**3GPP TSG-RAN2 Meeting #125R2-2401719**

**Athens, Greece 26th Feb – 1st Mar, 2024**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.2* | | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | | |
|  | | | | | | | | | |
|  | **38.331** | **CR** | **4639** | **rev** | **-** | **Current version:** | **18.0.0** |  | |
|  | | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | | |
|  | | | | | | | | | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network | **X** | Core Network |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | | | | | |
| ***Title:*** | Introduction of TxDiversity for 2Tx capability | | | | | | | | | | | | | |
|  |  | | | | | | | | | | | | | |
| ***Source to WG:*** | OPPO, Huawei, HiSilicon, Samsung | | | | | | | | | | | | | |
| ***Source to TSG:*** | R2 | | | | | | | | | | | | | |
|  |  | | | | | | | | | | | | | |
| ***Work item code:*** | 4Rx\_low\_NR\_band\_handheld\_3Tx\_NR\_CA\_ENDC-Core | | | | | | |  | ***Date:*** | | | | 2024-03-06 | |
|  |  | | | | | |  | |  | | | |  | |
| ***Category:*** | **B** | |  | | | | | | | ***Release:*** | | | | Rel-18 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) …* *Rel-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)*  *Rel-19 (Release 19)* | | |
|  |  | | | | | | | | | | | | | |
| ***Reason for change:*** | According to the RAN4 feature list R4-2403842 and RAN4 LS R4-2321983, RAN4 agreed to introduce a new UE capability in perFS level to indicate support of 2Tx TxDiversity for the band configured. This capability is applicable for both single band (non-CA) case and CA case. | | | | | | | | | | | | | |
|  |  | | | | | | | | | | | | | |
| ***Summary of change:*** | Introduce TxDiversity capability for 2Tx in perFS level to be early implementable in v18.1.0 from Rel-17.  *Implementation of this CR by a Release 17 UE will not cause compatibility issues.* | | | | | | | | | | | | | |
|  |  | | | | | | | | | | | | | |
| ***Consequences if not approved:*** | The UE is not allowed to indicate support of TxDiversity for 2Tx capability for the band configured and is not early implementable from Rel-17. | | | | | | | | | | | | | |
|  | | | |  | | | | | | | | | | |
| ***Clauses affected:*** | | 6.3.3, Annex C | | | | | | | | | | | | |
|  | |  | | | | | | | | | | | | |
|  | | **Y** | | | **N** |  | | | | |  | | | |
| ***Other specs*** | | **x** | | |  | Other core specifications | | | | | TS 38.306 CR 1057 | | | |
| ***affected:*** | |  | | | **x** | Test specifications | | | | | TS/TR ... CR ... | | | |
| ***(show related CRs)*** | |  | | | **x** | O&M Specifications | | | | | TS/TR ... CR ... | | | |
|  | |  | | | | | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | | | | | |
|  | |  | | | | | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | | | | | |

<Start of modification>

### 6.3.3 UE capability information elements

#### – *FeatureSetUplink*

The IE *FeatureSetUplink* is used to indicate the features that the UE supports on the carriers corresponding to one band entry in a band combination.

*FeatureSetUplink* information element

-- ASN1START

-- TAG-FEATURESETUPLINK-START

FeatureSetUplink ::= SEQUENCE {

featureSetListPerUplinkCC SEQUENCE (SIZE (1.. maxNrofServingCells)) OF FeatureSetUplinkPerCC-Id,

