of cells with

 -- different SCS/carrier type between scheduling cell and cells in the set

 multiCell-PUSCH-DCI-0-3-DiffSCS-r18 SEQUENCE {

 coScheduledCellSCS-r18 ENUMERATED {lowScheduling-highScheduled, highScheduling-lowScheduled, both},

 combinationCarrierType-r18 SEQUENCE (SIZE(1..maxSchedulingBandCombination-r18)) OF

 CombinationCarrierType-r18,

 maxNumberCoScheduledCell-r18 INTEGER (2..4),

 maxNumberSetsOfCellAcrossPUCCH-Group-r18 INTEGER (1..8),

 maxNumberSetsOfCellScheduling-r18 INTEGER (1..4),

 coScheduledCellIndicationScheme-r18 ENUMERATED {fdra,cellInd, both}

 } OPTIONAL,

 -- R1 49-3x: Advanced UE capability for larger number of unicast DL DCI

 advUnicastDCI-DL-r18 SEQUENCE {

 scs-15kHz-120kHz-r18 ENUMERATED {n2, n4} OPTIONAL,

 scs-15kHz-60kHz-r18 ENUMERATED {n2, n4} OPTIONAL,

 scs-30kHz-120kHz-r18 ENUMERATED {n2, n4} OPTIONAL,

 scs-15kHz-30kHz-r18 ENUMERATED {n2} OPTIONAL,

 scs-30kHz-60kHz-r18 ENUMERATED {n2} OPTIONAL,

 scs-60kHz-120kHz-r18 ENUMERATED {n2} OPTIONAL

 } OPTIONAL,

 -- R1 49-3y: Advanced UE capability for larger number of unicast UL DCI

 advUnicastDCI-UL-r18 SEQUENCE {

 scs-15kHz-120kHz-r18 ENUMERATED {n2, n4} OPTIONAL,

 scs-15kHz-60kHz-r18 ENUMERATED {n2, n4} OPTIONAL,

 scs-30kHz-120kHz-r18 ENUMERATED {n2, n4} OPTIONAL,

 scs-15kHz-30kHz-r18 ENUMERATED {n2} OPTIONAL,

 scs-30kHz-60kHz-r18 ENUMERATED {n2} OPTIONAL,

 scs-60kHz-120kHz-r18 ENUMERATED {n2} OPTIONAL

 } OPTIONAL,

 -- R1 49-5a: Trigger Type 3 HARQ CB based feedback using DCI format 1\_3

 type3HARQ-CB-DCI-1-3-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 49-5b: Trigger enhanced Type 3 HARQ CB based feedback using DCI format 1\_3

 type3EnhHARQ-CB-DCI-1-3-r18 SEQUENCE {

 numberOfCodebook-r18 ENUMERATED {n1, n2, n4, n8},

 maxNumberPUCCH-Trans-r18 INTEGER (1..7)

 } OPTIONAL,

 pdcch-MonitoringCA-Ext-r18 CHOICE {

 -- R1 55-6a: Capability on the number of CCs for monitoring a maximum number of BDs and non-overlapped CCEs per span when configured

 -- with DL CA with Rel-16 PDCCH monitoring capability on all the serving cells

 pdcch-MonitoringCA-r18 SEQUENCE {

 maxNumberOfMonitoringCC-r18 INTEGER (2..16),

 supportedSpanArrangement-r18 ENUMERATED {alignedOnly, alignedAndNonAligned}

 },

 } OPTIONAL,
 pdcch-BlindDetectionCA-MixedExt-r18 CHOICE {

 -- R1 55-6c: Number of carriers for CCE/BD scaling with DL CA with mix of Rel. 16 and Rel. 15 PDCCH monitoring capabilities on

 -- different carriers

 pdcch-BlindDetectionCA-Mixed-r18 SEQUENCE {

 blindDetectionCA-Mixed-r18 SEQUENCE(SIZE (1.. maxNrofPdcch-BlindDetectionMixed-1-r16)) OF

 PDCCH-BlindDetectionCA-MixedExt-r16,

 supportedSpanArrangement-r18 ENUMERATED{ alignedOnly, alignedAndNonAligned }

 },

 maxNrofPdcch-BlindDetectionMixed-1-r16

 PDCCH-BlindDetectionCA-MixedExt-r16

 } OPTIONAL,

 -- R1 55-6e: Number of carriers for CCE/BD scaling for MCG and for SCG when configured for NR-DC operation with mix of Rel. 16

 -- and Rel. 15 PDCCH monitoring capabilities on different carriers

 pdcch-BlindDetectionMCG-SCG-List-r18 SEQUENCE(SIZE (1.. maxNrofPdcch-BlindDetectionMixed-1-r16)) OF PDCCH-BlindDetectionMixed2-r18

