**3GPP TSG- Meeting #**

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| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
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|  | **38.306** | **CR** | **XXXX** | **rev** |  | **Current version:** |  |  |
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| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
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| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network | **X** | Core Network |  |

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| ***Title:***  | Correction on UE capability for multi-carrier enhancements |
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| ***Source to WG:*** |  |
| ***Source to TSG:*** |  |
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| ***Work item code:*** |  |  | ***Date:*** |  |
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| ***Category:*** | F |  | ***Release:*** | Rel-18 |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)…Rel-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19) Rel-20 (Release 20)* |
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| ***Reason for change:*** | NOTE: This CR is an outcome of [AT127bis][015][UL TX switching] UE capability (NTT docomo) to discuss and combine CRs contributed in RAN2#127bis.**From R2-2408666**RAN1 agreed to introduce a new UE capability as below as indicated in LS R1-2407505:

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| Agreement* Agree the CR in R1-2406993.
* Introduce following capability for the support of fallback to 1T-1T UL Tx switching when just 2 bands configured.
	+ FG name
		- Support of 2-band configuration of 1T-1T UL Tx switching by using Rel-18 UL Tx switching configurations
	+ Component
		- Support of 2-band configuration of 1T-1T UL Tx switching by using Rel-18 UL Tx switching configurations
	+ Prerequisite
		- “switchedUL” is reported via uplinkTxSwitchingOptionForBandPair
	+ Consequence if the feature is not supported by the UE
		- UE is not expected to be configured with 1T-1T UL Tx switching when just 2 bands configured (band A and B) by using Rel-18 UL Tx switching configurations
	+ Type
		- Per band pair per BC
	+ Note
		- The new capability is only needed for a band pair where the UE reports no UL-MIMO on both bands.
		- For a band pair for which the UE separately indicated UL CA support without UL Tx switching, the new capability is not expected to be reported as supported.
	+ Mandatory or optional
		- Optional with capability signaling
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This CR is to capture the above UE capability in TS 38.306. **From R2-2409072*** The last word is missing in the field description of *coScheduledCellSCS-r18* in *multiCell-PDSCH-DCI-1-3-DiffSCS-r18*.
* Based on following RAN1 agreement in RAN1#117, it should be clarified in this spec that 480/960 kHz SCS is not applicable to multi-cell scheduling with DCI format 0\_3/1\_3.

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| **Agreements**:Conclude that 480/960 kHz SCS is not supported for multi-cell scheduling with DCI format 0\_3/1\_3 |

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| ***Summary of change:*** | **From R2-2408666**In clause 4.2.7.1, * Add description of *configured1T1T-OnTwoBands-r18* under R18 *ULTxSwitchingBandPair*;

**From R2-2409072**Section 4.2.7.4* Added missing last word in the field description of *coScheduledCellSCS-r18* in *multiCell-PDSCH-DCI-1-3-DiffSCS-r18*.
* Added notes in the field descriptions of *multiCell-PDSCH-DCI-1-3-DiffSCS-r18,* *multiCell-PDSCH-DCI-1-3-SameSCS-r18,* *multiCell-PUSCH-DCI-0-3-DiffSCS-r18* and *multiCell-PUSCH-DCI-0-3-SameSCS-r18* to clarify a restriction that 480/960 kHz SCS is not applicable to multi-cell scheduling with DCI format 0\_3/1\_3.

**Impact analysis**Impacted functionality: UL Tx switchingImpacted architecture options: NR SAInter-operability: If a UE implements the CR but the network does not implement the CR, * The network does not understand the new UE capability and will not configure 2-band configuration with 1Tx-1Tx switching using Rel-18 signaling on a band pair where the UE reports no UL-MIMO on both bands. There are no inter-operability issues in this aspect.
* The UE does not indicate support of 480/960 kHz SCS for multi-cell scheduling with DCI format 0\_3/1\_3. There are no inter-operability issues in this aspect.

If the network implements the CR, but the UE does not, the UE will not indicate the new UE capabilitys, * The network will not configure 2-band configuration with 1Tx-1Tx switching using Rel-18 signaling on a band pair where the UE reports no UL-MIMO on both bands. There are no inter-operability issues in this aspect.
* The UE indicates support of 480/960 kHz SCS for multi-cell scheduling with DCI format 0\_3/1\_3, which is not expected by the network.
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| ***Consequences if not approved:*** | Without the change, the UE can not indicate it supports the configuration of 2-band configuration with 1Tx-1Tx switching using Rel-18 signaling on a band pair where the UE reports no UL-MIMO on both bands. |
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| ***Clauses affected:*** | 4.2.7.1 |
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|  | **Y** | **N** |  |  |
| ***Other specs*** | **X** |  |  Other core specifications  | TS 38.331, CR XXXX |
| ***affected:*** |  | **X** |  Test specifications | - |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | - |
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| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

\* \* \* Start of Change \* \* \*

#### 4.2.7.1 *BandCombinationList* parameters

| Definitions for parameters | Per | M | FDD-TDDDIFF | FR1-FR2DIFF |
| --- | --- | --- | --- | --- |
| ***bandEUTRA***Defines supported EUTRA frequency band by EUTRA frequency band number, as specified in TS 36.101 [14]. | Band | Yes | N/A | N/A |
| ***bandList***Each entry of the list should include at least one bandwidth class for UL or DL. | BC | Yes | N/A | N/A |
| ***bandNR***Defines supported NR frequency band by NR frequency band number, as specified in TS 38.101-1 [2] and TS 38.101-2 [3]. | Band | Yes | N/A | N/A |
| ***ca-BandwidthClassDL-EUTRA***Defines for DL, the class defined by the aggregated transmission bandwidth configuration and maximum number of component carriers supported by the UE, as specified in TS 36.101 [14]. When all FeatureSetEUTRA-DownlinkId:s in the corresponding FeatureSetsPerBand are zero, this field is absent. | Band | No | N/A | N/A |
| ***ca-BandwidthClassDL-NR***Defines for DL, the class defined by the aggregated transmission bandwidth configuration and maximum number of component carriers supported by the UE, as specified in TS 38.101-1 [2] and TS 38.101-2 [3]. When all FeatureSetDownlinkId:s in the corresponding FeatureSetsPerBand are zero, this field is absent. For FR1, the value 'F' shall not be used as it is invalidated in TS 38.101-1 [2]. | Band | No | N/A | N/A |
| ***ca-BandwidthClassDL-NR-r17***Defines for DL, additional FR2 CA bandwidth class (e.g., R, S, T, U ) as specified in TS 38.101-2 [3]. When all FeatureSetDownlinkId:s in the corresponding FeatureSetsPerBand are zero, this field is absent.If this field is indicated for a band, the UE shall also set *ca-BandwidthClassDL-NR* (without suffix) to the highest bandwidth class from the same fallback group that it supports in this band combination and with the given bandwidth combination set ID in case that the bandwidth combination consists of a sub-set of carriers and the same or a sub-set of carrier bandwidths on those carriers with respect to the bandwidth combination corresponding to *ca-BandwidthClassDL-NR-r17*; otherwise, it shall omit the *ca-BandwidthClassDL-NR* (without suffix) field.NOTE: If the UE includes ca-BandwidthClassDL-NR-r17 in a BandParameter the network ignores the ca-BandwidthClassDL-NR therein, if signalled. | Band | No | N/A | FR2 only |
| ***ca-BandwidthClassUL-EUTRA***Defines for UL, the class defined by the aggregated transmission bandwidth configuration and maximum number of component carriers supported by the UE, as specified in TS 36.101 [14]. When all FeatureSetEUTRA-UplinkId:s in the corresponding FeatureSetsPerBand are zero, this field is absent. | Band | No | N/A | N/A |
| ***ca-BandwidthClassUL-NR***Defines for UL, the class defined by the aggregated transmission bandwidth configuration and maximum number of component carriers supported by the UE, as specified in TS 38.101-1 [2] and TS 38.101-2 [3]. When all FeatureSetUplinkId:s in the corresponding FeatureSetsPerBand are zero, this field is absent. For FR1, the value 'F' shall not be used as it is invalidated in TS 38.101-1 [2]. | Band | No | N/A | N/A |
| ***ca-BandwidthClassUL-NR-r17***Defines for UL, additional FR2 CA bandwidth class (e.g., R, S, T, U ) as specified in TS 38.101-2 [3]. When all FeatureSetUplinkId:s in the corresponding FeatureSetsPerBand are zero, this field is absent.If this field is indicated for a band, the UE shall also set *ca-BandwidthClassUL-NR* (without suffix) to the highest bandwidth class from the same fallback group that it supports in this band combination and with the given bandwidth combination set ID in case that the bandwidth combination consists of a sub-set of carriers and the same or a sub-set of carrier bandwidths on those carriers with respect to the bandwidth combination corresponding to *ca-BandwidthClassUL-NR-r17*; otherwise, it shall omit the *ca-BandwidthClassUL-NR* (without suffix) field.NOTE: If the UE includes *ca-BandwidthClassUL-NR-r17* in a BandParameter the network ignores the *ca-BandwidthClassUL-NR* therein, if signalled. | Band | No | N/A | FR2 only |
| ***ca-ParametersEUTRA***Contains the EUTRA part of band combination parameters for a given (NG)EN-DC/NE-DC band combination. | BC | No | N/A | N/A |
| ***ca-ParametersNR***Contains the NR band combination parameters for a given (NG)EN-DC/NE-DC and/or NR CA band combination. | BC | No | N/A | N/A |
| ***ca-ParametersNRDC***Indicates whether the UE supports NR-DC for the band combination. It contains the NR band combination parameters applicable across MCG and SCG. If the band combination includes both FR1 and FR2 bands, a UE indicating support for NR-DC shall support synchronous NR-DC configuration where all serving cells of the MCG are in FR1 and all serving cells of the SCG are in FR2. | BC | No | N/A | N/A |
| ***featureSetCombination***Indicates the feature set that the UE supports on the NR and/or MR-DC band combination by FeatureSetCombinationId. | BC | N/A | N/A | N/A |
| ***featureSetCombinationDAPS-r16***Indicates the feature set that the UE supports for DAPS handover on the NR band combination by FeatureSetCombinationId. A UE shall include this field if intra-frequency or inter-frequency DAPS handover is supported for this band combination. For a band entry where it indicates the support for intra-frequency DAPS handover, the UE shall include at least two CCs and shall support intra-frequency DAPS handover between any CC pair within the same band entry. If the number of CCs within a band combination is more than one and if inter-frequency DAPS handover is supported, UE shall support inter-frequency DAPS handover between every CC pair in the same or different band entries in the band combination, except for the CC pair within a band entry with bandwidth class A. A feature set including *intraFreqDAPS-r16* can only be referred to by *featureSetCombinationDAPS-r16*, not by *featureSetCombination*. A feature set without *intraFreqDAPS-r16* is only applied to inter-freq DAPS handover if it is referred to by *featureSetCombinationDAPS*. Both feature sets with and without *intraFreqDAPS-r16* can be referred to by the same *featureSetCombinationDAPS-r16*. | BC | N/A | N/A | N/A |
| ***intrabandConcurrentOperationPowerClass-r16***Indicates the power class, of a particular Uu band combination and the intra-band PC5 band combination(s) on which the UE supports transmission of PC5 simultaneous with Uu uplink (as indicated by *supportedTxBandCombListPerBC-Sidelink-r16*). The leading/leftmost value corresponds to the band combination of the particular Uu band combination and the first intra-band PC5 band combination included in *BandCombinationListSidelinkEUTRA-NR* which is indicated with value 1 by *supportedTxBandCombListPerBC-Sidelink-r16*, the next value corresponds to the band combination of the particular Uu band combination and the second intra-band PC5 band combination included in *BandCombinationListSidelinkEUTRA-NR* which is indicated with value 1 by *supportedTxBandCombListPerBC-Sidelink-r16* and so on. If this power class is higher than the power class that the UE supports on the individual Uu or PC5 interface of this band combination, the latter determines maximum TX power available in each interface. | BC | No | N/A | N/A |
| ***mrdc-Parameters***Contains the band combination parameters for a given (NG)EN-DC/NE-DC band combination. | BC | No | N/A | N/A |
| ***ne-DC-BC***Indicates whether the UE supports NE-DC for the band combination. | BC | No | N/A | N/A |
| ***powerClass, powerClass-v1610***Indicates power class the UE supports when operating according to this band combination. If the field is absent, the UE supports the default power class. If this power class is higher than the power class that the UE supports on the individual bands of this band combination (*ue-PowerClass* in *BandNR*), the latter determines maximum TX power available in each band. The UE sets the power class parameter only in band combinations that are applicable as specified in TS 38.101-1 [2] and TS 38.101-3 [4]. This capability is not applicable to IAB-MT or NCR-MT. | BC | No | N/A | FR1 only |
| ***powerClassNRPart-r16***Indicates NR part power class the UE supports when operating according to this band combination.This field only applies for MR-DC BCs containing only single CC or intra-band CA in NR side in this release. | BC | No | N/A | FR1 only |
| ***scalingFactorTxSidelink-r16, scalingFactorRxSidelink-r16***Indicates, for a particular Uu band combination, the scaling factor for the PC5 band combination(s) on which the UE supports transmission/reception of PC5 simultaneous with Uu uplink/downlink respectively (as indicated by *supportedTxBandCombListPerBC-Sidelink-r16* / *supportedRxBandCombListPerBC-Sidelink-r16*). The leading / leftmost value corresponds to the first band combination included in *BandCombinationListSidelinkEUTRA-NR* which is indicated with value 1 by *supportedTxBandCombListPerBC-Sidelink-r16* / *supportedRxBandCombListPerBC-Sidelink-r16*, the next value corresponds to the second band combination included in *BandCombinationListSidelinkEUTRA-NR* which is indicated with value 1 by *supportedTxBandCombListPerBC-Sidelink-r16* / *supportedRxBandCombListPerBC-Sidelink-r16* and so on. For each value of *ScalingFactorSidelink-r16*, value f0p4 indicates the scaling factor 0.4, f0p75 indicates 0.75, and so on. | BC | No | N/A | N/A |
| ***scellDormancyWithinActiveTime-DCI-0-3-And-1-3-r18***Indicates whether the UE supports SCell dormancy indication sent within the active time on PCell with DCI format 0\_3/1\_3. One dormant BWP and one non-dormant BWP is supported per carrier. More than one non-dormant BWP per carrier is supported only if *upto4* in *bwp-SameNumerology* or *upto4* in *bwp-DiffNumerology* is also supported.One dormant BWP and one non-dormant BWP are UE specific BWPs even for UEs not supporting *upto2* in *bwp-SameNumerology* or *upto4* in *bwp-SameNumerology*.A UE supporting CA shall also indicate support of at least one *of multiCell-PDSCH-DCI-1-3-SameSCS-r18, multiCell-PDSCH-DCI-1-3-DiffSCS-r18, multiCell-PUSCH-DCI-0-3-SameSCS-r18* and *multiCell-PUSCH-DCI-0-3-DiffSCS-r18*. | BC | No | N/A | N/A |
| ***srs-AntennaSwitching8T8R-r18***Indicates whether the UE supports SRS 8T8R for antenna switching. The capability comprises the following parameters:- *antennaSwitch8T8R-r18* indicates the supporting type of 8T8R for antenna switching.- *downGradeConfig-r18* indicates a combination of supported xTyRs of downgrade antenna switching configurations. It includes 11-bit bitmap, where starting from the leading / leftmost bit (bit 0), each bit corresponds to {1T1R, 1T2R, 1T4R, 1T6R, 1T8R, 2T2R, 2T4R, 2T6R, 2T8R, 4T4R, 4T8R}.- *entryNumberAffect-r18* indicates the lowest band entry number of the UL group (see *entryNumberSwitch-r18*) that impacts the DL of this band entry.- *entryNumberSwitch-r18* indicates the lowest band entry of the UL group, which is defined as band entries with UL (see NOTE 1) that impact each other's UL (i.e. SRS TX port switching on any of the cells in the group will impact UL on all the cells in the group). This parameter is absent if an UL group contains only one band entry.The UE supporting this feature shall indicate support of *supportedSRS-Resources.*For *entryNumberAffect-r18* and *entryNumberSwitch-r18*, value 1 means first entry, value 2 means second entry and so on. The UE may include *entryNumberAffect-r18/ entryNumberSwitch-r18* for a band entry even if *antennaSwitch8T8R-r18 is* absent for that band entry. All DL and UL that switch together indicate the same entry number.The entry number is the band entry number in a band combination. The UE is restricted not to include fallback band combinations for the purpose of indicating different SRS antenna switching capabilities.NOTE 1: The band with UL includes a band associated with *FeatureSetUplinkId* set to 0 corresponding to the support of *SRS-SwitchingTimeNR*.NOTE 2: UE reports support of SRS with 8 Tx ports and Comb8 mapping —antenna switching via *srs-combEight-r17*. | BC | No | N/A | N/A |
| ***srs-AntennaSwitchingBeyond4RX-r17***Indicates whether the UE supports SRS Antenna switching for more than 4 Rx. The capability signalling comprises the following parameters:*-* *supportedSRS-TxPortSwitchBeyond4Rx-r17* indicates a combination of supported xTyRs. It includes 11-bit bitmap, where starting from the leading / leftmost bit (bit 0), each bit corresponds to {t1r1, t2r2, t1r2, t4r4, t2r4, t1r4, t2r6, t1r6, t4r8, t2r8, t1r8}. For any indicated value, x shall be equal to or smaller than the one associated with the largest y.*-* *entryNumberAffectBeyond4Rx-r17* indicates the lowest band entry number of the UL group (see *entryNumberSwitchBeyond4Rx-r17*) that impacts the DL of this band entry;*-* *entryNumberSwitchBeyond4Rx-r17* indicates the lowest band entry of the UL group, which is defined as band entries with UL (see NOTE 1) that impact each other's UL (i.e. SRS TX port switching on any of the cells in the group will impact UL on all the cells in the group). This parameter is absent if an UL group contains only one band entry.The UE indicating support of this shall indicate support of *srs-TxSwitch.*For *entryNumberAffectBeyond4Rx-r17* and *entryNumberSwitchBeyond4Rx-r17*, value 1 means first entry, value 2 means second entry and so on. The UE may include *entryNumberAffectBeyond4Rx-r17/entryNumberSwitchBeyond4Rx-r17* for a band entry even if all of the bits in the *supportedSRS-TxPortSwitchBeyond4Rx-r17* are set to 0 for that band entry. All DL and UL that switch together indicate the same entry number.The entry number is the band entry number in a band combination. The UE is restricted not to include fallback band combinations for the purpose of indicating different SRS antenna switching capabilities.NOTE 1: The band with UL includes a band associated with *FeatureSetUplinkId* set to 0 corresponding to the support of *SRS-SwitchingTimeNR*.NOTE 2: If reported for the same values of xTyR in *supportedSRS-TxPortSwitchBeyond4Rx-r17* as reported with *supportedSRS-TxPortSwitch*/*supportedSRS-TxPortSwitch-v1610*, the reported values for *entryNumberAffectBeyond4Rx-r17* and *entryNumberSwitchBeyond4Rx-r17* are not valid. | BC | No | N/A | N/A |
| ***srs-SwitchingAffectedBandsListNR-r17***Indicates which other bands in the band combination are affected by the SRS switch and the dropping rules / timelines apply to the indicated bands when SRS carrier switching on target CC and other UL on source CC are overlapped in the same symbol. UE indicating support of this feature shall indicate support of *srs-CarrierSwitch*.NOTE: The UE shall include the same number of entries, and listed in the same order as in *srs-SwitchingTimesListNR*. For each inter-band "source-target" pair (as indicated by *srs-SwitchingTimesListNR*), the UE can indicate which other bands in the band combination are affected by the SRS switch. The UE shall set the BIT STRING to 0 for intra-band band pairs. | BC | No | N/A | N/A |
| ***SRS-SwitchingTimeNR***Indicates the interruption time on DL/UL reception within a NR band pair during the RF retuning for switching between a carrier on one band and another (PUSCH-less) carrier on the other band to transmit SRS. *switchingTimeDL/ switchingTimeUL*:n0us represents 0 us, n30us represents 30us, and so on. *switchingTimeDL/ switchingTimeUL* is mandatory present if switching between the NR band pair is supported, otherwise the field is absent. It is signalled per pair of bands per band combination. | FD | No | N/A | N/A |
| ***SRS-SwitchingTimeEUTRA***Indicates the interruption time on DL/UL reception within a EUTRA band pair during the RF retuning for switching between a carrier on one band and another (PUSCH-less) carrier on the other band to transmit SRS. *switchingTimeDL/ switchingTimeUL:* n0 represents 0 OFDM symbols, n0dot5 represents 0.5 OFDM symbols, n1 represents 1 OFDM symbol and so on. *switchingTimeDL/ switchingTimeUL* is mandatory present if switching between the EUTRA band pair is supported, otherwise the field is absent. It is signalled per pair of bands per band combination. | FD | No | N/A | N/A |
| ***srs-TxSwitch, srs-TxSwitch-v1610***Defines whether UE supports SRS for DL CSI acquisition as defined in clause 6.2.1.2 of TS 38.214 [12]. The capability signalling comprises of the following parameters:- *supportedSRS-TxPortSwitch* indicates SRS Tx port switching pattern supported by the UE, which is mandatory with capability signalling. The indicated UE antenna switching capability of ′xTyR′ corresponds to a UE, capable of SRS transmission on ′x′ antenna ports over total of ′y′ antennas, where ′y′ corresponds to all or subset of UE receive antennas, where 2T4R is two pairs of antennas. *supportedSRS-TxPortSwitch-v1610*, which is optional to report, indicates downgrading configuration of SRS Tx port switching pattern. If the UE indicates the support of downgrading configuration of SRS Tx port switching pattern using *supportedSRS-TxPortSwitch-v1610*, the UE shall report the values for this as below, based on what is reported in *supportedSRS-TxPortSwitch*.