scalingFactor ENUMERATED {f0p4, f0p75, f0p8} OPTIONAL,

dummy3 ENUMERATED {supported} OPTIONAL,

intraBandFreqSeparationUL FreqSeparationClass OPTIONAL,

searchSpaceSharingCA-UL ENUMERATED {supported} OPTIONAL,

dummy1 DummyI OPTIONAL,

supportedSRS-Resources SRS-Resources OPTIONAL,

twoPUCCH-Group ENUMERATED {supported} OPTIONAL,

dynamicSwitchSUL ENUMERATED {supported} OPTIONAL,

simultaneousTxSUL-NonSUL ENUMERATED {supported} OPTIONAL,

pusch-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,

dummy2 DummyF OPTIONAL

}

FeatureSetUplink-v1540 ::= SEQUENCE {

zeroSlotOffsetAperiodicSRS ENUMERATED {supported} OPTIONAL,

pa-PhaseDiscontinuityImpacts ENUMERATED {supported} OPTIONAL,

pusch-SeparationWithGap ENUMERATED {supported} OPTIONAL,

pusch-ProcessingType2 SEQUENCE {

scs-15kHz ProcessingParameters OPTIONAL,

scs-30kHz ProcessingParameters OPTIONAL,

scs-60kHz ProcessingParameters OPTIONAL

} OPTIONAL,

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

}

FeatureSetUplink-v1610 ::= SEQUENCE {

-- R1 11-5: PUsCH repetition Type B

pusch-RepetitionTypeB-r16 SEQUENCE {

maxNumberPUSCH-Tx-r16 ENUMERATED {n2, n3, n4, n7, n8, n12},

hoppingScheme-r16 ENUMERATED {interSlotHopping, interRepetitionHopping, both}

} OPTIONAL,

-- R1 11-7: UL cancelation scheme for self-carrier

ul-CancellationSelfCarrier-r16 ENUMERATED {supported} OPTIONAL,

-- R1 11-7a: UL cancelation scheme for cross-carrier

ul-CancellationCrossCarrier-r16 ENUMERATED {supported} OPTIONAL,

-- R1 16-5c: The maximum number of SRS resources in one SRS resource set with usage set to 'codebook' for Mode 2

ul-FullPwrMode2-MaxSRS-ResInSet-r16 ENUMERATED {n1, n2, n4} OPTIONAL,

-- R1 22-4a/4b/4c/4d: CBG based transmission for UL with unicast PUSCH(s) per slot per CC with UE processing time Capability 1

cbgPUSCH-ProcessingType1-DifferentTB-PerSlot-r16 SEQUENCE {

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

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

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

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

} OPTIONAL,

-- R1 22-3a/3b/3c/3d: CBG based transmission for UL with unicast PUSCH(s) per slot per CC with UE processing time Capability 2

cbgPUSCH-ProcessingType2-DifferentTB-PerSlot-r16 SEQUENCE {

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

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

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

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

} OPTIONAL,

supportedSRS-PosResources-r16 SRS-AllPosResources-r16 OPTIONAL,

intraFreqDAPS-UL-r16 SEQUENCE {

dummy ENUMERATED {supported} OPTIONAL,

intraFreqTwoTAGs-DAPS-r16 ENUMERATED {supported} OPTIONAL,

dummy1 ENUMERATED {supported} OPTIONAL,

dummy2 ENUMERATED {supported} OPTIONAL,

dummy3 ENUMERATED {short, long} OPTIONAL

} OPTIONAL,

intraBandFreqSeparationUL-v1620 FreqSeparationClassUL-v1620 OPTIONAL,

-- R1 11-3: More than one PUCCH for HARQ-ACK transmission within a slot

multiPUCCH-r16 SEQUENCE {

sub-SlotConfig-NCP-r16 ENUMERATED {set1, set2} OPTIONAL,

sub-SlotConfig-ECP-r16 ENUMERATED {set1, set2} OPTIONAL

} OPTIONAL,

-- R1 11-3c: 2 PUCCH of format 0 or 2 for a single 7\*2-symbol subslot based HARQ-ACK codebook

twoPUCCH-Type1-r16 ENUMERATED {supported} OPTIONAL,

-- R1 11-3d: 2 PUCCH of format 0 or 2 for a single 2\*7-symbol subslot based HARQ-ACK codebook

twoPUCCH-Type2-r16 ENUMERATED {supported} OPTIONAL,

-- R1 11-3e: 1 PUCCH format 0 or 2 and 1 PUCCH format 1, 3 or 4 in the same subslot for a single 2\*7-symbol HARQ-ACK codebooks

twoPUCCH-Type3-r16 ENUMERATED {supported} OPTIONAL,

-- R1 11-3f: 2 PUCCH transmissions in the same subslot for a single 2\*7-symbol HARQ-ACK codebooks which are not covered by 11-3d and