 OPTIONAL,

 -- R4 33-1: Support of intra-band non-collocated NR CA operation

 intraBandNR-CA-non-collocated-r18 ENUMERATED {supported} OPTIONAL

}

CrossCarrierSchedulingSCell-SpCell-r17 ::= SEQUENCE {

 supportedSCS-Combinations-r17 SEQUENCE {

 scs15kHz-15kHz-r17 ENUMERATED {supported} OPTIONAL,

 scs15kHz-30kHz-r17 ENUMERATED {supported} OPTIONAL,

 scs15kHz-60kHz-r17 ENUMERATED {supported} OPTIONAL,

 scs30kHz-30kHz-r17 BIT STRING (SIZE (1..496)) OPTIONAL,

 scs30kHz-60kHz-r17 BIT STRING (SIZE (1..496)) OPTIONAL,

 scs60kHz-60kHz-r17 BIT STRING (SIZE (1..496)) OPTIONAL

 },

 pdcch-MonitoringOccasion-r17 ENUMERATED {val1, val2}

}

PDCCH-BlindDetectionMixedList-r16::= SEQUENCE {

 pdcch-BlindDetectionCA-MixedExt-r16 CHOICE {

 pdcch-BlindDetectionCA-Mixed-v16a0 PDCCH-BlindDetectionCA-MixedExt-r16,

 pdcch-BlindDetectionCA-Mixed-NonAlignedSpan-v16a0 PDCCH-BlindDetectionCA-MixedExt-r16

 } OPTIONAL,

 pdcch-BlindDetectionCG-UE-MixedExt-r16 SEQUENCE{

 pdcch-BlindDetectionMCG-UE-Mixed-v16a0 PDCCH-BlindDetectionCG-UE-MixedExt-r16,

 pdcch-BlindDetectionSCG-UE-Mixed-v16a0 PDCCH-BlindDetectionCG-UE-MixedExt-r16

 } OPTIONAL

}

PDCCH-BlindDetectionCA-MixedExt-r16 ::= SEQUENCE {

 pdcch-BlindDetectionCA1-r16 INTEGER (1..15),

 pdcch-BlindDetectionCA2-r16 INTEGER (1..15)

}

PDCCH-BlindDetectionCG-UE-MixedExt-r16 ::= SEQUENCE {

 pdcch-BlindDetectionCG-UE1-r16 INTEGER (0..15),

 pdcch-BlindDetectionCG-UE2-r16 INTEGER (0..15)

}

PDCCH-BlindDetectionMCG-SCG-r17 ::= SEQUENCE {

 pdcch-BlindDetectionMCG-UE-r17 INTEGER (1..15),

 pdcch-BlindDetectionSCG-UE-r17 INTEGER (1..15)

}

PDCCH-BlindDetectionMixed-r17::= SEQUENCE {

 pdcch-BlindDetectionCA-Mixed-r17 PDCCH-BlindDetectionCA-Mixed-r17 OPTIONAL,

 pdcch-BlindDetectionCG-UE-Mixed-r17 SEQUENCE{

 pdcch-BlindDetectionMCG-UE-Mixed-v17 PDCCH-BlindDetectionCG-UE-Mixed-r17,

 pdcch-BlindDetectionSCG-UE-Mixed-v17 PDCCH-BlindDetectionCG-UE-Mixed-r17

 } OPTIONAL

}

PDCCH-BlindDetectionCG-UE-Mixed-r17 ::= SEQUENCE {

 pdcch-BlindDetectionCG-UE1-r17 INTEGER (0..15),

 pdcch-BlindDetectionCG-UE2-r17 INTEGER (0..15)

}

PDCCH-BlindDetectionCA-Mixed-r17 ::= SEQUENCE {

 pdcch-BlindDetectionCA1-r17 INTEGER (1..15) OPTIONAL,

 pdcch-BlindDetectionCA2-r17 INTEGER (1..15) OPTIONAL

}

PDCCH-BlindDetectionMixed1-r17::= SEQUENCE {

 pdcch-BlindDetectionCA-Mixed1-r17 PDCCH-BlindDetectionCA-Mixed1-r17 OPTIONAL,

 pdcch-BlindDetectionCG-UE-Mixed1-r17 SEQUENCE{

 pdcch-BlindDetectionMCG-UE-Mixed1-v17 PDCCH-BlindDetectionCG-UE-Mixed1-r17,

 pdcch-BlindDetectionSCG-UE-Mixed1-v17 PDCCH-BlindDetectionCG-UE-Mixed1-r17

 } OPTIONAL

}

PDCCH-BlindDetectionCG-UE-Mixed1-r17 ::= SEQUENCE {

 pdcch-BlindDetectionCG-UE1-r17 INTEGER (0..15),

 pdcch-BlindDetectionCG-UE2-r17 INTEGER (0..15),

 pdcch-BlindDetectionCG-UE3-r17 INTEGER (0..15)