|  |  |
| --- | --- |
| *supportedSRS-TxPortSwitch* | *supportedSRS-TxPortSwitch-v1610* |
| *t1r2* | *t1r1-t1r2* |
| *t1r4* | *t1r1-t1r2-t1r4* |
| *t2r4* | *t1r1-t1r2-t2r2-t2r4* |
| *t2r2* | *t1r1-t2r2* |
| *t4r4* | *t1r1-t2r2-t4r4* |
| *t1r4-t2r4* | *t1r1-t1r2-t2r2-t1r4-t2r4* |

- *txSwitchImpactToRx* indicates the lowest band entry number of the UL group (see *txSwitchWithAnotherBand*) that impacts the DL of this band entry;- *txSwitchWithAnotherBand* indicates the lowest band entry of the UL group, which is defined as band entries with UL (see NOTE) that impact each other's UL (i.e. SRS TX port switching on any of the cells in the group will impact UL on all the cells in the group). This parameter is absent if an UL group contains only one band entry.For *txSwitchImpactToRx* and *txSwitchWithAnotherBand*, value 1 means first entry, value 2 means second entry and so on. The UE may include *txSwitchImpactToRx* and *txSwitchWithAnotherBand* for a band entry even if *supportedSRS-TxPortSwitch* is set to 'notSupported' for that band entry. All DL and UL that switch together indicate the same entry number.The entry number is the band entry number in a band combination. The UE is restricted not to include fallback band combinations for the purpose of indicating different SRS antenna switching capabilities.NOTE: The band with UL includes a band associated with *FeatureSetUplinkId* set to 0 corresponding to the support of SRS-SwitchingTimeNR. | BC | FD | N/A | N/A |
| ***supportedAggBW-FR2-r17***Indicates the supported maximum aggregated intra-band bandwidth for TDD DL CCs and TDD UL CCs respectively in the FR2 CA bands of the band combination. It is also applicable to fallback band combinations of FR2 CA except for a single CC (i.e. non-CA) case. It is only applicable to FR2 CA band with FBG5 R2-R12 BW classes. UE indicating this shall report at least one *featureSetPerDownlinkCC* and *featureSetPerUplinkCC* (if applicable)with 200 MHz, and the UE is expected to support any combination of 100/200MHz carriers associated with the reported BW class (and as per TS 38.101-2 [34]) as long as the aggregated bandwidth of the configured carriers by the network does not exceed *supportedAggBW-FR2-r17****.*** | BC | No | N/A | FR2 only |
| ***supportedBandwidthCombinationSet***Defines the supported bandwidth combination set for a band combination as defined in TS 38.101-1 [2], TS 38.101-2 [3] and TS 38.101-3 [4]. For NR SA CA, NR-DC, inter-band (NG)EN-DC without intra-band (NG)EN-DC component, inter-band NE-DC without intra-band NE-DC component and intra-band (NG)EN-DC/NE-DC with additional inter-band NR CA component, the field defines the bandwidth combinations for the NR part of the band combination. For intra-band (NG)EN-DC/NE-DC without additional inter-band NR and LTE CA component, the field indicates the supported bandwidth combination set applicable to intra-band (NG)EN-DC/NE-DC band combination. This field is not applicable to source and target cells in intra-frequency DAPS handover.Field encoded as a bit map, where bit N is set to "1" if UE supports Bandwidth Combination Set N for this band combination as defined in the TS 38.101-1 [2], TS 38.101-2 [3] and TS 38.101-3 [4]. The leading / leftmost bit (bit 0) corresponds to the Bandwidth Combination Set 0, the next bit corresponds to the Bandwidth Combination Set 1 and so on. It is mandatory if- the band combination has more than one NR carrier (at least one SCell in an NR cell group);- or is an intra-band (NG)EN-DC/NE-DC combination without additional inter-band NR and LTE CA component;- or both.The corresponding bits of Bandwidth Combination Set 4 and Bandwidth Combination Set 5 shall not both be set to "1" for the same band combination. | BC | CY | N/A | N/A |
| ***supportedBandwidthCombinationSetIntraENDC***Defines the supported bandwidth combination set for a band combination that allows configuration of at least one EUTRA serving cell and at least one NR serving cell in the same band, as defined in the TS 38.101-3 [4], table 5.3B.1.2-1 and table 5.3B.1.3-1.- For intra-band (NG)EN-DC with additional inter-band CA component(s) of LTE and/or NR, the field defines the bandwidth combination set for the intra-band (NG)EN-DC component.- For intra-band NE-DC with additional inter-band CA component(s) of LTE and/or NR, the field defines the bandwidth combination set for the intra-band NE-DC component.Field encoded as a bit map, where bit N is set to "1" if UE supports Bandwidth Combination Set N for this band combination as defined in the TS 38.101-3 [4]. The leading / leftmost bit (bit 0) corresponds to the Bandwidth Combination Set 0, the next bit corresponds to the Bandwidth Combination Set 1 and so on.For the inter-band (NG)EN-DC/NE-DC band combination with only one intra-band (NG)EN-DC/NE-DC component as defined in the TS 38.101-3 [4], table 5.3B.1.2-1 and table 5.3B.1.3-1:- It is mandatory if the band combination is an intra-band (NG)EN-DC/NE-DC combination supporting both UL and DL intra-band (NG)EN-DC/NE-DC parts with additional inter-band NR/LTE CA component.- It is optional if the band combination is an intra-band (NG)EN-DC/NE-DC combination without supporting UL in both the bands of the intra-band (NG)EN-DC/NE-DC UL part. If not included, the network assumes the UE supports BCS0 as defined in TS 38.101-3 [4], table 5.3B.1.2-1 and table 5.3B.1.3-1 for the intra-band (NG)EN-DC/NE-DC.For the inter-band (NG)EN-DC band combination with multiple intra-band (NG)EN-DC components as defined in clause 5.5B in the TS 38.101-3 [4]:- This field is applicable only if the UE supports the same set of BCSs for all the intra-band (NG)EN-DC components.- It is mandatory if an intra-band (NG)EN-DC component supports both UL and DL intra-band (NG)EN-DC parts and the UE supports the same set of BCSs for all the intra-band (NG)EN-DC components.- It is optional if all the intra-band (NG)EN-DC components do not support UL in the bands of the intra-band (NG)EN-DC componenets. If this field and the *supportedIntraENDC-BandCombinationList* are not included, the network assumes the UE supports BCS0 as defined in TS 38.101-3 [4], table 5.3B.1.2-1 and table 5.3B.1.3-1 for all the intra-band (NG)EN-DC components. | BC | CY | N/A | N/A |
| ***supportedBandwidthCombinationSetIntraENDC-v1790***Indicates the supported bandwidth combination set for the corresponding intra-band (NG)EN-DC component within the inter-band (NG)EN-DC band combination with multiple intra-band (NG)EN-DC components as defined in clause 5.5B in the TS 38.101-3 [4].Field encoded as a bit map, where bit N is set to "1" if UE supports Bandwidth Combination Set N for this band combination as defined in the TS 38.101-3 [4]. The leading / leftmost bit (bit 0) corresponds to the Bandwidth Combination Set 0, the next bit corresponds to the Bandwidth Combination Set 1 and so on.- It is mandatory if the intra-band (NG)EN-DC component supports both UL and DL intra-band (NG)EN-DC parts.- It is optional if the intra-band (NG)EN-DC component does not support UL in both the bands of the intra-band (NG)EN-DC UL part. If not included, the network assumes the UE supports BCS0 for the intra-band (NG)EN-DC component as defined in TS 38.101-3 [4], table 5.3B.1.2-1 and table 5.3B.1.3-1 for the intra-band (NG)EN-DC component. | BC | CY | N/A | N/A |
| ***supportedTxBandCombListPerBC-Sidelink-r16, supportedRxBandCombListPerBC-Sidelink-r16***Indicates, for a particular Uu band combination, the PC5 band combination(s) on which the UE supports transmission/reception of PC5 simultaneously with Uu uplink/downlink respectively. The leading / leftmost bit (bit 0) corresponds to the first band combination included in *BandCombinationListSidelinkEUTRA-NR*, the next bit corresponds to the second band combination included in *BandCombinationListSidelinkEUTRA-NR* and so on. with value 1 indicating simultaneous transmission/reception is supported. | BC | No | N/A | N/A |
| ***supportedBandCombListPerBC-SL-RelayDiscovery-r17, supportedBandCombListPerBC-SL-NonRelayDiscovery-r17***Indicates, for a particular Uu band combination, the PC5 Relay discovery and non-Relay discovery band combination(s) on which the UE supports simultaneous transmission/reception of PC5 data (Relay discovery or non-Relay discovery) and Uu uplink/downlink respectively.The leading / leftmost bit (bit 0) corresponds to the first band combination included in *supportedBandCombinationListSL-RelayDiscovery-r17/supportedBandCombinationListSL-NonRelayDiscovery-r17*, the next bit corresponds to the second band combination included in *supportedBandCombinationListSL-RelayDiscovery-r17/supportedBandCombinationListSL-NonRelayDiscovery-r17* and so on. with value 1 indicating simultaneous transmission/reception is supported. | BC | No | N/A | N/A |
| ***supportedBandCombListPerBC-SL-U2U-RelayDiscovery-r18***Indicates, for a particular Uu band combination, the PC5 U2U relay discovery band combination(s) on which the UE supports simultaneous transmission/reception of PC5 data (U2U relay discovery) and Uu uplink/downlink respectively.The leading / leftmost bit (bit 0) corresponds to the first band combination included in *supportedBandCombinationListSL-U2U-RelayDiscovery-r18*, the next bit corresponds to the second band combination included in *supportedBandCombinationListSL-U2U-RelayDiscovery-r18* and so on with value 1 indicating simultaneous transmission/reception is supported. | BC | No | N/A | N/A |
| ***switchingPeriodRestriction-r18***Indicates whether the same value of switching period is applicable to the fallback band combinations for a given band combination supporting UL Tx switching across up to 4 bands.When the field is included for a band combination, it represents the largest value, i.e. 210us is supported for each band pair in all fallback band combinations.When the field is absent, it represents the same switching period reported for each band pair in this band combination is supported for the same band pair in all the fallback band combinations. | BC | FD | N/A | FR1 only |