-- 11-3e

twoPUCCH-Type4-r16 ENUMERATED {supported} OPTIONAL,

-- R1 11-3g: SR/HARQ-ACK multiplexing once per subslot using a PUCCH (or HARQ-ACK piggybacked on a PUSCH) when SR/HARQ-ACK

-- are supposed to be sent with different starting symbols in a subslot

mux-SR-HARQ-ACK-r16 ENUMERATED {supported} OPTIONAL,

dummy1 ENUMERATED {supported} OPTIONAL,

dummy2 ENUMERATED {supported} OPTIONAL,

-- R1 11-4c: 2 PUCCH of format 0 or 2 for two HARQ-ACK codebooks with one 7\*2-symbol sub-slot based HARQ-ACK codebook

twoPUCCH-Type5-r16 ENUMERATED {supported} OPTIONAL,

-- R1 11-4d: 2 PUCCH of format 0 or 2 in consecutive symbols for two HARQ-ACK codebooks with one 2\*7-symbol sub-slot based HARQ-ACK

-- codebook

twoPUCCH-Type6-r16 ENUMERATED {supported} OPTIONAL,

-- R1 11-4e: 2 PUCCH of format 0 or 2 for two subslot based HARQ-ACK codebooks

twoPUCCH-Type7-r16 ENUMERATED {supported} OPTIONAL,

-- R1 11-4f: 1 PUCCH format 0 or 2 and 1 PUCCH format 1, 3 or 4 in the same subslot for HARQ-ACK codebooks with one 2\*7-symbol

-- subslot based HARQ-ACK codebook

twoPUCCH-Type8-r16 ENUMERATED {supported} OPTIONAL,

-- R1 11-4g: 1 PUCCH format 0 or 2 and 1 PUCCH format 1, 3 or 4 in the same subslot for two subslot based HARQ-ACK codebooks

twoPUCCH-Type9-r16 ENUMERATED {supported} OPTIONAL,

-- R1 11-4h: 2 PUCCH transmissions in the same subslot for two HARQ-ACK codebooks with one 2\*7-symbol subslot which are not covered

-- by 11-4c and 11-4e

twoPUCCH-Type10-r16 ENUMERATED {supported} OPTIONAL,

-- R1 11-4i: 2 PUCCH transmissions in the same subslot for two subslot based HARQ-ACK codebooks which are not covered by 11-4d and

-- 11-4f

twoPUCCH-Type11-r16 ENUMERATED {supported} OPTIONAL,

-- R1 12-1: UL intra-UE multiplexing/prioritization of overlapping channel/signals with two priority levels in physical layer

ul-IntraUE-Mux-r16 SEQUENCE {

pusch-PreparationLowPriority-r16 ENUMERATED {sym0, sym1, sym2},

pusch-PreparationHighPriority-r16 ENUMERATED {sym0, sym1, sym2}

} OPTIONAL,

-- R1 16-5a: Supported UL full power transmission mode of fullpower

ul-FullPwrMode-r16 ENUMERATED {supported} OPTIONAL,

-- R1 18-5d: Processing up to X unicast DCI scheduling for UL 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 16-5b: Supported UL full power transmission mode of fullpowerMode1

ul-FullPwrMode1-r16 ENUMERATED {supported} OPTIONAL,

-- R1 16-5c-2: Ports configuration for Mode 2

ul-FullPwrMode2-SRSConfig-diffNumSRSPorts-r16 ENUMERATED {p1-2, p1-4, p1-2-4} OPTIONAL,

-- R1 16-5c-3: TPMI group for Mode 2

ul-FullPwrMode2-TPMIGroup-r16 SEQUENCE {

twoPorts-r16 BIT STRING(SIZE(2)) OPTIONAL,

fourPortsNonCoherent-r16 ENUMERATED{g0, g1, g2, g3} OPTIONAL,

fourPortsPartialCoherent-r16 ENUMERATED{g0, g1, g2, g3, g4, g5, g6} OPTIONAL

} OPTIONAL

}

FeatureSetUplink-v1630 ::= SEQUENCE {

-- R1 22-8: For SRS for CB PUSCH and antenna switching on FR1 with symbol level offset for aperiodic SRS transmission

offsetSRS-CB-PUSCH-Ant-Switch-fr1-r16 ENUMERATED {supported} OPTIONAL,

-- R1 22-8a: PDCCH monitoring on any span of up to 3 consecutive OFDM symbols of a slot and constrained timeline for SRS for CB