}

PDCCH-BlindDetectionCA-Mixed1-r17 ::= SEQUENCE {

 pdcch-BlindDetectionCA1-r17 INTEGER (1..15) OPTIONAL,

 pdcch-BlindDetectionCA2-r17 INTEGER (1..15) OPTIONAL,

 pdcch-BlindDetectionCA3-r17 INTEGER (1..15) OPTIONAL

}

PDCCH-BlindDetectionMixed2-r18 ::= SEQUENCE{

 pdcch-BlindDetectionMCG-UE-Mixed-r18 PDCCH-BlindDetectionCG-UE-MixedExt-r16,

 pdcch-BlindDetectionSCG-UE-Mixed-r18 PDCCH-BlindDetectionCG-UE-MixedExt-r16

}

SimulSRS-ForAntennaSwitching-r16 ::= SEQUENCE {

 supportSRS-xTyR-xLessThanY-r16 ENUMERATED {supported} OPTIONAL,

 supportSRS-xTyR-xEqualToY-r16 ENUMERATED {supported} OPTIONAL,

 supportSRS-AntennaSwitching-r16 ENUMERATED {supported} OPTIONAL

}

TwoPUCCH-Grp-Configurations-r16 ::= SEQUENCE {

 pucch-PrimaryGroupMapping-r16 TwoPUCCH-Grp-ConfigParams-r16,

 pucch-SecondaryGroupMapping-r16 TwoPUCCH-Grp-ConfigParams-r16

}

TwoPUCCH-Grp-Configurations-r17 ::= SEQUENCE {

 primaryPUCCH-GroupConfig-r17 PUCCH-Group-Config-r17,

 secondaryPUCCH-GroupConfig-r17 PUCCH-Group-Config-r17

}

TwoPUCCH-Grp-ConfigParams-r16 ::= SEQUENCE {

 pucch-GroupMapping-r16 PUCCH-Grp-CarrierTypes-r16,

 pucch-TX-r16 PUCCH-Grp-CarrierTypes-r16

}

CarrierTypePair-r16 ::= SEQUENCE {

 carrierForCSI-Measurement-r16 PUCCH-Grp-CarrierTypes-r16,

 carrierForCSI-Reporting-r16 PUCCH-Grp-CarrierTypes-r16

}

PUCCH-Grp-CarrierTypes-r16 ::= SEQUENCE {

 fr1-NonSharedTDD-r16 ENUMERATED {supported} OPTIONAL,

 fr1-SharedTDD-r16 ENUMERATED {supported} OPTIONAL,

 fr1-NonSharedFDD-r16 ENUMERATED {supported} OPTIONAL,

 fr2-r16 ENUMERATED {supported} OPTIONAL

}

PUCCH-Group-Config-r17 ::= SEQUENCE {

 fr1-FR1-NonSharedTDD-r17 ENUMERATED {supported} OPTIONAL,

 fr2-FR2-NonSharedTDD-r17 ENUMERATED {supported} OPTIONAL,

 fr1-FR2-NonSharedTDD-r17 ENUMERATED {supported} OPTIONAL

}

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}

}

-- TAG-CA-PARAMETERSNR-STOP

-- ASN1STOP

|  |
| --- |
| *CA-ParametersNR* field description |
| ***codebookParametersPerBC***For a given supported band combination, this field indicates the alternative list of *SupportedCSI-RS-Resource* supported for each codebook type, amongst the supported CSI-RS resources included in *codebookParametersPerBand* in *MIMO-ParametersPerBand*. |

#### – *CA-ParametersNRDC*

The IE *CA-ParametersNRDC* contains dual connectivity related capabilities that are defined per band combination.

*CA-ParametersNRDC* information element

-- ASN1START

-- TAG-CA-PARAMETERS-NRDC-START

CA-ParametersNRDC ::= SEQUENCE {

 ca-ParametersNR-ForDC CA-ParametersNR OPTIONAL,

 ca-ParametersNR-ForDC-v1540 CA-ParametersNR-v1540 OPTIONAL,

 ca-ParametersNR-ForDC-v1550 CA-ParametersNR-v1550 OPTIONAL,

 ca-ParametersNR-ForDC-v1560 CA-ParametersNR-v1560 OPTIONAL,

 featureSetCombinationDC FeatureSetCombinationId OPTIONAL

}

CA-ParametersNRDC-v15g0 ::= SEQUENCE {

 ca-ParametersNR-ForDC-v15g0 CA-ParametersNR-v15g0 OPTIONAL

}

CA-ParametersNRDC-v1610 ::= SEQUENCE {

 -- R1 18-1: Semi-static power sharing mode1 between MCG and SCG cells of same FR for NR dual connectivity

 intraFR-NR-DC-PwrSharingMode1-r16 ENUMERATED {supported} OPTIONAL,

 -- R1 18-1a: Semi-static power sharing mode 2 between MCG and SCG cells of same FR for NR dual connectivity

 intraFR-NR-DC-PwrSharingMode2-r16 ENUMERATED {supported} OPTIONAL,

 -- R1 18-1b: Dynamic power sharing between MCG and SCG cells of same FR for NR dual connectivity

 intraFR-NR-DC-DynamicPwrSharing-r16 ENUMERATED {short, long} OPTIONAL,

 asyncNRDC-r16 ENUMERATED {supported} OPTIONAL

}

CA-ParametersNRDC-v1630 ::= SEQUENCE {

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

 ca-ParametersNR-ForDC-v1630 CA-ParametersNR-v1630 OPTIONAL

}

CA-ParametersNRDC-v1640 ::= SEQUENCE {

 ca-ParametersNR-ForDC-v1640 CA-ParametersNR-v1640 OPTIONAL

}

CA-ParametersNRDC-v1650 ::= SEQUENCE {

 supportedCellGrouping-r16 BIT STRING (SIZE (1..maxCellGroupings-r16)) OPTIONAL

}

CA-ParametersNRDC-v16a0 ::= SEQUENCE {

 ca-ParametersNR-ForDC-v16a0 CA-ParametersNR-v16a0 OPTIONAL

}

CA-ParametersNRDC-v1700 ::= SEQUENCE {

 -- R1 31-9: Indicates the support of simultaneous transmission and reception of an IAB-node from multiple parent nodes