| ***ULTxSwitchingBandPair-r16, ULTxSwitchingBandPair-v1700***Indicates UE supports dynamic UL 1Tx-2Tx switching in case of inter-band CA, SUL, and (NG)EN-DC, and UL 2Tx-2Tx switching in case of inter-band CA and SUL as defined in TS 38.214 [12], TS 38.101-1 [2] and TS 38.101-3 [4]. The capability signalling comprises of the following parameters:- *bandIndexUL1-r16* and *bandIndexUL2-r16* indicate the band pair on which UE supports dynamic UL Tx switching. *bandindexUL1*/*bandindexUL2* xx refers to the xxth band entry in the band combination. UE shall indicate support for 2-layer UL MIMO capabilities on one of the indicated two bands in each FeatureSet entry supporting UL 1Tx-2Tx switching and indicate support for 2-layer UL MIMO capabilities on both bands in each FeatureSet entry supporting UL 2T-2Tx switching, and only the band where UE supports 2-layer UL MIMO capability can work as carrier2 as defined in TS 38.101-1 [2] and TS 38.101-3 [4].- *uplinkTxSwitchingPeriod-r16* indicates the length of UL Tx switching period of 1Tx-2Tx switching per pair of UL bands per band combination when dynamic UL Tx switching is configured, as specified in TS 38.101-1 [2] and TS 38.101-3 [4]. UE shall not report the value n210us for EN-DC band combinations. n35us represents 35 µs, n140us represents 140µs, and so on, as specified in TS 38.101-1 [2] and TS 38.101-3 [4].- *uplinkTxSwitchingPeriod2T2T-r17* indicates the length of UL Tx switching period of 2Tx-2Tx switching per pair of UL bands per band combination when dynamic UL Tx switching is configured, as specified in TS 38.101-1 [2] and TS 38.101-3 [4]. n35us represents 35 µs, n140us represents 140µs, and so on, as specified in TS 38.101-1 [2] and TS 38.101-3 [4].- *uplinkTxSwitching-DL-Interruption-r16* indicates that DL interruption on the band will occur during UL Tx switching, as specified in TS 38.133 [5] and in TS 36.133 [27]. UE is not allowed to set this field for the band combination of SUL band+TDD band, for which no DL interruption is allowed.Field encoded as a bit map, where bit N is set to "1" if DL interruption on band N will occur during uplink Tx switching as specified in TS 38.133 [5] and in TS 36.133 [27]. The leading / leftmost bit (bit 0) corresponds to the first band of this band combination, the next bit corresponds to the second band of this band combination and so on. The capability is not applicable to the following band combinations, in which DL reception interruption is not allowed:- TDD+TDD CA with the same UL-DL pattern- TDD+TDD EN-DC with the same UL-DL pattern | BC | FD | N/A | FR1 only |
| ***uplinkTxSwitching-OptionSupport-r16***Indicates which option is supported for dynamic UL 1Tx-2Tx switching for inter-band UL CA and (NG)EN-DC. *switchedUL* represents option 1 as specified in TS 38.214 [12], *dualUL* represents option 2 as specified in TS 38.214 [12], *both* represents both option 1 and option2 as specified in TS 38.214 [12]. UE shall not report the value *both* for (NG)EN-DC case. The field is mandatory for inter-band UL CA and (NG)EN-DC case where UE supports dynamic UL 1Tx-2Tx switching.If this field is absent, the band pair reported in *supportedBandPairListNR-r16* is not valid for dynamic UL 1Tx-2Tx switching for inter-band UL CA. | BC | CY | N/A | FR1 only |
| ***uplinkTxSwitching-OptionSupport2T2T-r17***Indicates which option is supported for dynamic UL 2Tx-2Tx switching for inter-band UL CA. *switchedUL* represents option 1 as specified in TS 38.214 [12], *dualUL* represents option 2 as specified in TS 38.214 [12], *both* represents both option 1 and option2 as specified in TS 38.214 [12]. The field is mandatory for inter-band UL CA cases where UE supports dynamic UL 2Tx-2Tx switching. The UE indicating support of this feature shall indicate support of at least one common switching option between *uplinkTxSwitching-OptionSupport2T2T-r17* and *uplinkTxSwitching-OptionSupport-r16*. | BC | CY | N/A | FR1 only |
| ***uplinkTxSwitching-PowerBoosting-r16***Indicates the support of 3dB boosting on the maximum output power for UE transmission under the operation state in which 2-port transmission can be supported on carrier2 in case of inter-band UL CA case where UE supports dynamic UL Tx switching. A UE shall only indicate this capability in case the UE supports power class 3 for inter-band UL CA for the band combination as defined in TS 38.101-1 [2]. | BC | No | N/A | FR1 only |
| ***UplinkTxSwitchingAdditionalPeriodDualUL-r18***Indicates the UL Tx switching period for switching between a band pair and another band pair or another band, as specified in TS 38.101-1 [2], when Rel-18 UL Tx switching is configured by *uplinkTxSwitchingMoreBands-r18*.- *bandPairIndex1-r18*/*bandPairIndex2-r18* xx refers to the xxth band pair entry in the band pair list indicated by *ULTxSwitchingBandPair-r18*. The two band pairs consist of mutually exclusive bands.- *bandIndex-r18* xx refers to the xxth band entry in this band combination, which indicates a different band from those indicated by *bandPairIndex1-r18*.- *switchingAdditionalPeriodDualUL-r18* indicates the length of switching period for switching between one band pair indicated by *bandPairIndex1-r18* and another band pair indicated by *bandPairIndex2-r18* or another band indicated by *bandIndex-r18*. n35us represents 35 µs, n140us represents 140µs, and so on, as specified in TS 38.101-1 [2].A UE supporting this feature shall also indicate the support of dualUL switching option for the band pair(s) indicated in *bandPairIndex1-r18/bandPairIndex2-r18*. | BC | No | N/A | FR1 only |
| ***ULTxSwitchingBandPair-r18, ULTxSwitchingBandPair-v18xx***Indicates UE supports R18 dynamic UL Tx switching across up to 4 bands in case of inter-band CA, SUL as defined in TS 38.214 [12] and TS 38.101-1 [2]. The capability signalling comprises of the following parameters:- *bandIndexUL1-r18* and *bandIndexUL2-r18* indicate the band pair on which UE supports dynamic UL Tx switching. *bandindexUL1*/*bandindexUL2* xx refers to the xxth UL band entry in the band combination. UE shall indicate support of 2-layer UL MIMO in *FeatureSet* on both bands for 2Tx-2Tx switching, or indicate support of 2-layer UL MIMO on one band and 1-layer MIMO on the other band for 1Tx-2Tx switching, or indicate support of 1-layer UL MIMO on both bands for 1Tx-1Tx switching.- *uplinkTxSwitchingOptionForBandPair-r18* indicates whether switchedUL or dualUL or both switching options is supported for a given band pair as specified in TS 38.214 [12].- *switchingPeriodFor2T-r18* indicates the length of 2Tx-2Tx switching period. *switchingPeriodFor1T-r18* indicates the length of 1Tx-2Tx switching and/or 1Tx-1Tx switching period, as specified in TS 38.101-1 [2]. n35us represents 35 µs, n140us represents 140µs, and so on, as specified in TS 38.101-1 [2].- *uplinkTxSwitching-DL-Interruption-r18* indicates that DL interruption on the band will occur during UL Tx switching, as specified in TS 38.133 [5]. UE is not allowed to set this field for the band combination of SUL band+TDD band, for which no DL interruption is allowed.Field encoded as a bit map, where bit N is set to "1" if DL interruption on band N will occur during uplink Tx switching as specified in TS 38.133 [5]. The leading / leftmost bit (bit 0) corresponds to the first band of this band combination, the next bit corresponds to the second band of this band combination and so on. The capability is not applicable to the following band combinations, in which DL reception interruption is not allowed:- TDD+TDD CA with the same UL-DL pattern- *SwitchingPeriodUnaffectedBandDualUL-r18* indicates for a given band pair {band X and band Y}, whether/how the switching period is to be applied on band Z (as well as band X and Y), when a UL Tx switching is triggered from band pair {band X and band Z} to band pair {band Y and band Z}, as defined in 38.101-1 [2]. If absent for band Z, the UE is not required to transmit on any UL bands during the switching period reported for the band pair of band X and band Y, as defined in 38.101-1 [2].- *bandIndexUnaffected-r18* xx indicates the band index of band Z and refers to the xxth UL band entry in the band combination.- *maintainedUL-Trans-r18* indicates that the UE is capable of uplink transmission on band Z and is not required to transmit on band X and Y during the switching period reported for the band pair of band X and band Y, as specified in 38.101-1 [2].- *periodOnULBands-r18* indicates the switching period to be applied on any UL bands as specified in 38.101-1 [2]. n35us represents 35 µs, n140us represents 140µs, and so on.- *configured1T1T-OnTwoBands-r18* indicates the support of 2-band configuration of 1T-1T UL Tx switching using Rel-18 UL Tx switching configurations. This capability is only needed for a band pair where the UE reports no UL-MIMO on both bands. For a give band pair, the UE indicating support of this capability shall indicate support of switchedUL for this band pair. For a band pair for which the UE separately indicates support of UL CA support without UL Tx switching, this capability is not expected to be reported. | BC | FD | N/A | FR1 only |
| ***UplinkTxSwitchingBandParameters-v1700***Contains the UL Tx switching specific band parameters for a given band combination.The capability signalling comprises of the following parameters:- *bandIndex-r17* indicates a band on which UE supports dynamic UL Tx switching with another band in the band combination. *bandIndex* xx refers to the xxth band entry in the band combination.- *uplinkTxSwitching2T2T-PUSCH-TransCoherence-r17* indicates support of the uplink codebook subset for the carrier(s) on a band capable of two antenna connectors on which UE supports dynamic UL 2Tx-2Tx switching with another band in the band combination. UE indicating support of full coherent codebook subset shall also support non-coherent codebook subset. If this field is absent,- When 2Tx-2Tx switching between two bands is configured by *uplinkTxSwitching-2T-Mode-r17*, the per BC UE capability reported in *uplinkTxSwitching-PUSCH-TransCoherence-r16* is applied, and if this field and *uplinkTxSwitching-PUSCH-TransCoherence-r16* are both absent, the UE capability reported in *pusch-TransCoherence* is applied when uplink Tx switching is triggered between last transmitted SRS and scheduled PUSCH transmission, as specified in TS 38.101-1 [2].- When R18 dynamic UL Tx switching is configured by *uplinkTxSwitchingMoreBands-r18*, the UE capability reported in *pusch-TransCoherence* is applied when uplink Tx switching is triggered between last transmitted SRS and scheduled PUSCH transmission, as specified in TS 38.101-1 [2].NOTE: If *UplinkTxSwitchingBandParameters-v1700* is absent for one or more bands of a band combination, the per BC UE capability reported in *uplinkTxSwitching-PUSCH-TransCoherence-r16* is applied for corresponding band(s), and if *uplinkTxSwitching-PUSCH-TransCoherence-r16* is also absent, the UE capability reported in *pusch-TransCoherence* is applied for corresponding band(s) when uplink Tx switching is triggered between last transmitted SRS and scheduled PUSCH transmission, as specified in TS 38.101-1 [2]. | BC | No | N/A | FR1 only |
| ***uplinkTxSwitchingMinimumSeparationTime-r18***Indicates the minimum separation time for two uplink switching on more than 2 bands within any two consecutive reference slots as specified in TS 38.214 [12]. The field is mandatory when UE supports dynamic UL Tx switching across more than two bands. | BC | CY | N/A | FR1 only |
| ***uplinkTxSwitching-PUSCH-TransCoherence-r16***Indicates support of the uplink codebook subset when uplink 1Tx-2Tx switching is triggered between last transmitted SRS and scheduled PUSCH transmission, as specified in TS 38.101-1 [2].UE indicating support of full coherent codebook subset shall also support non-coherent codebook subset.If the field is absent, the supported uplink codebook subset indicated by *pusch-TransCoherence* applies when the uplink switching is triggered between last transmitted SRS and scheduled transmission. | BC | No | N/A | FR1 only |