-- PUSCH and antenna switching on FR1

offsetSRS-CB-PUSCH-PDCCH-MonitorSingleOcc-fr1-r16 ENUMERATED {supported} OPTIONAL,

-- R1 22-8b: For type 1 CSS with dedicated RRC configuration, type 3 CSS, and UE-SS, monitoring occasion can be any OFDM symbol(s)

-- of a slot for Case 2 and constrained timeline for SRS for CB PUSCH and antenna switching on FR1

offsetSRS-CB-PUSCH-PDCCH-MonitorAnyOccWithoutGap-fr1-r16 ENUMERATED {supported} OPTIONAL,

-- R1 22-8c: For type 1 CSS with dedicated RRC configuration, type 3 CSS, and UE-SS, monitoring occasion can be any OFDM symbol(s)

-- of a slot for Case 2 with a DCI gap and constrained timeline for SRS for CB PUSCH and antenna switching on FR1

offsetSRS-CB-PUSCH-PDCCH-MonitorAnyOccWithGap-fr1-r16 ENUMERATED {supported} OPTIONAL,

dummy ENUMERATED {supported} OPTIONAL,

-- R1 22-9: Cancellation of PUCCH, PUSCH or PRACH with a DCI scheduling a PDSCH or CSI-RS or a DCI format 2\_0 for SFI

partialCancellationPUCCH-PUSCH-PRACH-TX-r16 ENUMERATED {supported} OPTIONAL

}

FeatureSetUplink-v1640 ::= SEQUENCE {

-- R1 11-4: Two HARQ-ACK codebooks with up to one sub-slot based HARQ-ACK codebook (i.e. slot-based + slot-based, or slot-based +

-- sub-slot based) simultaneously constructed for supporting HARQ-ACK codebooks with different priorities at a UE

twoHARQ-ACK-Codebook-type1-r16 SubSlot-Config-r16 OPTIONAL,

-- R1 11-4a: Two sub-slot based HARQ-ACK codebooks simultaneously constructed for supporting HARQ-ACK codebooks with different

-- priorities at a UE

twoHARQ-ACK-Codebook-type2-r16 SubSlot-Config-r16 OPTIONAL,

-- R1 22-8d: All PDCCH monitoring occasion can be any OFDM symbol(s) of a slot for Case 2 with a span gap and constrained timeline