 simultaneousRxTx-IAB-MultipleParents-r17 ENUMERATED {supported} OPTIONAL,

 condPSCellAdditionNRDC-r17 ENUMERATED {supported} OPTIONAL,

 scg-ActivationDeactivationNRDC-r17 ENUMERATED {supported} OPTIONAL,

 scg-ActivationDeactivationResumeNRDC-r17 ENUMERATED {supported} OPTIONAL,

 beamManagementType-CBM-r17 ENUMERATED {supported} OPTIONAL

}

CA-ParametersNRDC-v1720 ::= SEQUENCE {

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

 ca-ParametersNR-ForDC-v1720 CA-ParametersNR-v1720 OPTIONAL

}

CA-ParametersNRDC-v1730 ::= SEQUENCE {

 ca-ParametersNR-ForDC-v1730 CA-ParametersNR-v1730 OPTIONAL

}

CA-ParametersNRDC-v1760 ::= SEQUENCE {

 ca-ParametersNR-ForDC-v1760 CA-ParametersNR-v1760

}

CA-ParametersNRDC-v1780 ::= SEQUENCE {

 ca-ParametersNR-ForDC-v1780 CA-ParametersNR-v1780 OPTIONAL

}

CA-ParametersNRDC-v1800 ::= SEQUENCE {

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

 -- R1 55-6d: Capability on the number of CCs for monitoring a maximum number of BDs and non-overlapped CCEs per span for MCG and for

 -- SCG when configured for NR-DC operation with Rel-16 PDCCH monitoring on all the serving cells

 pdcch-BlindDetectionNRDC-r18 SEQUENCE(SIZE (1.. maxNrofPdcch-BlindDetectionMixed-1-r16)) OF PDCCH-BlindDetectionMixed1-r18

 OPTIONAL

}

PDCCH-BlindDetectionMixed1-r18::= SEQUENCE {

 pdcch-BlindDetectionCG-UE-Mixed-r18 SEQUENCE{

 pdcch-BlindDetectionMCG-UE-Mixed-r18 INTEGER (1..15),

 pdcch-BlindDetectionSCG-UE-Mixed-r18 INTEGER (1..15)

 }

}

-- TAG-CA-PARAMETERS-NRDC-STOP

-- ASN1STOP

|  |
| --- |
| *CA-ParametersNRDC* field descriptions |
| ***ca-ParametersNR-forDC (with and without suffix)***If this field is present for a band combination, it reports the UE capabilities when NR-DC is configured with the band combination. If a version of this field (i.e., with or without suffix) is absent for a band combination, the corresponding *ca-ParametersNR* field version in *BandCombination* is applicable to the UE configured with NR-DC for the band combination. If a version of this field (i.e., with or without suffix) is present for a band combination but does not contain any parameters, the UE does not support the corresponding field version when configured with NR-DC for the band combination. |
| ***featureSetCombinationDC***If this field is present for a band combination, it reports the feature set combination supported for the band combination when NR-DC is configured. If this field is absent for a band combination, the *featureSetCombination* in *BandCombination* (without suffix) is applicable to the UE configured with NR-DC for the band combination. |

#### – *FeatureSetDownlink*

The IE *FeatureSetDownlink* indicates a set of features that the UE supports on the carriers corresponding to one band entry in a band combination.

*FeatureSetDownlink* information element

-- ASN1START

-- TAG-FEATURESETDOWNLINK-START

FeatureSetDownlink ::= SEQUENCE {

 featureSetListPerDownlinkCC SEQUENCE (SIZE (1..maxNrofServingCells)) OF FeatureSetDownlinkPerCC-Id,