\* \* \* Next Change \* \* \*

#### 4.2.7.4 *CA-ParametersNR*

| Definitions for parameters | Per | M | FDD-TDDDIFF | FR1-FR2DIFF |
| --- | --- | --- | --- | --- |
| ***ack-NACK-FeedbackForMulticast-r17***Indicates whether the UE supports ACK/NACK based HARQ-ACK feedback and RRC-based enabling/disabling ACK/NACK-based feedback for dynamic scheduling for multicast, comprised of the following functional components:- Supports ACK/NACK based HARQ-ACK feedback, and support of enabling/disabling ACK/NACK based HARQ-ACK feedback configured by RRC signalling;- Supports PTM retransmission for multicast;- Supports Type-1 and Type-2 HARQ-ACK CB for multicast feedback only;- Supports shared PUCCH resource configurations with unicast;- Supports Type-2 HARQ-ACK codebook for multicast on PUSCH/PUCCH with max number of G-RNTIs indicated in *maxNumberG-RNTI-HARQ-ACK-Codebook-r17*, which is not larger than max number of G-RNTIs indicated in *maxNumberG-RNTI-r17*.A UE supporting this feature shall also indicate support of *dynamicMulticastPCell-r17*. | BC | No | N/A | N/A |
| ***ack-NACK-FeedbackForSPS-Multicast-r17***Indicates whether the UE supports ACK/NACK based HARQ-ACK feedback and RRC-based enabling/disabling ACK/NACK-based feedback for SPS group-common PDSCH for multicast, comprised of the following functional components:- Support of ACK/NACK based HARQ-ACK feedback, enabling/disabling ACK/NACK based HARQ-ACK feedback configured by RRC signalling for SPS group-common PDSCH without PDCCH scheduling and first PDSCH after SPS activation;- Support of PTM retransmission for SPS multicast associated with G-CS-RNTI;- Support of Type-1 and Type-2 HARQ-ACK CB for SPS multicast feedback only;- Support of shared *SPS-PUCCH-AN-List* configuration from unicast SPS.A UE supporting this feature shall also indicate support of *sps-Multicast-r17*. | BC | No | N/A | N/A |
| ***advUnicastDCI-DL-r18***Indicates whether the UE supports processing up to X unicast DCI scheduling PDSCH per scheduled cell in a set of cells configured for multi-cell PDSCH scheduling by DCI format 1\_3.The UE supports up to X DCI formats 1\_3 for the set of cells, and up to X unicast DL DCI formats 1\_0/1\_1/1\_2 (if supported) for each of the cells in the set of cells. For each cell in the set of cells, the UE supports no more than X DCIs scheduling PDSCH for the cell.X is based on pair of (scheduling CC SCS, scheduled CC SCS): X={2,4} for (15,120), (15,60), (30,120). X={2} for (15,30), (30,60), (60,120 kHz). X applies per slot of scheduling CC.A UE supporting this feature shall also indicate support of *multiCell-PDSCH-DCI-1-3-DiffSCS-r18.* | BC | No | N/A | N/A |
| ***advUnicastDCI-UL-r18***Indicates whether the UE supports processing up to X unicast DCI scheduling PUSCH per scheduled cell in a set of cells configured for multi-cell PUSCH scheduling by DCI format 0\_3.The UE supports up to X DCI formats 0\_3 for the set of cells, and up to X unicast UL DCI formats 0\_0/0\_1/0\_2 (if supported) for each of the cells in the set of cells. For a cell in the set of cells, the UE supports no more than X DCIs scheduling PUSCH for the cell.X is based on pair of (scheduling CC SCS, scheduled CC SCS): X={2,4} for (15,120), (15,60), (30,120). X={2} for (15,30), (30,60), (60,120 kHz), X applies per slot of scheduling CC.A UE supporting this feature shall also indicate support of *multicell-PUSCH-DCI-0-3-DiffSCS-r18.* | BC | No | N/A | N/A |
| ***beamManagementType-r16, beamManagementType-CBM-r17***Indicates the supported beam management type for inter-band CA within FR2. Beam management type can be independent beam management (IBM) or common beam management (CBM). The UE can support independent beam management (IBM) only or common beam management (CBM) only or both.NOTE: *beamManagementType-CBM-r17* is only applicable to the band combinations with 2 bands. | BC | Yes | TDD only | FR2 only |
| ***blindDetectFactor-r16***Defines the value of factor R for blind detection as specified in Clause 10.1 [11].The UE that indicates support of this feature shall support *multiDCI-MultiTRP-r16.* | BC | No | N/A | N/A |
| ***bwp-SwitchingDCI-0-3-And-1-3-r18***Indicates whether the UE supports BWP switch indication by DCI format 0\_3 and 1\_3.A UE supporting this feature shall indicate support of at least one of *multiCell-PDSCH-DCI-1-3-SameSCS-r18, multiCell-PDSCH-DCI-1-3-DiffSCS-r18, multiCell-PUSCH-DCI-0-3-SameSCS-r18* and *multiCell-PUSCH-DCI-0-3-DiffSCS-r18* for the same BC.A UE supporting this feature shall also indicate support of at least one of *upto2* in *bwp-SameNumerology, upto4* in *bwp-SameNumerology* and *upto4* in *bwp-DiffNumerology* for at least one band of the same BC. | BC | No | N/A | N/A |
| ***codebookComboParametersAdditionPerBC-r16***Indicates the list of supported CSI-RS resources across all bands in a band combination by referring to *codebookVariantsList* for the mixed codebook types. For mixed codebook types, UE reports support active CSI-RS resources and ports for up to 4 mixed codebook combinations in any slot. The following parameters are included in *codebookVariantsList* for each code book type:- *maxNumberTxPortsPerResource* indicates the maximum number of Tx ports in a resource across all bands within a band combination;- *maxNumberResourcesPerBand* indicates the maximum number of resources across all CCs within a band combination, simultaneously;- *totalNumberTxPortsPerBand* indicates the total number of Tx ports across all CCs within a band combination, simultaneously.For each band in a band combination, supported values for these three parameters are determined in conjunction with *codebookComboParametersAddition-r16* reported in *MIMO-ParametersPerBand*. | BC | No | N/A | N/A |
| ***CodebookComboParametersCJT-PerBC-r18***Indicates the support of active CSI-RS resources and ports for mixed codebook types including Type-II-CJT in any slot.The UE reports supported active CSI-RS resources and ports for the following are the possible mixed codebook combinations {Codebook1, Codebook2, Codebook3}:- cjt-Type1SP-eType2R1-null indicates {Type I SP, eType-II-CJT R=1, NULL}- cjt-Type1SP-eType2R2-null indicates {Type I SP, eType-II-CJT R=2, NULL}- cjt-Type1SP-feType2R1M1-null indicates {Type I SP, FeType-II-CJT PS R=1 M=1, NULL}- cjt-Type1SP-feType2R1M2-null indicates {Type I SP, FeType-II-CJT PS R=1 M=2, NULL}- cjt-Type1SP-feType2R2M2-null indicates {Type I SP, FeType-II-CJT PS R=2 M=2, NULL}- cjt-Type1MP-eType2R1-null indicates {Type I MP, eType-II-CJT R=1, NULL}- cjt-Type1MP-eType2R2-null indicates {Type I MP, eType-II-CJT R=2, NULL}- cjt-Type1MP-feType2R1M1-null indicates {Type I MP, FeType-II-CJT PS R=1 M=1, NULL}- cjt-Type1MP-feType2R1M2-null indicates {Type I MP, FeType-II-CJT PS R=1 M=2, NULL}- cjt-Type1MP-feType2R2M2-null indicates {Type I MP, FeType-II-CJT PS R=2 M=2, NULL}For each mixed codebook supported by the UE, *supportedCSI-RS-ResourceListAdd-r16* indicates the list of supported CSI-RS resources across all CCs in a band combination by referring to *codebookVariantsList*. The following parameters are included in *codebookVariantsList*:*- maxNumberTxPortsPerResource* indicates the maximum number of Tx ports in a resource of a band combination. The minimum of *maxNumberTxPortsPerResource* is '*p4*';- *maxNumberResourcesPerBand* indicates the maximum number of resources across all CCs in a band combination.- *totalNumberTxPortsPerBand* indicates the total number of Tx ports across all CCs in a band combination. The minimum value of *totalNumberTxPortsPerBand* is 4.A UE supporting this feature shall also indicate support of individual codebook types in the reported mixed codebook combination among *eType2CJT-r18*, *feType2CJT-r18*, Type I single panel codebook and Type I multi-panel codebook. | BC | No | N/A | N/A |
| ***codebookParametersAdditionPerBC-r16***Indicates the list of supported CSI-RS resources across all bands in a band combination by referring to *codebookVariantsList* for the additional codebook types. The following parameters are included in *codebookVariantsList* for each code book type:- *maxNumberTxPortsPerResource* indicates the maximum number of Tx ports in a resource across all bands within a band combination;- *maxNumberResourcesPerBand* indicates the maximum number of resources across all CCs within a band combination, simultaneously;- *totalNumberTxPortsPerBand* indicates the total number of Tx ports across all CCs within a band combination, simultaneously.For each band in a band combination, supported values for these three parameters are determined in conjunction with *codebookParametersAddition-r16* reported in *MIMO-ParametersPerBand*. | BC | No | N/A | N/A |
| ***codebookParametersetype2CJT-PerBC-r18***Indicates the UE support of additional codebooks and the corresponding parameters supported by the UE of Enhanced Type II Codebook (eType-II) with refinement for multi-TRP CJT.The UE shall include *eType2CJT-r18* to indicate basic features of eType-II codebook with refinement for multi-TRP CJT. This capability signalling comprises the following parameters:*-* *supportedCSI-RS-ResourceList-r18* indicates the list of supported CSI-RS resources across all CCs in a band combination by referring to *codebookVariantsList*. The following parameters are included in *codebookVariantsList*:- *maxNumberTxPortsPerResource* indicates the maximum number of Tx ports in one NZP CSI-RS resource associated with multi-TRP CJT- *maxNumberResourcesPerBand* indicates the maximum total number of NZP CSI-RS resource associated with multi-TRP CJT- *totalNumberTxPortsPerBand* indicates the total number of Tx ports of NZP CSI-RS resources associated with multi-TRP CJT- *scalingfactor-r18* indicates the scaling factor X for CPU occupation counting for CJT etype-II codebook- *maxNumberNZP-CSI-RS-MultiTRP-CJT-r18* indicates the maximum number of NZP CSI-RS resources in one NZP CSI-RS resource set associated with multi-TRP CJTThe UE indicating *eType2CJT-r18* shall support N=N\_TRP only, N\_L=1 only, support mode 2 for eType-II codebook refinement for multi-TRP CJT, support for PMI subband R=1, support of parameter combinations with L=2,4, support rank 1,2, and support frequency basis selection mode 2, i.e., common frequency basis selection among different TRPs.The UE indicating support of *eType2CJT-r18* shall also indicate support of *csi-ReportFramework* and *simultaneousCSI-ReportsAllCC.*NOTE 1:When NTRP=1 TRP is configured, OCPU =1. When NTRP>1 TRPS are configured, OCPU = ceil(X \* NTRP).NOTE 2:A-CSI is supported, and whether UE supports SP-CSI on PUSCH is dependent on *sp-CSI-ReportPUSCH*.The UE optionally includes *eType2CJT-FD-IO-r18* to indicate whether the UE supports mode 1 for CJT eType-II codebook with FD basis selection integer frequency offset. This capability signalling comprises the list of supported NZP CSI-RS resources across all CCs in a band combination by referring to *codebookVariantsList*. The UE indicating *eType2CJT-FD-IO-r18* shall also support frequency basis selection mode 1, i.e., common frequency basis selection among different TRPs with FD basis selection integer frequency offset.The UE optionally indicates *eType2CJT-FD-FO-r18* to indicate whether the UE supports FD basis selection fractional offset mode for Rel-16-based CJT codebook with mode1. The UE indicating *eType2CJT-FD-FO-r18* shall also indicate support of *eType2CJT-FD-IO-r18.*The UE optionally indicates *eType2CJT-R2-r18* to indicate whether the UE supports eType-II codebook refinement for multi-TRP CJT with PMI subbands R=2. This capability signalling comprises the list of supported NZP CSI-RS resources with R=2 across all CCs in a band combination by referring to *codebookVariantsList* across all CCs.The UE optionally indicates *eType2CJT-PV-Beta-r18* to indicate whether the UE supports eType-II codebook refinement for multi-TRP CJT with parameter combination pv={1/2,1/2,1/2,1/2} and beta=1/2.The UE optionally indicates *eType2CJT-2NN1N2-r18* to indicate whether the UE supports 2NN1N2 >32 for eType-II CJT codebook. The UE indicates themaximum number of ports across all TRPs for one CJT CSI measurement.The UE optionally indicates *eType2CJT-Rank3Rank4-r18* to indicate whether the UE supports eType-II codebook refinement for multi-TRP CJT with rank 3,4.The UE optionally indicates *eType2CJT-L6-r18* to indicate whether the UE supports eType-II codebook refinement for multi-TRP CJT with parameter combination with L=6. The UE supports this capability only for N\_TRP=1. The UE indicating *eType2CJT-L6-r18* shall also indicate support of *eType2CJT-r18*.The UE optionally indicates *eType2CJT-NN-r18* to indicate whether the UE supports selection of N <= N\_TRP CSI-RS resource by UE for multi-TRP CJT based on eType-II codebook.The UE optionally indicates *eType2CJT-NL-SD-r18* to indicate whether the UE supports N\_L>1 combinations of number of SD basis across CSI-RS resources for CJT eType-II codebook. The UE indicates themaximum number of lists for spatial basis selection, i.e., N\_L, for multi-TRP CJT based on eType-II codebook.The UE optionally indicates *eType2CJT-Unequal-r18* to indicate whether the UE supports unequal number of spatial basis selection configuration across CSI-RS resources for multi-TRP CJT including eType-II codebook refinement.For *codebookVariantsList* related to the eType-II:*-* The minimum of *maxNumberTxPortsPerResource* is '*p4*';*-* The minimum of *maxNumberResourcesPerBand* is 2;*-* The minimum value of *totalNumberTxPortsPerBand* is 4. | BC | No | N/A | N/A |