-- for SRS for CB PUSCH and antenna switching on FR1

offsetSRS-CB-PUSCH-PDCCH-MonitorAnyOccWithSpanGap-fr1-r16 SEQUENCE {

scs-15kHz-r16 ENUMERATED {set1, set2, set3} OPTIONAL,

scs-30kHz-r16 ENUMERATED {set1, set2, set3} OPTIONAL,

scs-60kHz-r16 ENUMERATED {set1, set2, set3} OPTIONAL

} OPTIONAL

}

FeatureSetUplink-v16d0 ::= SEQUENCE {

pusch-RepetitionTypeB-v16d0 SEQUENCE {

maxNumberPUSCH-Tx-Cap1-r16 ENUMERATED {n2, n3, n4, n7, n8, n12},

maxNumberPUSCH-Tx-Cap2-r16 ENUMERATED {n2, n3, n4, n7, n8, n12}

} OPTIONAL

}

FeatureSetUplink-v1710 ::= SEQUENCE {

-- R1 23-3-1 Multi-TRP PUSCH repetition (type A) -codebook based

mTRP-PUSCH-TypeA-CB-r17 ENUMERATED {n1,n2,n4} OPTIONAL,

-- R1 23-3-1-2 Multi-TRP PUSCH repetition (type A) - non-codebook based

mTRP-PUSCH-RepetitionTypeA-r17 ENUMERATED {n1,n2,n3,n4} OPTIONAL,

-- R1 23-3-3 Multi-TRP PUCCH repetition-intra-slot

mTRP-PUCCH-IntraSlot-r17 ENUMERATED {pf0-2, pf1-3-4, pf0-4} OPTIONAL,

-- R1 23-8-4 Maximum 2 SP and 1 periodic SRS sets for antenna switching

srs-AntennaSwitching2SP-1Periodic-r17 ENUMERATED {supported} OPTIONAL,

-- R1 23-8-9 Extension of aperiodic SRS configuration for 1T4R, 1T2R and 2T4R

srs-ExtensionAperiodicSRS-r17 ENUMERATED {supported} OPTIONAL,

-- R1 23-8-10 1 aperiodic SRS resource set for 1T4R

srs-OneAP-SRS-r17 ENUMERATED {supported} OPTIONAL,

-- R4 16-8 UE power class per band per band combination

ue-PowerClassPerBandPerBC-r17 ENUMERATED {pc1dot5, pc2, pc3} OPTIONAL,

-- R4 17-8 UL transmission in FR2 bands within an UL gap when the UL gap is activated

tx-Support-UL-GapFR2-r17 ENUMERATED {supported} OPTIONAL

}

FeatureSetUplink-v1720 ::= SEQUENCE {

-- R1 25-3: Repetitions for PUCCH format 0, 1, 2, 3 and 4 over multiple PUCCH subslots with configured K = 2, 4, 8

pucch-Repetition-F0-1-2-3-4-RRC-Config-r17 ENUMERATED {supported} OPTIONAL,

-- R1 25-3a: Repetitions for PUCCH format 0, 1, 2, 3 and 4 over multiple PUCCH subslots using dynamic repetition indication

pucch-Repetition-F0-1-2-3-4-DynamicIndication-r17 ENUMERATED {supported} OPTIONAL,

-- R1 25-3b: Inter-subslot frequency hopping for PUCCH repetitions

interSubslotFreqHopping-PUCCH-r17 ENUMERATED {supported} OPTIONAL,

-- R1 25-8: Semi-static HARQ-ACK codebook for sub-slot PUCCH

semiStaticHARQ-ACK-CodebookSub-SlotPUCCH-r17 ENUMERATED {supported} OPTIONAL,

-- R1 25-14: PHY prioritization of overlapping low-priority DG-PUSCH and high-priority CG-PUSCH

phy-PrioritizationLowPriorityDG-HighPriorityCG-r17 INTEGER(1..16) OPTIONAL,

-- R1 25-15: PHY prioritization of overlapping high-priority DG-PUSCH and low-priority CG-PUSCH

phy-PrioritizationHighPriorityDG-LowPriorityCG-r17 SEQUENCE {

pusch-PreparationLowPriority-r17 ENUMERATED{sym0, sym1, sym2},

additionalCancellationTime-r17 SEQUENCE {

scs-15kHz-r17 ENUMERATED{sym0, sym1, sym2} OPTIONAL,

scs-30kHz-r17 ENUMERATED{sym0, sym1, sym2, sym3, sym4} OPTIONAL,

scs-60kHz-r17 ENUMERATED{sym0, sym1, sym2, sym3, sym4, sym5, sym6, sym7, sym8} OPTIONAL,

scs-120kHz-r17 ENUMERATED{sym0, sym1, sym2, sym3, sym4, sym5, sym6, sym7, sym8, sym9,

sym10, sym11, sym12, sym13, sym14, sym15, sym16} OPTIONAL

},

maxNumberCarriers-r17 INTEGER(1..16)

} OPTIONAL,

-- R4 17-5 Support of UL DC location(s) report

extendedDC-LocationReport-r17 ENUMERATED {supported} OPTIONAL

}

FeatureSetUplink-v1800 ::= SEQUENCE {

-- R1 40-3-3-2: Number of delay values

tdcpNumberDelayValue-r18 INTEGER (2..4) OPTIONAL,

-- R1 40-3-3-4: Phase report

phaseReportMoreThanOne-r18 ENUMERATED {supported} OPTIONAL,

-- R1 40-4-6d: 2 symbols front-loaded DMRS (uplink) for Rel.18 enhanced DMRS ports for PUSCH