 intraBandFreqSeparationDL FreqSeparationClass OPTIONAL,

 scalingFactor ENUMERATED {f0p4, f0p75, f0p8} OPTIONAL,

 dummy8 ENUMERATED {supported} OPTIONAL,

 scellWithoutSSB ENUMERATED {supported} OPTIONAL,

 csi-RS-MeasSCellWithoutSSB ENUMERATED {supported} OPTIONAL,

 dummy1 ENUMERATED {supported} OPTIONAL,

 type1-3-CSS ENUMERATED {supported} OPTIONAL,

 pdcch-MonitoringAnyOccasions ENUMERATED {withoutDCI-Gap, withDCI-Gap} OPTIONAL,

 dummy2 ENUMERATED {supported} OPTIONAL,

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

 searchSpaceSharingCA-DL ENUMERATED {supported} OPTIONAL,

 timeDurationForQCL SEQUENCE {

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

 scs-120kHz ENUMERATED {s14, s28} OPTIONAL

 } OPTIONAL,

 pdsch-ProcessingType1-DifferentTB-PerSlot SEQUENCE {

 scs-15kHz ENUMERATED {upto2, upto4, upto7} OPTIONAL,

 scs-30kHz ENUMERATED {upto2, upto4, upto7} OPTIONAL,

 scs-60kHz ENUMERATED {upto2, upto4, upto7} OPTIONAL,

 scs-120kHz ENUMERATED {upto2, upto4, upto7} OPTIONAL

 } OPTIONAL,

 dummy3 DummyA OPTIONAL,

 dummy4 SEQUENCE (SIZE (1.. maxNrofCodebooks)) OF DummyB OPTIONAL,

 dummy5 SEQUENCE (SIZE (1.. maxNrofCodebooks)) OF DummyC OPTIONAL,

 dummy6 SEQUENCE (SIZE (1.. maxNrofCodebooks)) OF DummyD OPTIONAL,

 dummy7 SEQUENCE (SIZE (1.. maxNrofCodebooks)) OF DummyE OPTIONAL

}

FeatureSetDownlink-v1540 ::= SEQUENCE {

 oneFL-DMRS-TwoAdditionalDMRS-DL ENUMERATED {supported} OPTIONAL,

 additionalDMRS-DL-Alt ENUMERATED {supported} OPTIONAL,

 twoFL-DMRS-TwoAdditionalDMRS-DL ENUMERATED {supported} OPTIONAL,

 oneFL-DMRS-ThreeAdditionalDMRS-DL ENUMERATED {supported} OPTIONAL,

 pdcch-MonitoringAnyOccasionsWithSpanGap SEQUENCE {

 scs-15kHz ENUMERATED {set1, set2, set3} OPTIONAL,

 scs-30kHz ENUMERATED {set1, set2, set3} OPTIONAL,

 scs-60kHz ENUMERATED {set1, set2, set3} OPTIONAL,

 scs-120kHz ENUMERATED {set1, set2, set3} OPTIONAL

 } OPTIONAL,

 pdsch-SeparationWithGap ENUMERATED {supported} OPTIONAL,

 pdsch-ProcessingType2 SEQUENCE {

 scs-15kHz ProcessingParameters OPTIONAL,

 scs-30kHz ProcessingParameters OPTIONAL,

 scs-60kHz ProcessingParameters OPTIONAL

 } OPTIONAL,

 pdsch-ProcessingType2-Limited SEQUENCE {

 differentTB-PerSlot-SCS-30kHz ENUMERATED {upto1, upto2, upto4, upto7}

 } OPTIONAL,

 dl-MCS-TableAlt-DynamicIndication ENUMERATED {supported} OPTIONAL

}

FeatureSetDownlink-v15a0 ::= SEQUENCE {

 supportedSRS-Resources SRS-Resources OPTIONAL

}

FeatureSetDownlink-v1610 ::= SEQUENCE {

 -- R1 22-4e/4f/4g/4h: CBG based reception for DL with unicast PDSCH(s) per slot per CC with UE processing time Capability 1

 cbgPDSCH-ProcessingType1-DifferentTB-PerSlot-r16 SEQUENCE {

 scs-15kHz-r16 ENUMERATED {one, upto2, upto4, upto7} OPTIONAL,

 scs-30kHz-r16 ENUMERATED {one, upto2, upto4, upto7} OPTIONAL,

 scs-60kHz-r16 ENUMERATED {one, upto2, upto4, upto7} OPTIONAL,

 scs-120kHz-r16 ENUMERATED {one, upto2, upto4, upto7} OPTIONAL

 } OPTIONAL,

 -- R1 22-3e/3f/3g/3h: CBG based reception for DL with unicast PDSCH(s) per slot per CC with UE processing time Capability 2

 cbgPDSCH-ProcessingType2-DifferentTB-PerSlot-r16 SEQUENCE {

 scs-15kHz-r16 ENUMERATED {one, upto2, upto4, upto7} OPTIONAL,

 scs-30kHz-r16 ENUMERATED {one, upto2, upto4, upto7} OPTIONAL,

 scs-60kHz-r16 ENUMERATED {one, upto2, upto4, upto7} OPTIONAL,

 scs-120kHz-r16 ENUMERATED {one, upto2, upto4, upto7} OPTIONAL

 } OPTIONAL,

 intraFreqDAPS-r16 SEQUENCE {

 intraFreqDiffSCS-DAPS-r16 ENUMERATED {supported} OPTIONAL,

 intraFreqAsyncDAPS-r16 ENUMERATED {supported} OPTIONAL

 } OPTIONAL,

 intraBandFreqSeparationDL-v1620 FreqSeparationClassDL-v1620 OPTIONAL,

 intraBandFreqSeparationDL-Only-r16 FreqSeparationClassDL-Only-r16 OPTIONAL,

 -- R1 11-2: Rel-16 PDCCH monitoring capability

 pdcch-Monitoring-r16 SEQUENCE {

 pdsch-ProcessingType1-r16 SEQUENCE {

 scs-15kHz-r16 PDCCH-MonitoringOccasions-r16 OPTIONAL,

 scs-30kHz-r16 PDCCH-MonitoringOccasions-r16 OPTIONAL

 } OPTIONAL,

 pdsch-ProcessingType2-r16 SEQUENCE {

 scs-15kHz-r16 PDCCH-MonitoringOccasions-r16 OPTIONAL,

 scs-30kHz-r16 PDCCH-MonitoringOccasions-r16 OPTIONAL

 } OPTIONAL

 } OPTIONAL,

 -- R1 11-2b: Mix of Rel. 16 PDCCH monitoring capability and Rel. 15 PDCCH monitoring capability on different carriers