| ***codebookParametersetype2DopplerCSI-PerBC-r18***Indicates the UE support of additional codebooks and the corresponding parameters supported by the UE of Enhanced Type II Codebook (eType-II) based on doppler CSI as specified in TS 38.214 [12].The UE shall include *eType2Doppler-r18* to indicate basic features of eType-II doppler codebook. This capability signalling comprises the following parameters:*-* *supportedCSI-RS-ResourceList-r18* indicates the list of supported CSI-RS resources across all CCs in a band combination by referring to *codebookVariantsList*. The following parameters are included in *codebookVariantsList*:- *maxNumberTxPortsPerResource* indicates the maximum number of Tx ports in a resource of a band combination- *maxNumberResourcesPerBand* indicates the maximum number of resources across all CCs in a band combination, simultaneously- *totalNumberTxPortsPerBand* indicates the total number of Tx ports across all CCs in a band combination, simultaneously- *valueY-P-SP-CSI-RS-r18* indicates value of Y for CPU occupation (OCPU = Y\**vectorLengthDD-r18*), when P/SP-CSI-RS is configured for CMR- *valueY-A-CSI-RS-r18* indicates value of Y for CPU occupation (OCPU = Y\*K), when A-CSI-RS is configured for CMR- *scalingfactor-r18* indicates scaling factor for active resource counting KpThe UE indicating *eType2Doppler-r18* shall support X=1 CQI based on the first/earliest slot of the CSI reporting window and the first/earliest predicted PMI (TDCQI='1-1'), support eType-II regular codebook refinement for predicted PMI with PMI subband R=1 3, support parameter combinations with L=2,4, support for rank = 1,2, and support for the size of DD-basis, vectorLengthDD-r18 =1.The UE indicating support of *eType2Doppler-r18* shall also indicate support of *csi-ReportFramework* and *simultaneousCSI-ReportsAllCC.*NOTE 1:When vectorLengthDD-r18 =1, OCPU =4.NOTE 2:OCPU ≥ 4 when P/SP-CSI-RS is configured for CMR.NOTE 3:when K=12, OCPU =8NOTE 4:A UE that supports CSI enhancement for Rel-16-based type-2 doppler must support this feature.The UE optionally includes *eType2DopplerN4-r18* to indicate whether the UE supports doppler measurement with N4>1 for eType-II doppler codebook. This capability signalling comprises the following parameters:- *supportedCSI-RS-ReportSettingList1-r18* indicates the list of supported combinations across all CCs in a band combination simultaneously by referring to *supportedCSI-RS-ReportSettingList* The following parameters are included in *supportedCSI-RS-ReportSettingList-r18*- *maxN4-r18* indicates the max number of vectorLengthDD-r18- *maxNumberTxPortsPerResource-r18* indicates the maximum number of Tx ports in a resource of a band combination- *maxNumberResourcesPerBand-r18* indicates the maximum number of resources across all CCs in a band combination, simultaneously- *totalNumberTxPortsPerBand-r18* indicates the total number of Tx ports across all CCs in a band combination, simultaneously- *supportedCSI-RS-ReportSettingList2-r18* indicates the list of supported combinations for one CSI report setting by referring to *supportedCSI-RS-ReportSettingList-r18.*The UE indicating support of *eType2DopplerN4-r18* shall also indicate support for the size of DD-basis, vectorLengthDD-r18 >1, and Value of *unitDurationDD-r18*=m for the DD unit size when A-CSI-RS is configured for CMR.The UE optionally includes *ddUnitSize-A-CSI-RS-CMR-r18* to indicate the support of value of *unitDurationDD-r18*=1 for the DD unit duration when A-CSI-RS is configured for CMR.A UE supporting this feature shall also indicate support of *eType2DopplerN4-r18*.The UE optionally includes *maxNumberAperiodicCSI-RS-Resource-r18* to indicate the maximum number of aperiodic CSI-RS resources that can be configured in the same CSI report setting for eType-II doppler measurement.The UE optionally includes *eType2DopplerR2-r18* to indicate whether the UE supports R=2 for eType-II doppler codebook. This capability signalling comprises the list of supported CSI-RS resources across all CCs in a band combination by referring to *codebookVariantsList*.The UE optionally includes *eType2DopplerX1-r18* to indicate whether the UE support X=1 based on first and last slot of WCSI, for eType-II doppler codebook.The UE optionally includes *eType2DopplerX2-r18* to indicate whether the UE support X=2 CQI based on 2 slots for eType-II doppler codebook.The UE optionally includes *eType2DopplerL-N4D1-r18* to indicate whether the UE support l = (n – nCSI,ref ) for CSI reference slot for eType-II doppler codebook.The UE optionally includes *eType2DopplerL6-r18* to indicate whether the UE support L=6 for eType-II doppler codebook.The UE optionally includes *eType2DopplerR3R4-r18* to indicate whether the UE support rank equals 3 and 4 for eType-II doppler codebook.For *codebookVariantsList-r16* related to the eType-II:- The minimum of *maxNumberTxPortsPerResource* is 'p4';- The minimum of *maxNumberResourcesPerBand* is 2, except for *eType2DopplerR2-r18*.- The minimum value of *totalNumberTxPortsPerBand* is 4. | BC | No | N/A | N/A |
| ***codebookParametersfetype2CJT-PerBC-r18***Indicates the UE support of additional codebooks and the corresponding parameters supported by the UE of Further Enhanced Type II Codebook (feType-II) with refinement for multi-TRP CJT.The UE shall include *feType2CJT-r18* to indicate basic features of feType-II codebook with refinement for multi-TRP CJT. This capability signalling comprises the following parameters:*-* *supportedCSI-RS-ResourceList-r18* indicates the list of supported CSI-RS resources across all CCs in a band combination by referring to *codebookVariantsList*. The following parameters are included in *codebookVariantsList*:- *maxNumberTxPortsPerResource* indicates the maximum number of Tx ports in one NZP CSI-RS resource associated with multi-TRP CJT- *maxNumberResourcesPerBand* indicates the maximum total number of NZP CSI-RS resource associated with multi-TRP CJT- *totalNumberTxPortsPerBand* indicates the total number of Tx ports of NZP CSI-RS resources associated with multi-TRP CJT- *scalingfactor-r18* indicates the scaling factor X for CPU occupation counting for CJT fetype-II codebook- *maxNumberNZP-CSI-RS-MultiTRP-CJT-r18* indicates the maximum number of NZP CSI-RS resources in one NZP CSI-RS resource set associated with multi-TRP CJTThe UE indicating *feType2CJT-r18* shall support N=N\_TRP only, N\_L=1 only, support mode 2 for FeType-II port selection codebook refinement for multi-TRP CJT, support for PMI subband R=1, support of parameter combinations with M=1, support rank 1,2, and support frequency basis selection mode 2, i.e., common frequency basis selection among different TRPs.The UE indicating support of *feType2CJT-r18* shall also indicate support of *csi-ReportFramework* and *simultaneousCSI-ReportsAllCC.*NOTE 1:When NTRP=1 TRP is configured, OCPU =1. When NTRP>1 TRPS are configured, OCPU = ceil(X \* NTRP).NOTE 2:A-CSI is supported, and whether UE supports SP-CSI on PUSCH is dependent on *sp-CSI-ReportPUSCH*.NOTE 3:A UE that supports CSI enhancement for Rel 17 based type-II CJT must support this feature.The UE optionally includes *feType2CJT-FD-IO-r18* to indicate whether the UE supports FeType-II port selection codebook refinement for multi-TRP CJT with PMI subband R=1. This capability signalling comprises the list of supported NZP CSI-RS resources across all CCs in a band combination by referring to *codebookVariantsList*. The UE indicating *feType2CJT-FD-IO-r18* shall also support frequency basis selection mode 1, i.e., common frequency basis selection among different TRPs with FD basis selection integer frequency offset.The UE optionally Indicates *feType2CJT-FD-FO-r18* to indicate whether the UE supports frequency basis selection mode 1 with FD basis selection fractional frequency offset for FeType-II port selection based CJT codebook. The UE indicating *feType2CJT-FD-FO-r18* shall also indicate support of *feType2CJT-FD-IO-r18.*The UE optionally Indicates *eType2CJT-M2R1-r18* to indicate whether the UE supports FeType-II port selection codebook refinement for multi-TRP CJT with M=2 and PMI subband R=1. This capability signalling comprises the list of supported NZP CSI-RS resources with R=2 across all CCs in a band combination by referring to *codebookVariantsList*. The UE indicating *feType2CJT-M2R1-r18* shall also indicate support of *feType2CJT-r18* or *feType2CJT-FD-IO-r18*.The UE optionally indicates *feType2CJT-R2-r18* to indicate whether the UE supports FeType-II port selection codebook refinement for multi-TRP CJT with PMI subband R=2. This capability signalling comprises the list of supported NZP CSI-RS resources with R=2 across all CCs in a band combination by referring to *codebookVariantsList*. The UE indicating *feType2CJT-R2-r18* shall also indicate support of *feType2CJT-r18* or *feType2CJT-FD-IO-r18*.The UE optionally indicates *feType2CJT-2NN1N2-r18* to indicate whether the UE supports 2NN1N2 >32 for FeType-II CJT codebook. The UE indicates themaximum number of ports across all TRPs for one CJT CSI measurement.The UE optionally indicates *feType2CJT-Rank3Rank4-r18* to indicate whether the UE supports FeType-II port selection codebook refinement for multi-TRP CJT with rank 3,4.The UE optionally indicates *feType2CJT-NN-r18* to indicate whether the UE supports selection of N <= N\_TRP CSI-RS resource by UE for multi-TRP CJT based on FeType-II port selection codebook.The UE optionally indicates *feType2CJT-NL-r18* to indicate whether the UE supports N\_L>1 combinations of number of ports across CSI-RS resources for CJT Fetype-II codebook. The UE indicates the maximum number of lists for ports selection, i.e., NL, for multi-TRP CJT based on FeType-II port selection codebook.The UE optionally indicates *feType2CJT-Unequal-r18* to indicate whether the UE supports unequal number of port selection configuration across CSI-RS resources for multi-TRP CJT including FeType-II port selection codebook refinement.For *codebookVariantsList* related to the FeType-II:*-* The minimum of *maxNumberTxPortsPerResource* is '*p4*';*-* The minimum of *maxNumberResourcesPerBand* is 2;*-* The minimum value of *totalNumberTxPortsPerBand* is 4. | BC | No | N/A | N/A |