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

-- R1 40-4-6e: 2-symbol FL DMRS + one additional 2-symbols DMRS for Rel.18 enhanced DMRS ports for PUSCH

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

-- R1 40-4-6f: 1 symbol FL DMRS and 3 additional DMRS symbols for Rel.18 enhanced DMRS ports for PUSCH

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

-- R1 40-4-12: Support Rel-18 UL DMRS with single-DCI based M-TRP

ul-DMRS-SingleDCI-M-TRP-r18 ENUMERATED {supported} OPTIONAL,

-- R1 40-4-13: Support Rel-18 UL DMRS with M-DCI based M-TRP

ul-DMRS-M-DCI-M-TRP-r18 ENUMERATED {supported} OPTIONAL,

-- R1 40-5-5: Maximum 2 SP and 1 periodic SRS sets for 8T8R antenna switching

max2SP1SRS8T8R-AntennaSwitch-r18 ENUMERATED {supported} OPTIONAL,

-- R1 40-6-4: Single-DCI based STx2P SFN scheme for PUCCH

pucch-SingleDCI-STx2P-SFN-r18 ENUMERATED {pf0-2, pf1-3-4, pf0-4} OPTIONAL,

-- R4 27-1 TxDiversity for 4Tx

txDiversity4Tx-r18 ENUMERATED {supported} OPTIONAL,

-- R4 44-1 TxDiversity for 2Tx

txDiversity2Tx-r18 ENUMERATED {supported} OPTIONAL

}

SubSlot-Config-r16 ::= SEQUENCE {

sub-SlotConfig-NCP-r16 ENUMERATED {n4,n5,n6,n7} OPTIONAL,

sub-SlotConfig-ECP-r16 ENUMERATED {n4,n5,n6} OPTIONAL

}

SRS-AllPosResources-r16 ::= SEQUENCE {

srs-PosResources-r16 SRS-PosResources-r16,

srs-PosResourceAP-r16 SRS-PosResourceAP-r16 OPTIONAL,

srs-PosResourceSP-r16 SRS-PosResourceSP-r16 OPTIONAL

}

SRS-PosResources-r16 ::= SEQUENCE {

maxNumberSRS-PosResourceSetPerBWP-r16 ENUMERATED {n1, n2, n4, n8, n12, n16},

maxNumberSRS-PosResourcesPerBWP-r16 ENUMERATED {n1, n2, n4, n8, n16, n32, n64},

maxNumberSRS-ResourcesPerBWP-PerSlot-r16 ENUMERATED {n1, n2, n3, n4, n5, n6, n8, n10, n12, n14},

maxNumberPeriodicSRS-PosResourcesPerBWP-r16 ENUMERATED {n1, n2, n4, n8, n16, n32, n64},

maxNumberPeriodicSRS-PosResourcesPerBWP-PerSlot-r16 ENUMERATED {n1, n2, n3, n4, n5, n6, n8, n10, n12, n14}

}

SRS-PosResourceAP-r16 ::= SEQUENCE {

maxNumberAP-SRS-PosResourcesPerBWP-r16 ENUMERATED {n1, n2, n4, n8, n16, n32, n64},

maxNumberAP-SRS-PosResourcesPerBWP-PerSlot-r16 ENUMERATED {n1, n2, n3, n4, n5, n6, n8, n10, n12, n14}

}

SRS-PosResourceSP-r16 ::= SEQUENCE {

maxNumberSP-SRS-PosResourcesPerBWP-r16 ENUMERATED {n1, n2, n4, n8, n16, n32, n64},

maxNumberSP-SRS-PosResourcesPerBWP-PerSlot-r16 ENUMERATED {n1, n2, n3, n4, n5, n6, n8, n10, n12, n14}

}

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),

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

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

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

}

DummyF ::= SEQUENCE {

maxNumberPeriodicCSI-ReportPerBWP INTEGER (1..4),

maxNumberAperiodicCSI-ReportPerBWP INTEGER (1..4),

maxNumberSemiPersistentCSI-ReportPerBWP INTEGER (0..4),

simultaneousCSI-ReportsAllCC INTEGER (5..32)