 pdcch-MonitoringMixed-r16 ENUMERATED {supported} OPTIONAL,

 -- R1 18-5c: Processing up to X unicast DCI scheduling for DL per scheduled CC

 crossCarrierSchedulingProcessing-DiffSCS-r16 SEQUENCE {

 scs-15kHz-120kHz-r16 ENUMERATED {n1,n2,n4} OPTIONAL,

 scs-15kHz-60kHz-r16 ENUMERATED {n1,n2,n4} OPTIONAL,

 scs-30kHz-120kHz-r16 ENUMERATED {n1,n2,n4} OPTIONAL,

 scs-15kHz-30kHz-r16 ENUMERATED {n2} OPTIONAL,

 scs-30kHz-60kHz-r16 ENUMERATED {n2} OPTIONAL,

 scs-60kHz-120kHz-r16 ENUMERATED {n2} OPTIONAL

 } OPTIONAL,

 -- R1 16-2b-1: Support of single-DCI based SDM scheme

 singleDCI-SDM-scheme-r16 ENUMERATED {supported} OPTIONAL

}

FeatureSetDownlink-v1700 ::= SEQUENCE {

 -- R1 36-2: Scaling factor to be applied to 1024QAM for FR1

 scalingFactor-1024QAM-FR1-r17 ENUMERATED {f0p4, f0p75, f0p8} OPTIONAL,

 -- R1 24 feature for existing UE cap to include new SCS

 timeDurationForQCL-v1710 SEQUENCE {

 scs-480kHz ENUMERATED {s56, s112} OPTIONAL,

 scs-960kHz ENUMERATED {s112, s224} OPTIONAL

 } OPTIONAL,

 -- R1 23-6-1 SFN scheme A (scheme 1) for PDSCH and PDCCH

 sfn-SchemeA-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 23-6-1-1 SFN scheme A (scheme 1) for PDCCH only

 sfn-SchemeA-PDCCH-only-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 23-6-1a Dynamic switching - scheme A

 sfn-SchemeA-DynamicSwitching-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 23-6-1b SFN scheme A (scheme 1) for PDSCH only

 sfn-SchemeA-PDSCH-only-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 23-6-2 SFN scheme B (TRP based pre-compensation) for PDSCH and PDCCH

 sfn-SchemeB-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 23-6-2a Dynamic switching - scheme B

 sfn-SchemeB-DynamicSwitching-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 23-6-2b SFN scheme B (TRP based pre-compensation) for PDSCH only

 sfn-SchemeB-PDSCH-only-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 23-2-1d PDCCH repetition for Case 2 PDCCH monitoring with a span gap

 mTRP-PDCCH-Case2-1SpanGap-r17 SEQUENCE {

 scs-15kHz-r17 PDCCH-RepetitionParameters-r17 OPTIONAL,

 scs-30kHz-r17 PDCCH-RepetitionParameters-r17 OPTIONAL,

 scs-60kHz-r17 PDCCH-RepetitionParameters-r17 OPTIONAL,

 scs-120kHz-r17 PDCCH-RepetitionParameters-r17 OPTIONAL

 } OPTIONAL,

 -- R1 23-2-1e PDCCH repetition for Rel-16 PDCCH monitoring

 mTRP-PDCCH-legacyMonitoring-r17 SEQUENCE {

 scs-15kHz-r17 PDCCH-RepetitionParameters-r17 OPTIONAL,

 scs-30kHz-r17 PDCCH-RepetitionParameters-r17 OPTIONAL

 } OPTIONAL,

 -- R1 23-2-4 Simultaneous configuration of PDCCH repetition and multi-DCI based multi-TRP

 mTRP-PDCCH-multiDCI-multiTRP-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 33-2: Dynamic scheduling for multicast for PCell

 dynamicMulticastPCell-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 23-2-1 PDCCH repetition

 mTRP-PDCCH-Repetition-r17 SEQUENCE {

 numBD-twoPDCCH-r17 INTEGER (2..3),

 maxNumOverlaps-r17 ENUMERATED {n1,n2,n3,n5,n10,n20,n40}

 } OPTIONAL

}

FeatureSetDownlink-v1720 ::= SEQUENCE {

 -- R1 25-19: RTT-based Propagation delay compensation based on CSI-RS for tracking and SRS

 rtt-BasedPDC-CSI-RS-ForTracking-r17 ENUMERATED {supported} OPTIONAL,

 -- R1 25-19a: RTT-based Propagation delay compensation based on DL PRS for RTT-based PDC and SRS

 rtt-BasedPDC-PRS-r17 SEQUENCE {

 maxNumberPRS-Resource-r17 ENUMERATED {n1, n2, n4, n8, n16, n32, n64},

 maxNumberPRS-ResourceProcessedPerSlot-r17 SEQUENCE {

 scs-15kHz-r17 ENUMERATED {n1, n2, n4, n6, n8, n12, n16, n24, n32, n48, n64} OPTIONAL,

 scs-30kHz-r17 ENUMERATED {n1, n2, n4, n6, n8, n12, n16, n24, n32, n48, n64} OPTIONAL,

 scs-60kHz-r17 ENUMERATED {n1, n2, n4, n6, n8, n12, n16, n24, n32, n48, n64} OPTIONAL,

 scs-120kHz-r17 ENUMERATED {n1, n2, n4, n6, n8, n12, n16, n24, n32, n48, n64} OPTIONAL