| ***codebookParametersfetype2DopplerCSI-PerBC-r18***Indicates the UE support of additional codebooks and the corresponding parameters supported by the UE of Further Enhanced Type II Codebook (FeType-II) based on doppler CSI as specified in TS 38.214 [12].The UE shall include *feType2Doppler-r18* to indicate basic features of FeType-II doppler codebook. This capability signalling comprises the following parameters:*-* *supportedCSI-RS-ResourceList-r18* indicates the list of supported CSI-RS resources across all CCs in a band combination by referring to *codebookVariantsList*. The following parameters are included in *codebookVariantsList*:- *maxNumberTxPortsPerResource* indicates the maximum number of Tx ports in a resource of a band combination- *maxNumberResourcesPerBand* indicates the maximum number of resources across all CCs within a band combination, simultaneously- *totalNumberTxPortsPerBand* indicates the total number of Tx ports across all CCs within a band combination, simultaneously- *valueY-A-CSI-RS-r18* indicates value of Y for CPU occupation (OCPU = Y\*K), when A-CSI-RS is configured for CMR- *scalingfactor-r18* indicates scaling factor for active resource counting KpThe UE indicating *feType2Doppler-r18* shall support X=1 CQI based on the first/earliest slot of the CSI reporting window and the first/earliest predicted PMI, support FeType-II regular codebook refinement for predicted PMI with PMI subband R=1, support parameter combinations with M=1, support for rank = 1,2, and support vectorLengthDD-r18 =1. A UE indicating this feature shall also indicate the support of *csi-ReportFramework*.The UE indicating support of *feType2Doppler-r18* shall also indicate support of *eType2Doppler-r18*, *csi-ReportFramework* and *simultaneousCSI-ReportsAllCC.*NOTE 1:OCPU = 4 when P/SP-CSI-RS is configured for CMR.NOTE 2:when K=12, OCPU =8.NOTE 3:Void.The UE optionally includes *maxNumberAperiodicCSI-RS-Resource-r18* to indicate the maximum number of aperiodic CSI-RS resources that can be configured in the same CSI report setting for FeType-II doppler measurement.The UE optionally includes *feType2DopplerM2R1-r18* to indicate whether the UE supports M=2 and R=1 for FeType-II doppler codebook. This capability signalling comprises the list of supported CSI-RS resources across all CCs in a band combination by referring to *codebookVariantsList*.The UE optionally includes *feType2DopplerR2-r18* to indicate whether the UE supports R=2 for FeType-II doppler codebook. This capability signalling comprises the list of supported CSI-RS resources across all CCs in a band combination by referring to *codebookVariantsList*.The UE optionally includes *feType2DopplerL-N4D1-r18* to indicate whether the UE support support of l = (n – nCSI,ref ) for CSI reference slot for FeType-II doppler codebook.The UE optionally includes *feType2DopplerR3R4-r18* to indicate whether the UE support rank equals 3 and 4 for FeType-II doppler codebook.For *codebookVariantsList-r16* related to the feType-II:- The minimum of *maxNumberTxPortsPerResource* is '*p4*';- The minimum of *maxNumberResourcesPerBand* is 2, except for *eType2DopplerR2-r18*.- The minimum value of *totalNumberTxPortsPerBand* is 4. | BC | No | N/A | N/A |
| ***codebookParametersfetype2perBC-r17***Indicates the list of supported CSI-RS resources across all bands in a band combination by referring to *codebookVariantsList* for the additional codebook types. The following parameters are included in *codebookVariantsList* for each code book type:- *maxNumberTxPortsPerResource* indicates the maximum number of Tx ports in a resource across all bands within a band combination;- *maxNumberResourcesPerBand* indicates the maximum number of resources across all CCs within a band combination, simultaneously;- *totalNumberTxPortsPerBand* indicates the total number of Tx ports across all CCs within a band combination, simultaneously.For each band in a band combination, supported values for these three parameters are determined in conjunction with *CodebookParametersfetyp2-r17* reported in *MIMO-ParametersPerBand*.For *codebookVariantsList* related to the FeType-II:- The minimum of *maxNumberTxPortsPerResource* is '*p4*';- The minimum value of *totalNumberTxPortsPerBand* is 4. | BC | No | N/A | N/A |
| ***codebookParametersHARQ-ACK-PUSCH-PerBC-r18***Indicates whether the UE supports Multiplexing HARQ-ACK codebook in a PUSCH for PDSCH scheduled after UL grant.This capability signalling comprises the following parameters:- *multiplexingType1-r18* indicates whether the UE supports multiplexing Type-1 HARQ-ACK codebook on a repetition of a PUSCH transmission other than a first repetition, where ACK/NACK is generated for the HARQ-ACK codebook including HARQ-ACK information associated with PDSCH reception(s) scheduled after the UL grant scheduling the PUSCH transmission. A UE supporting this feature shall also indicate support of *semiItaticHARQ-ACK-Codebook.*- *multiplexingType2-r18* indicates whether the UE supports multiplexing Type-2 HARQ-ACK codebook on a repetition of a PUSCH transmission other than a first repetition, where ACK/NACK is generated for the HARQ-ACK codebook including HARQ-ACK information associated with PDSCH reception(s) scheduled after the UL grant scheduling the PUSCH transmission. A UE supporting this feature shall also indicate support of *dynamicHARQ-ACK-Codebook*.- *multiplexingType3-r18* indicates whether the UE supports multiplexing Type-3 HARQ-ACK codebook on a repetition of a PUSCH transmission other than a first repetition, where ACK/NACK is generated for the HARQ-ACK codebook including HARQ-ACK information associated with PDSCH reception(s) scheduled after the UL grant scheduling the PUSCH transmission. A UE supporting this feature shall also indicate support of *oneShotHARQ-feedback-r16*.A UE supporting this feature shall also indicate support of one of *pusch-RepetitionMultiSlots-r16* and *pusch-RepetitionTypeB-r16*.UE does not expect to determine a different codebook size in a PUCCH slot from the codebook size determined based on HARQ-ACK information associated with PDSCH reception(s) scheduled before a UL grant that schedules a PUSCH in a slot overlapping with the PUCCH slot.UE does not expect to determine a different PUCCH time domain resource in a slot from the PUCCH time domain resource determined based on HARQ-ACK information associated with PDSCH reception(s) scheduled before a UL grant that schedules a PUSCH in that slot.The UE optionally includes *pucch-DiffResource-PDSCH-r18* to indicate whether the UE supports determining a different PUCCH resource in a slot from the PUCCH resource indicated by the last DCI format before a UL grant in the slot, to include HARQ-ACK information associated with PDSCH reception(s) scheduled after the UL grant scheduling a PUSCH transmission with repetitions and the HARQ-ACK information are multiplexed on a repetition of the PUSCH transmission other than a first repetition in the same slot.The UE optionally includes *diffCB-Size-PDSCH-r18* to indicate whether the UE supports determining different codebook size in a PUCCH slot from the size determined based on HARQ-ACK information associated with PDSCH reception(s) scheduled before a UL grant, to include HARQ-ACK information associated with PDSCH reception(s) scheduled after the UL grant scheduling a PUSCH transmission with repetitions and the HARQ-ACK information are multiplexed on a repetition of the PUSCH transmission other than a first repetition in the same slot. | BC | No | N/A | N/A |
| ***codebookComboParameterMixedTypePerBC-r17***Indicates the support of active CSI-RS resources and ports for mixed codebook types in any slot. The UE reports supported active CSI-RS resources and ports for up to 4 mixed codebook combinations in any slot. The following are the possible mixed codebook combinations {Codebook1, Codebook2, Codebook3}:*- type1SP-feType2PS-null-r17 indicates* {Type 1 Single Panel, FeType II PS M=1, NULL}*- type1SP-feType2PS-M2R1-null-r17* indicates {Type 1 Single Panel, FeType II PS M=2 R=1, NULL}*- type1SP-feType2PS-M2R2-null-r17* indicates {Type 1 Single Panel, FeType II PS M=2 R=2, NULL}*- type1SP-Type2-feType2-PS-M1-r17* indicates {Type 1 Single Panel, Type II, FeType II PS M=1}*- type1SP-Type2-feType2-PS-M2R1-r17* indicates {Type 1 Single Panel, Type II, FeType II PS M=2 R=1}*- type1SP-eType2R1-feType2-PS-M1-r17* indicates {Type 1 Single Panel, eType II R=1, FeType II PS M=1}*- type1SP-eType2R1-feType2-PS-M2R1-r17* indicates {Type 1 Single Panel, eType II R=1, FeType II PS M=2 R=1}*- type1MP-feType2PS-null-r17* indicates {Type 1 Multi Panel*,* FeType II PS M=1, NULL}*- type1MP-feType2PS-M2R1-null-r17* indicates {Type 1 Multi Panel*,* FeType II PS M=2 R=1, NULL}*- type1MP-feType2PS-M2R2-null-r17* indicates {Type 1 Multi Panel*,* FeType II PS M=2 R=2, NULL}*- type1MP-Type2-feType2-PS-M1-r17* indicates {Type 1 Multi Panel*,* Type II, FeType II PS M=1}*- type1MP-Type2-feType2-PS-M2R1-r17* indicates {Type 1 Multi Panel*,* Type II, FeType II PS M=2 R=1}*- type1MP-eType2R1-feType2-PS-M1-r17* indicates {Type 1 Multi Panel, eType II R=1, FeType II PS M=1}*- type1MP-eType2R1-feType2-PS-M2R1-r17* indicates {Type 1 Multi Panel, eType II R=1, FeType II PS M=2 R=1}For each mixed codebook supported by the UE, *supportedCSI-RS-ResourceListAdd-r16* indicates the list of supported CSI-RS resources in a band by referring to *codebookVariantsList*. The following parameters are included in *codebookVariantsList*:*- maxNumberTxPortsPerResource* indicates the maximum number of Tx ports in a resource of a band combination with the minimum value of '*p4*'.- *maxNumberResourcesPerBand* indicates the maximum number of resources across all CCs in a band combination with the minimum value of 4.- *totalNumberTxPortsPerBand* indicates the total number of Tx ports across all CCs in a band combination.The UE supporting this feature shall indicate the support of individual codebook types in the reported mixed codebook combination(s) among *fetype2basic-r17, etype2R1-r16, codebookParameters (type1-singlePanel, type1-multiPanel, type2), fetype2R1-r17, fetype2R2-r17.* | BC | No | N/A | N/A |
| ***codebookComboParameterMultiTRP-PerBC-r17***Indicates the support of active CSI-RS resources and ports in the presence of multi-TRP CSI.Indicates the support of active CSI-RS resources and ports for mixed codebook types in any slot. The UE reports supported active CSI-RS resources and ports for up to 4 mixed codebook combinations. The following are the possible mixed codebook combinations {Codebook1, Codebook2, Codebook3}:*- nCJT-null-null* indicates {NCJT, NULL, NULL}*- nCJT1SP-null-null* indicates {NCJT+Type 1 SP for sTRP, NULL, NULL}*- nCJT-Type2-null-r16* indicates{NCJT*, Type 2, Null}**- nCJT-Type2PS-null-r16* indicates{NCJT*, Type 2 with port selection, Null}**- nCJT-eType2R1-null-r16* indicates{NCJT*, eType 2 with R=1, Null}**- nCJT-eType2R2-null-r16* indicates{NCJT*, eType 2 with R=2, Null}**- nCJT-eType2R1PS-null-r16* indicates{NCJT*, eType 2 with R=1 and port selection, Null}**- nCJT-eType2R2PS-null-r16* indicates{NCJT*, eType 2 with R=2 and port selection, Null}**- nCJT-Type2-Type2PS-r16* indicates{NCJT*, Type 2, Type 2 with port selection}**- nCJT1SP-Type2-null-r16* indicates{NCJT+Type 1 SP for sTRP, Type 2, Null}*- nCJT1SP-Type2PS-null-r16* indicates{NCJT+Type 1 SP for sTRP, Type 2 with port selection, Null}*- nCJT1SP-eType2R1-null-r16* indicates{NCJT+Type 1 SP for sTRP, eType 2 with R=1, Null}*- nCJT1SP-eType2R2-null-r16* indicates{NCJT+Type 1 SP for sTRP, eType 2 with R=2, Null}*- nCJT1SP-eType2R1PS-null-r16* indicates{NCJT+Type 1 SP for sTRP, eType 2 with R=1 and port selection, Null}*- nCJT1SP-eType2R2PS-null-r16* indicates{NCJT+Type 1 SP for sTRP, eType 2 with R=2 and port selection, Null}*- nCJT1SP-Type2-Type2PS-r16* indicates{NCJT+Type 1 SP for sTRP, Type 2, Type 2 with port selection}*- nCJT-feType2PS-null-r17 indicates* {NCJT, FeType II PS M=1, NULL}*- nCJT-feType2PS-M2R1-null-r17* indicates {NCJT, FeType II PS M=2 R=1, NULL}*- nCJT-feType2PS-M2R2-null-r17* indicates {NCJT, FeType II PS M=2 R=2, NULL}*- nCJT-Type2-feType2-PS-M1-r17* indicates {NCJT, Type II, FeType II PS M=1}*- nCJT-Type2-feType2-PS-M2R1-r17* indicates {NCJT, Type II, FeType II PS M=2 R=1}*- nCJT-eType2R1-feType2-PS-M1-r17* indicates {NCJT, eType II R=1, FeType II PS M=1}*- nCJT-eType2R1-feType2-PS-M2R1-r17* indicates {NCJT, eType II R=1, FeType II PS M=2 R=1}*- nCJT1SP-feType2PS-null-r17 indicates* {NCJT+Type 1 SP for sTRP, FeType II PS M=1, NULL}*- nCJT1SP-feType2PS-M2R1-null-r17* indicates {NCJT+Type 1 SP for sTRP, FeType II PS M=2 R=1, NULL}*- nCJT1SP-feType2PS-M2R2-null-r17* indicates {NCJT+Type 1 SP for sTRP, FeType II PS M=2 R=2, NULL}*- nCJT1SP-Type2-feType2-PS-M1-r17* indicates {NCJT+Type 1 SP for sTRP, Type II, FeType II PS M=1}*- nCJT1SP-Type2-feType2-PS-M2R1-r17* indicates {NCJT+Type 1 SP for sTRP, Type II, FeType II PS M=2 R=1}*- nCJT1SP-eType2R1-feType2-PS-M1-r17* indicates {NCJT+Type 1 SP for sTRP, eType II R=1, FeType II PS M=1}*- nCJT1SP-eType2R1-feType2-PS-M2R1-r17* indicates {NCJT+Type 1 SP for sTRP, eType II R=1, FeType II PS M=2 R=1}For each mixed codebook supported by the UE, *supportedCSI-RS-ResourceListAdd-r16* indicates the list of supported CSI-RS resources in a band by referring to *codebookVariantsList*. The following parameters are included in *codebookVariantsList*:*- maxNumberTxPortsPerResource* indicates the maximum number of Tx ports in a resource of a band combination.- *maxNumberResourcesPerBand* indicates the maximum number of resources across all CCs in a band combination.- *totalNumberTxPortsPerBand* indicates the total number of Tx ports across all CCs in a band combination.NOTE 1:A CMR pair configured for NCJT will be counted as two activated resources, a CMR configured for sTRP will be counted as one activated resource for a triplet.NOTE2:his capability is relevant only when UE is configured with NCJT CSI in at least one CSI report setting in at least one CC in the band and/or band combination.The UE indicating support of this feature shall also indicate the support of *mTRP-CSI-EnhancementPerBand-r17*. | BC | No | N/A | N/A |