}

-- TAG-FEATURESETUPLINK-STOP

-- ASN1STOP

|  |
| --- |
| *FeatureSetUplink* field descriptions |
| ***featureSetListPerUplinkCC***  Indicates which features the UE supports on the individual UL carriers of the feature set (and hence of a band entry that refers to the feature set). The UE shall hence include at least as many *FeatureSetUplinkPerCC-Id* in this list as the number of carriers it supports according to the *ca-BandwidthClassUL*, except if indicating additional functionality by reducing the number of *FeatureSetUplinkPerCC-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 *FeatureSetUplinkPerCC-Id* in this list. |

<Next modification>

Annex C (normative): List of CRs Containing Early Implementable Features and Corrections

This annex lists the Change Requests (CRs) whose changes may be implemented by a UE of an earlier release than which the CR was approved in (i.e. CRs that contain on their coversheets the sentence "Implementation of this CR from Rel-N will not cause interoperability issues").

Table C-1: List of CRs Containing Early Implementable Features and Corrections

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| TDoc Number (RP-xxxxxx): CR Title | CR Number(s) | CR Revision Number(s) | Earliest Implementable Release | Additional Information |
| RP-200335: Correction on usage of access category 2 for UAC for RNA update | 1141 | 2 | Release 15 |  |
| RP-201185: Introduction of signalling for high-speed train scenarios | 1464 | 5 | Release 15 |  |
| RP-201216: Release-16 UE capabilities based on RAN1, RAN4 feature lists and RAN2 | 1665 | 2 | Release 15 | Early implementation part is referring to the aspect covered by  - R2-2006203: Extension of CSI-RS capabilities per codebook type  - R2-2006360: Intraband EN\_DC power class expansion for 29 dBm |
| RP-202768: UE behaviour when UL 7.5KHz shift is not supported | 2107 | 2 | Release 15 |  |
| RP-202790: Correction on uac-AccessCategory1-SelectionAssistanceInfo | 2130 | 1 | Release 15 |  |
| RP-211483: Clarification on the initiation of RNA update | 2581 | 1 | Release 15 |  |
| RP-201190: Introduction of eCall over IMS for NR | 1670 | - | Release 15 |  |
| RP-212598: Distinguishing support of extended band n77 | 2810 | 2 | Release 15 |  |
| RP-213342: Duty cycle signalling for power class 1.5 | 2817 | 1 | Release 15 |  |
| RP-213345: CR on 38.331 for introducing UE capability of txDiversity | 2859 | 1 | Release 15 |  |
| RP-220497: Introduction of function for RRM enhancements for Rel-17 NR FR1 HST | 2898 | 2 | Release 16 |  |
| RP-220838: Release-17 UE capabilities based on R1 and R4 feature lists (TS38.331) | 2901 | 1 | Release 15 | Early implementation part is referring to the aspect covered by:  - R2-2203898: Introduction of BCS4 and BCS5  - R2-2203836: Introducing UE capability for power class 5 for FR2 FWA |
| RP-221721: CR on the CBM/IBM reporting-38331 | 2916 | 2 | Release 16 |  |
| RP-221736: Distinguishing support of band n77 restrictions in Canada [n77 Canada] | 3078 | 2 | Release 15 |  |
| RP-222527: Correction to additionalSpectrumEmission for UL CA in n77 for the US | 3476 | - | Release 15 |  |
| RP-222527: Correction to additionalSpectrumEmission for UL CA in n77 for Canada | 3478 | - | Release 15 |  |
| RP-232570: Addition of extended number range for NS value | 3900 | 6 | Release 16 |  |
| RP-233888: Introduction of FR2 FBG2 CA BW classes | 2867 | 6 | Release 15 |  |
| RP-233882: Enhancing SCell A2 event reporting | 4375 | 2 | Release 15 |  |
| RP-233890: PTM retransmission reception for multicast DRX with HARQ feedback disabled [PTM\_ReTx\_Mcast\_HARQ\_Disb] | 4504 | - | Release 17 |  |
| RP-xxxxxx: Introduction of TxDiversity for 2Tx capability | xxxx | - | Release 17 |  |

<End of modification>