 }

 } OPTIONAL,

 -- R1 33-5-1: SPS group-common PDSCH for multicast on PCell

 sps-Multicast-r17 ENUMERATED {supported} OPTIONAL

}

FeatureSetDownlink-v1730 ::= SEQUENCE {

 -- R1 25-19b: Support of PRS as spatial relation RS for SRS

 prs-AsSpatialRelationRS-For-SRS-r17 ENUMERATED {supported} OPTIONAL

}

FeatureSetDownlink-v1800 ::= SEQUENCE {

 -- R1 40-4-1: Basic feature of Rel.18 enhanced DMRS ports for PDSCH for mapping type A

 pdsch-TypeA-DMRS-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 40-4-1a: Basic feature of Rel.18 enhanced DMRS ports for PDSCH for mapping type B

 pdsch-TypeB-DMRS-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 40-4-1b: 1 symbol FL DMRS and 2 additional DMRS symbols for more than one port for Rel.18 enhanced DMRS ports for PDSCH

 pdsch-1SymbolFL-DMRS-Addition2Symbol-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 40-4-1c: Alternative additional DMRS position for co-existence with LTE CRS for Rel.18 enhanced DMRS ports for PDSCH

 pdsch-AlternativeDMRS-Coexistence-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 40-4-1d: 2 symbols FL-DMRS for Rel.18 enhanced DMRS ports for PDSCH

 pdsch-2SymbolFL-DMRS-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 40-4-1e: 2-symbol FL DMRS + one additional 2-symbols DMRS for Rel.18 enhanced DMRS ports for PDSCH

 pdsch-2SymbolFL-DMRS-Addition2Symbol-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 40-4-1f: 1 symbol FL DMRS and 3 additional DMRS symbols for Rel.18 enhanced DMRS ports for PDSCH

 pdsch-1SymbolFL-DMRS-Addition3Symbol-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 40-4-1g: DMRS type for Rel.18 enhanced DMRS ports for PDSCH

 pdsch-DMRS-Type-r18 ENUMERATED {etype1, etype1And2} OPTIONAL,

 -- R1 40-4-1h: 1 port DL PTRS for Rel.18 enhanced DMRS ports for PDSCH with rank 1-8

 pdsch-1PortDL-PTRS-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 40-4-1i: 2 port DL PTRS for Rel.18 enhanced DMRS ports for PDSCH with rank 1-8

 pdsch-2PortDL-PTRS-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 40-4-1j: Support 1 symbol FL DMRS and 2 additional DMRS symbols for at least one port for mapping type A

 mappingTypeA-1SymbolFL-DMRS-Addition2Symbol-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 40-4-4: Reception of PDSCH without the scheduling restriction for Rel.18 eType1 DMRS ports

 pdsch-ReceptionWithoutSchedulingRestriction-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 40-4-4a: Reception of PDSCH without the scheduling restriction for Rel.18 eType1 DMRS ports for PDSCH with fdmSchemeA

 pdsch-ReceptionSchemeA-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 40-4-4b: Reception of PDSCH without the scheduling restriction for Rel.18 eType1 DMRS ports for PDSCH with fdmSchemeB

 pdsch-ReceptionSchemeB-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 40-4-5: Rel-18 DL DMRS with single DCI based M-TRP

 dmrs-MultiTRP-SingleDCI-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 40-4-5a: Additional row(s) for antenna ports (0,2,3) for Rel.18 DMRS ports for single-DCI based M-TRP

 dmrs-MultiTRP-AddtionRows-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 40-4-7: Rel-18 DL DMRS with M-DCI based M-TRP

 dmrs-MultiTRP-MultiDCI-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 40-4-12: Support of Rel-18 DMRS and PDSCH processing capability 2 simultaneously

 simulDMRS-PDSCH-r18 SEQUENCE {

 scs-15kHz-r18 INTEGER (0..4) OPTIONAL,

 scs-30kHz-r18 INTEGER (0..5) OPTIONAL,

 scs-60kHz-r18 INTEGER (0..7) OPTIONAL

 } OPTIONAL,

 -- R1 53-1: Support RLM/BM/BFD and gapless L3 intra-frequency measurements based on CD-SSB outside active BWP without interruptions

 bwpOperationMeasWithoutInterrupt-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 55-6: (2, 2) span-based PDCCH monitoring with additional restriction(s)

 pdcch-MonitoringSpan2-2-r18 SEQUENCE{

 pdsch-ProcessingType1-r18 SEQUENCE{

 scs-15kHz-r18 ENUMERATED {supported} OPTIONAL,

 scs-30kHz-r18 ENUMERATED {supported} OPTIONAL

 },

 pdsch-ProcessingType2-r18 SEQUENCE{

 scs-15kHz-r18 ENUMERATED {supported} OPTIONAL,

 scs-30kHz-r18 ENUMERATED {supported} OPTIONAL

 }

 } OPTIONAL,

 -- R1 55-6b: Mix of Rel-16 PDCCH monitoring capability and Rel. 15 PDCCH monitoring capability on different carriers