| ***crossCarrierA-CSI-trigDiffSCS-r16***Indicates the UE support of handling cross-carrier aperiodic CSI report with aperiodic CSI-RS where triggering PDCCH and triggered CSI-RS resource are on different cells with different SCS. Value *higherA-CSI-SCS* indicates the UE support of PDCCH cell of lower SCS and CSI RS cell of higher SCS and value *lowerA-CSI-SCS* indicates the UE support of PDCCH cell of higher SCS and CSI RS cell of lower SCS, and value *both* indicates the support of both variations. A UE supporting this feature shall also indicate support of CSI-RS and CSI-IM reception for CSI feedback using *csi-RS-IM-ReceptionForFeedback* | BC | No | N/A | N/A |
| ***crossCarrierSchedulingDefaultQCL-r16***Indicates whether the UE can be configured with *enabledDefaultBeamForCCS* for default QCL assumption for cross-carrier scheduling for same/different numerologies. A UE supporting this feature shall either indicate support of *crossCarrierScheduling-SameSCS* or *crossCarrierSchedulingDL-DiffSCS-r16*.Value *diff-only* indicates UE supports this feature only for different SCS combination(s).Value *both* indicates UE supports this feature for same SCS and for different SCS combination(s). | BC | No | N/A | N/A |
| ***crossCarrierSchedulingDL-DiffSCS-r16***Indicates the UE supports cross carrier scheduling for the different numerologies with carrier indicator field (CIF) in DL carrier aggregation where numerologies for the scheduling CC and scheduled CC are different.Value *low-to-hig*h indicates UE supports scheduling CC of lower SCS to scheduled CC of higher SCS;Value *high-to-low* indicates UE supports scheduling CC of higher SCS to scheduled CC of lower SCS;Value *both* indicates UE supports both scheduling CC of lower SCS to scheduled CC of higher SCS and scheduling CC of higher SCS to scheduled CC of lower SCS.NOTE 1: Following components are applicable to cross carrier scheduling from lower SCS to higher SCS when the UE reports this feature:- Processing one unicast DCI scheduling DL per scheduling CC slot per scheduled CC for FDD scheduling CC- Processing one unicast DCI scheduling DL per scheduling CC slot per scheduled CC for TDD scheduling CCNOTE 2: Following components are applicable to cross carrier scheduling from higher SCS to lower SCS when the UE reports this feature:- Processing one unicast DCI scheduling DL per N consecutive scheduling CC slot per scheduled CC for FDD scheduling CC- Processing one unicast DCI scheduling DL per N consecutive scheduling CC slot per scheduled CC for TDD scheduling CC- N is based on pair of (scheduling CC SCS, scheduled CC SCS): N=2 for (30,15), (60,30), (120,60) and N=4 for (60,5), (120,30), N = 8 for (120,15) | BC | No | N/A | N/A |
| ***crossCarrierSchedulingSCell-SpCellTypeB-r17***Indicates whether the UE supports cross-carrier scheduling from SCell configured with cross-carrier scheduling to PCell/PSCell (sSCell) to PCell/PSCell(Type B). This capability signalling comprises the following parameters:- *supportedSCS-Combinations-r17* indicates which {PCell/PSCell SCS in kHz, sSCell SCS in kHz} combinations are supported. For {PCell/PSCell SCS in kHz, sSCell SCS in kHz} combinations = {(30,30), (30, 60), (60,60)}, the capability also indicates the band pair(s) that are supported. The band-pair is encoded as a bitmap with size L \* (L – 1) / 2, and bit N (leftmost bit is indexed as bit 0) is set to "1" if the UE supports cross-carrier scheduling from SCell toPCell/PSCell for the band pair (x, y), where L is the number of band entries in the band combination, x and y are the indices of the band entry in the band combination (the first band entry is indexed as 0), x < y, and N = x\*(2\*L – x – 1)/2 + y – x – 1.- sSCell USS set(s) (for CCS from sSCell to PCell/PSCell) and search space sets on PCell/PSCell can be configured so that the UE monitors them in overlapping slot of PCell/PSCell and sSCell.- Configuration of scaling factor α for BD and CCE limit handling and PDCCH overbooking handling on P(S)Cell- The number of unicast DCI limits for PCell/PSCell scheduling- Processing K1 unicast DCI scheduling DL on PCell/PSCell per PCell/PSCell slot and its aligned N consecutive sSCell slot(s)- Processing K2 unicast DCI scheduling UL on PCell/PSCell per PCell/PSCell slot and its aligned N consecutive sSCell slot(s)- N is based on pair of (PCell/PSCell SCS, sSCell SCS): N=1 for (15,15), (30,30), (60,60) and N=2 for (15,30), (30,60) and N=4 for (15, 60)- (K1, K2) = {(1,1) for FDD P(S)Cell; (K1, K2) = (1,2) for TDD P(S)Cell}- Same numerology between sSCell and P(S)Cell or sSCell SCS is larger than P(S)Cell SCS.- USS set(s) for DCI format 0\_1,1\_1 configured on sSCell for CCS from sSCell to PCell/PSCell and USS set(s) for DCI format 0\_2,1\_2 configured on sSCell for CCS from sSCell to PCell/PSCell if UE supports *dci-Format1-2And0-2-r16*- *pdcch-MonitoringOccasion-r17* indicates the PDCCH monitoring occasion(s) on sSCell for cross-carrier scheduling to Pcell/PSCell. There are 2 values {val1, val2} where val1 = within the first 3 OFDM symbols of sSCell slot overlapping with the first 3 OFDM symbols of PCell/PSCell slot and val2 = within the first 3 OFDM symbols of any sSCell slot overlapping with a PCell/PSCell slot.- Frame boundary alignment between PCell/PSCell and sSCell.NOTE 1: A UE supporting this FG does not imply that the UE can be configured with sSCell in shared channel access spectrum.NOTE 2: The CCS from sSCell to PCell is applicable to FR1 only but there can be other SCells in FR2 configured for the UE.NOTE 3: Parameters in *CSI-MeasConfig* of P(S)Cell and sSCell are configured such that combination of P(S)Cell and sSCell configurations does not result in exceeding any of the UE's capabilities for A-/SP-CSI reporting on PUSCH on P(S)Cell. | BC | No | N/A | FR1 only |
| ***crossCarrierSchedulingSCell-SpCellTypeA-r17***Indicates whether the UE supports cross-carrier scheduling from SCell configured with cross-carrier scheduling to PCell/PSCell (sSCell) to PCell/PSCell with search space restrictions (Type A). This capability signalling comprises the following parameters:- *supportedSCS-Combinations-r17* indicates which {PCell/PSCell SCS in kHz, sSCell SCS in kHz} combinations are supported. For {PCell/PSCell SCS in kHz, sSCell SCS in kHz} combinations = {(30,30), (30, 60), (60,60)}, the capability also indicates the band pair(s) that are supported. The band-pair is encoded as a bitmap with size L \* (L – 1) / 2, and bit N (leftmost bit is indexed as bit 0) is set to "1" if the UE supports cross-carrier scheduling from SCell toPCell/PSCell for band pair (x, y), where L is the number of band entries in the band combination, x and y are the indices of the band entry in the band combination (the first band entry is indexed as 0), x < y, and N = x\*(2\*L – x – 1)/2 + y – x – 1.- Search space restrictions: sSCell USS set(s) (for CCS from sSCell to PCell/PSCell) and following search space sets on PCell/PSCell can only be configured such that UE does not monitor them in overlapping slot of PCell/PSCell and sSCell:- USS sets for DCI formats 0\_1,1\_1,0\_2,1\_2.- USS sets for DCI formats 0\_0,1\_0.- Type3-CSS set(s) for DCI formats 1\_0/0\_0 with C-RNTI/CS-RNTI/MCS-C-RNTI.- Configuration of scaling factor α for BD and CCE limit handling and PDCCH overbooking handling on P(S)Cell.- The number of unicast DCI limits for PCell/PSCell scheduling:- Processing K1 unicast DCI scheduling DL on PCell/PSCell per PCell/PSCell slot and its aligned N consecutive sSCell slot(s).- Processing K2 unicast DCI scheduling UL on PCell/PSCell per PCell/PSCell slot and its aligned N consecutive sSCell slot(s).- N is based on pair of (PCell/PSCell SCS, sSCell SCS): N=1 for (15,15), (30,30), (60,60) and N=2 for (15,30), (30,60) and N=4 for (15, 60).- (K1, K2) = {(1,1) for FDD P(S)Cell; (K1, K2) = (1,2) for TDD P(S)Cell}.- Same numerology between sSCell and P(S)Cell or sSCell SCS is larger than P(S)Cell SCS.- USS set(s) for DCI format 0\_1,1\_1 configured on sSCell for CCS from sSCell to PCell/PSCell and USS set(s) for DCI format 0\_2,1\_2 configured on sSCell for CCS from sSCell to PCell/PSCell if UE supports dci-Format1-2And0-2-r16.- sSCell USS set(s) (for CCS from sSCell to PCell/PSCell) and Type0/0A/1/2 CSS sets on PCell/PSCell can be configured so that the UE monitors them in overlapping slot of PCell/PSCell and sSCell- no simultaneous monitoring between 'USS sets (for P(S)Cell scheduling) on sSCell' and 'Type 0/0A/1/2 CSS sets on P(S)Cell for DCI formats with CRC scrambled by C-RNTI/MCS-C-RNTI/CS-RNTI'- simultaneous monitoring of 'USS sets (for P(S)Cell scheduling) on sSCell' and 'Type 0/0A/1/2 CSS sets on P(S)Cell for DCI formats with CRC not scrambled by C-RNTI/MCS-C-RNTI/CS-RNTI'.- *pdcch-MonitoringOccasion-r17* indicates the PDCCH monitoring occasion(s) on sSCell for cross-carrier scheduling to PCell/PSCell. There are 2 values {val1, val2} where val1 = within the first 3 OFDM symbols of sSCell slot overlapping with the first 3 OFDM symbols of PCell/PSCell slot and val2 = within the first 3 OFDM symbols of any sSCell slot overlapping with a PCell/PSCell slot.- Frame boundary alignment between PCell/PSCell and sSCell.NOTE 1: A UE supporting this FG does not imply that the UE can be configured with sSCell in shared channel access spectrum.NOTE 2: The CCS from sSCell to PCell is applicable to FR1 only but there can be other SCells in FR2 configured for the UE.NOTE 3: Parameters in *CSI-MeasConfig* of P(S)Cell and sSCell are configured such that combination of P(S)Cell and sSCell configurations does not result in exceeding any of the UE's capabilities for A-/SP-CSI reporting on PUSCH on P(S)Cell. | BC | No | N/A | FR1 only |
| ***crossCarrierSchedulingUL-DiffSCS-r16***Indicates the UE supports cross carrier scheduling for the different numerologies with carrier indicator field (CIF) in UL carrier aggregation where numerologies for the scheduling CC and scheduled CC are different.Value *low-to-high* indicates UE supports scheduling CC of lower SCS to scheduled CC of higher SCS;Value *high-to-low* indicates UE supports scheduling CC of higher SCS to scheduled CC of lower SCS;Value *both* indicates UE supports both scheduling CC of lower SCS to scheduled CC of higher SCS and scheduling CC of higher SCS to scheduled CC of lower SCS.NOTE 1: Following components are applicable to cross carrier scheduling from lower SCS to higher SCS when the UE reports this feature:- Processing one unicast DCI scheduling UL per scheduling CC slot per scheduled CC for FDD scheduling CC- Processing 2 unicast DCI scheduling UL per scheduling CC slot per scheduled CC for TDD scheduling CCNOTE 2: Following components are applicable to cross carrier scheduling from higher SCS to lower SCS when the UE reports this feature:- Processing one unicast DCI scheduling UL per N consecutive scheduling CC slot per scheduled CC for FDD scheduling CC- Processing 2 unicast DCI scheduling UL per N consecutive scheduling CC slot per scheduled CC for TDD scheduling CC- N is based on pair of (scheduling CC SCS, scheduled CC SCS): N=2 for (30,15), (60,30), (120,60) and N=4 for (60,5), (120,30), N = 8 for (120,15) | BC | No | N/A | N/A |