 pdcch-MonitoringMixed-r18 ENUMERATED {supported} OPTIONAL,

 -- R1 55-6h: PDCCH repetition for Rel-16 PDCCH monitoring

 mTRP-PDCCH-legacyMonitoring-r18 SEQUENCE {

 scs-15kHz-r18 PDCCH-RepetitionParameters-r17 OPTIONAL,

 scs-30kHz-r18 PDCCH-RepetitionParameters-r17 OPTIONAL

 } OPTIONAL,

 -- R4 42-1: Support of SCell without SS/PBCH block for inter-band CA

 scellWithoutSSB-InterBandCA-r18 ENUMERATED {supported} OPTIONAL,

 multicastInactive-r18 ENUMERATED {supported} OPTIONAL,

 thresholdBasedMulticastResume-r18 ENUMERATED {supported} OPTIONAL

}

PDCCH-MonitoringOccasions-r16 ::= SEQUENCE {

 period7span3-r16 ENUMERATED {supported} OPTIONAL,

 period4span3-r16 ENUMERATED {supported} OPTIONAL,

 period2span2-r16 ENUMERATED {supported} OPTIONAL

}

PDCCH-RepetitionParameters-r17 ::= SEQUENCE {

 supportedMode-r17 ENUMERATED {intra-span, inter-span, both},

 limitX-PerCC-r17 ENUMERATED {n4, n8, n16, n32, n44, n64, nolimit} OPTIONAL,

 limitX-AcrossCC-r17 ENUMERATED {n4, n8, n16, n32, n44, n64, n128, n256, n512, nolimit} OPTIONAL

}

DummyA ::= SEQUENCE {

 maxNumberNZP-CSI-RS-PerCC INTEGER (1..32),

 maxNumberPortsAcrossNZP-CSI-RS-PerCC ENUMERATED {p2, p4, p8, p12, p16, p24, p32, p40, p48, p56, p64, p72, p80,

 p88, p96, p104, p112, p120, p128, p136, p144, p152, p160, p168,

 p176, p184, p192, p200, p208, p216, p224, p232, p240, p248, p256},

 maxNumberCS-IM-PerCC ENUMERATED {n1, n2, n4, n8, n16, n32},

 maxNumberSimultaneousCSI-RS-ActBWP-AllCC ENUMERATED {n5, n6, n7, n8, n9, n10, n12, n14, n16, n18, n20, n22, n24, n26,

 n28, n30, n32, n34, n36, n38, n40, n42, n44, n46, n48, n50, n52,

 n54, n56, n58, n60, n62, n64},

 totalNumberPortsSimultaneousCSI-RS-ActBWP-AllCC ENUMERATED {p8, p12, p16, p24, p32, p40, p48, p56, p64, p72, p80,

 p88, p96, p104, p112, p120, p128, p136, p144, p152, p160, p168,

 p176, p184, p192, p200, p208, p216, p224, p232, p240, p248, p256}

}

DummyB ::= SEQUENCE {

 maxNumberTxPortsPerResource ENUMERATED {p2, p4, p8, p12, p16, p24, p32},

 maxNumberResources INTEGER (1..64),

 totalNumberTxPorts INTEGER (2..256),

 supportedCodebookMode ENUMERATED {mode1, mode1AndMode2},

 maxNumberCSI-RS-PerResourceSet INTEGER (1..8)

}

DummyC ::= SEQUENCE {

 maxNumberTxPortsPerResource ENUMERATED {p8, p16, p32},

 maxNumberResources INTEGER (1..64),

 totalNumberTxPorts INTEGER (2..256),

 supportedCodebookMode ENUMERATED {mode1, mode2, both},

 supportedNumberPanels ENUMERATED {n2, n4},

 maxNumberCSI-RS-PerResourceSet INTEGER (1..8)

}

DummyD ::= SEQUENCE {

 maxNumberTxPortsPerResource ENUMERATED {p4, p8, p12, p16, p24, p32},

 maxNumberResources INTEGER (1..64),

 totalNumberTxPorts INTEGER (2..256),

 parameterLx INTEGER (2..4),

 amplitudeScalingType ENUMERATED {wideband, widebandAndSubband},

 amplitudeSubsetRestriction ENUMERATED {supported} OPTIONAL,

 maxNumberCSI-RS-PerResourceSet INTEGER (1..8)

}

DummyE ::= SEQUENCE {

 maxNumberTxPortsPerResource ENUMERATED {p4, p8, p12, p16, p24, p32},

 maxNumberResources INTEGER (1..64),

 totalNumberTxPorts INTEGER (2..256),

 parameterLx INTEGER (2..4),

 amplitudeScalingType ENUMERATED {wideband, widebandAndSubband},

 maxNumberCSI-RS-PerResourceSet INTEGER (1..8)

}

-- TAG-FEATURESETDOWNLINK-STOP

-- ASN1STOP

|  |
| --- |
| *FeatureSetDownlink* field descriptions |
| ***featureSetListPerDownlinkCC***Indicates which features the UE supports on the individual DL carriers of the feature set (and hence of a band entry that refer to the feature set). The UE shall hence include at least as many *FeatureSetDownlinkPerCC-Id* in this list as the number of carriers it supports according to the *ca-BandwidthClassDL*, except if indicating additional functionality by reducing the number of *FeatureSetDownlinkPerCC-Id* in the feature set (see NOTE 1 in *FeatureSetCombination* IE description). The order of the elements in this list is not relevant, i.e., the network may configure any of the carriers in accordance with any of the *FeatureSetDownlinkPerCC-Id* in this list. |
| ***supportedSRS-Resources***Indicates supported SRS resources for SRS carrier switching to the band associated with this *FeatureSetDownlink*. The UE is only allowed to set this field for a band with associated *FeatureSetUplinkId* set to 0. |