| ***csi-ReportingCrossPUCCH-Grp-r16***Indicates the support of CSI reporting cross PUCCH group, comprised of the following functional components:- Support reporting CSI of an SCell belonging to secondary PUCCH group by PUSCH or PUCCH of active serving cells belonging to primary PUCCH group, for both during and after SCell activation procedure;- Support reporting CSI of an SCell belonging to primary PUCCH group by PUSCH or PUCCH of active serving cells belonging to secondary PUCCH group, for both during and after SCell activation procedure;- Support for P-CSI and A-CSI for cross-PUCCH group CSI reporting;- *computationTimeForA-CSI-r16* indicates the CSI computation time for A-CSI; if '*relaxed*' is reported, the *additionalSymbols-r16* shall be reported to indicate for each supported SCS the required additional number of symbols in addition to existing Z and Z' for aperiodic CSI report for cross-PUCCH group CSI reporting (the same SCS set definition as in clause 5.4 of TS 38.214 [12]). The value *s14* indicates 14 symbols, and so on. For FR2-2 bands, the time relaxation values of the required additional number of symbols for SCS 480/960 kHz (µ=5 and µ=6) are the same amount of absolute time as UE reported for SCS 120kHz (µ=3).- *sp-CSI-ReportingOnPUCCH-r16* indicates whether the UE supports SP-CSI reporting on PUCCH for cross-PUCCH group CSI reporting;- *sp-CSI-ReportingOnPUSCH-r16* indicates whether the UE supports SP-CSI reporting on PUSCH for cross-PUCCH group CSI reporting;- *carrierTypePairList-r16* indicates one or multiple supported carrier type pairs(s). For each supported carrier type pair in *carrierTypePairList-r16*:- carrierForCSI-Measurement-r16 indicates the carrier type in a PUCCH group in which CSI measurement is performed;- carrierForCSI-Reporting-r16 indicates the carrier type in the other PUCCH group in which CSI report is performed,- where a carrier type is one of {*fr1-NonSharedTDD-r16, fr1-SharedTDD-r16, fr1-NonSharedFDD-r16, fr2-r16*}UE indicating support of this feature shall indicate *csi-ReportFramework* and indicate support of at least one of *twoPUCCH-Group*, *diffNumerologyAcrossPUCCH-Group* and *twoPUCCH-Grp-ConfigurationsList-r16.*NOTE 1: For a band combination with SUL, the SUL band is counted as one of the bands.NOTE 2: For a band combination with SDL, the SDL band is counted as one of the bands. SDL is indicated as 'FR1-NonSharedFDD' carrier type. Per UE capabilities that are TDD only are not applicable to SDL.NOTE 3: When the carrier type of NUL is indicated for PUCCH/PUSCH transmission location for CSI measurement or CSI reporting, the SUL in the same cell as in the NUL can also be configured for PUCCH/PUSCH transmission. | BC | No | N/A | N/A |
| ***csi-RS-IM-ReceptionForFeedbackPerBandComb***Indicates support of CSI-RS and CSI-IM reception for CSI feedback. This capability signalling comprises the following parameters:- *maxNumberSimultaneousNZP-CSI-RS-ActBWP-AllCC* indicates the maximum number of simultaneous CSI-RS resources (irrespective of the associated codebook type) in active BWPs across all CCs, and across MCG and SCG in case of NR-DC. The network applies this limit in addition to the limits signalled in *MIMO-ParametersPerBand-> maxNumberSimultaneousNZP-CSI-RS-PerCC* and in *Phy-ParametersFRX-Diff-> maxNumberSimultaneousNZP-CSI-RS-PerCC*;- *totalNumberPortsSimultaneousNZP-CSI-RS-ActBWP-AllCC* indicates the total number of CSI-RS ports in simultaneous CSI-RS resources (irrespective of the associated codebook type) in active BWPs across all CCs, and across MCG and SCG in case of NR-DC. The network applies this limit in addition to the limits signalled in *MIMO-ParametersPerBand-> totalNumberPortsSimultaneousNZP-CSI-RS-PerCC* and in *Phy-ParametersFRX-Diff-> totalNumberPortsSimultaneousNZP-CSI-RS-PerCC*.The UE is mandated to report *csi-RS-IM-ReceptionForFeedbackPerBandComb*. | BC | Yes | N/A | N/A |
| ***currentSpCellInclL1-Report-r18***Indicates support of always including the current SpCell in the L1 measurement report.UE supporting this feature shall also indicate support of *intraFreqL1-MeasConfig-r18*. | BC | No | N/A | N/A |
| ***dci-FormatsPCellPSCellUSS-Sets-r17***Indicates whether UE supports the monitoring DCI formats 0\_1,1\_1,0\_2 (if supported),1\_2 (if supported) on PCell/PSCell USS set(s).UE indicating support of this feature shall indicate support of *crossCarrierSchedulingSCell-SpCellTypeA-r17*. | BC | No | N/A | FR1 only |
| ***defaultQCL-CrossCarrierA-CSI-Trig-r16***Indicates whether the UE can be configured with *enabledDefaultBeamForCCS* for default QCL assumption for cross-carrier A-CSI-RS triggering for same/different numerologies as specified in TS 38.213 [11].Value *diffOnly* indicates the UE supports this feature for different SCS combination(s).Value *both* indicates the UE supports this feature for same SCS and for different SCS combination(s) (low-to-high, high-to-low or both) reported for *crossCarrierA-CSI-trigDiffSCS-r16.* | BC | No | N/A | N/A |
| ***demodulationEnhancementCA-r17***Indicates whether the UE supports the enhanced demodulation processing for carrier aggregation for HST-SFN joint transmission scheme with velocity up to 500km/h as specified in TS 38.101-4 [18].UE indicating support of this feature shall indicate support of *demodulationEnhancement-r16*. | BC | No | No | FR1 only |
| ***diffNumerologyAcrossPUCCH-Group***Indicates whether different numerology across two NR PUCCH groups for data and control channel at a given time in NR CA and (NG)EN-DC/NE-DC is supported by the UE. | BC | No | N/A | N/A |
| ***diffNumerologyAcrossPUCCH-Group-CarrierTypes-r16***Indicates whether different numerology across two NR PUCCH groups for data and control channel at a given time in NR CA for UE supporting two PUCCH groups with 3 or more bands with at least two carrier types. UE indicating support of this feature shall indicate support of *twoPUCCH-Grp-ConfigurationsList-r16.* | BC | No | N/A | N/A |
| ***diffNumerologyWithinPUCCH-GroupLargerSCS***Indicates whether UE supports different numerology across carriers within a PUCCH group and a same numerology between DL and UL per carrier for data/control channel at a given time in NR CA, (NG)EN-DC/NE-DC and NR-DC.In case of NR CA and (NG)EN-DC/NE-DC with one NR PUCCH group and in case of NR CA with two NR PUCCH groups, it also indicates whether the UE supports different numerologies across NR carriers within the same NR PUCCH group up to two different numerologies within the same NR PUCCH group, wherein NR PUCCH is sent on the carrier with larger SCS for data and control channel at a given time.In case of (NG)EN-DC/NE-DC with two NR PUCCH groups, it indicates whether the UE supports different numerologies across NR carriers up to two different numerologies within an NR PUCCH group in FR1, wherein NR PUCCH is sent on the carrier with larger SCS, and same numerology across NR carriers within another NR PUCCH group in FR2 for data and control channel at a given time.In case of NR-DC, it indicates whether the UE supports different numerologies across NR carriers within the same NR PUCCH group in MCG (in FR1) up to two different numerologies within the same NR PUCCH group wherein NR PUCCH is sent on the carrier with larger SCS for data/control channel at a given time; and same numerology across NR carriers in SCG (in FR2). | BC | No | N/A | N/A |
| ***diffNumerologyWithinPUCCH-GroupLargerSCS-CarrierTypes-r16***Indicates whether UE supports different numerology across carriers up to 2 different numerologies within the same PUCCH group wherein PUCCH is sent on the carrier with larger SCS for data/control channel at a given time in NR CA for UE supporting two PUCCH groups with 3 or more bands with at least two carrier types. UE indicating support of this feature shall indicate support of *twoPUCCH-Grp-ConfigurationsList-r16.*NOTE: PUCCH is sent on a carrier with SCS not smaller than SCS of any DL carriers corresponding to the PUCCH group. | BC | No | N/A | N/A |
| ***diffNumerologyWithinPUCCH-GroupSmallerSCS***Indicates whether UE supports different numerology across carriers within a PUCCH group and a same numerology between DL and UL per carrier for data/control channel at a given time in NR CA, (NG)EN-DC/NE-DC and NR-DC.In case of NR CA and (NG)EN-DC/NE-DC with one NR PUCCH group and in case of NR CA with two NR PUCCH groups, it also indicates whether the UE supports different numerologies across NR carriers within the same NR PUCCH group up to two different numerologies within the same NR PUCCH group, wherein NR PUCCH is sent on the carrier with smaller SCS for data and control channel at a given time.In case of (NG)EN-DC/NE-DC with two NR PUCCH groups, it indicates whether the UE supports different numerologies across NR carriers up to two different numerologies within an NR PUCCH group in FR1, wherein NR PUCCH is sent on the carrier with smaller SCS, and same numerology across NR carriers within another NR PUCCH group in FR2 for data and control channel at a given time.In case of NR-DC, it indicates whether the UE supports different numerologies across NR carriers within the same NR PUCCH group in MCG (in FR1) up to two different numerologies within the same NR PUCCH group wherein NR PUCCH is sent on the carrier with smaller SCS for data/control channel at a given time; and same numerology across NR carriers in SCG (in FR2). | BC | No | N/A | N/A |
| ***diffNumerologyWithinPUCCH-GroupSmallerSCS-CarrierTypes-r16***Indicates whether UE supports different numerology across carriers up to 2 different numerologies within the same PUCCH group wherein PUCCH is sent on the carrier with smaller SCS for data/control channel at a given time in NR CA for UE supporting two PUCCH groups with 3 or more bands with at least two carrier types. UE indicating support of this feature shall indicate support of *twoPUCCH-Grp-ConfigurationsList-r16.*NOTE: NR PUCCH is sent on a carrier with SCS not larger than SCS of any DL carriers corresponding to the NR PUCCH group. | BC | No | N/A | N/A |
| ***disablingScalingFactorDeactSCell-r17***Indicates whether UE supports disabling scaling factor α for Cross-carrier scheduling (CCS) from SCell configured with cross-carrier scheduling to PCell/PSCell (sSCell) to PCell/PSCell(Type A or Type B) when sSCell is deactivated (i.e. scaling factor α is not applied for PDCCH overbooking/BD/CCE limit computation when sSCell is deactivated).UE indicating support of this feature shall indicate support of *crossCarrierSchedulingSCell-SpCellTypeA-r17* or *crossCarrierSchedulingSCell-SpCellTypeB-r17*. | BC | No | N/A | FR1 only |
| ***disablingScalingFactorDormantSCell-r17***Indicates whether UE supports disabling scaling factor α for Cross-carrier scheduling (CCS) from SCell configured with cross-carrier scheduling to PCell/PSCell (sSCell) to PCell/PSCell(Type A or Type B) when sSCell is switched to dormant BWP (i.e. scaling factor α is not applied for PDCCH overbooking/BD/CCE limit computation when sSCell is switched to dormant BWP).UE indicating support of this feature shall indicate support of *crossCarrierSchedulingSCell-SpCellTypeA-r17* or *crossCarrierSchedulingSCell-SpCellTypeB-r17*. | BC | No | N/A | FR1 only |
| ***dmrs-BundlingNonBackToBackTX-PerBC-r17***Indicates whether the UE supports DM-RS bundling for non-back-to-back transmission for consecutive slots for PUSCH and PUCCH only for corresponding supported back-to-back transmission as reported in dmrs-BundlingPUSCH-RepTypeAPerBC-r17, dmrs-BundlingPUSCH-RepTypeBPerBC-r17, dmrs-BundlingPUSCH-multiSlotPerBC-r17 or dmrs-BundlingPUCCH-RepPerBC-r17.UE indicating support of this feature shall also indicate support of at least one of *dmrs-BundlingPUSCH-RepTypeAPerBC-r17*, *dmrs-BundlingPUSCH-RepTypeBPerBC-r17*, *dmrs-BundlingPUSCH-multiSlotPerBC-r17* or *dmrs-BundlingPUCCH-RepPerBC-r17*.NOTE: This capability is only applicable when UE is configured with single uplink carrier within a frequency range. | BC | No | N/A | N/A |
| ***dmrs-BundlingPUCCH-RepPerBC-r17***Indicates whether the UE supports DM-RS bundling for PUCCH repetitions for PUCCH formats 1/3/4 over consecutive symbols.UE indicating support of this feature shall also indicate support of *maxDurationDMRS-Bundling-r17* in at least one of the bands in the band combination and *pucch-Repetition-F1-3-4*.This feature is applicable to following multiple carrier scenarios in addition to single carrier scenarios:- FR1+FR2 UL CA, FR1+FR2 DC, and EN-DC with NR on FR2. DMRS bundling configuration is limited to one uplink NR carrier in total on all FRs at a time.- FR1 inter-band DL CA with a "single" uplink band configured, meaning no switching to transmit SRS on another carrier.- DL CA with "additional" UL carrier configured with SRS only (i.e. no PUCCH/PUSCH configured).- FR1 inter-band UL CA with DMRS bundling.- SUL with DMRS bundling.For the last three scenarios listed above, DMRS bundling can be applied with the following conditions:- Concurrent transmissions scheduled/configured over multiple carriers are not expected by UE.- Only configuration of a single TAG.- Only applicable for the back-to-back case (i.e., zero gap between two transmissions within an actual TDW).- Only one band can be configured with DMRS bundling at a time.NOTE 1: Under the above conditions, phase continuity and power consistency within any actual TDW on one carrier is not impacted by operations on a different carrier.NOTE 2: Under the above conditions, the events defined in clause 6.1.7 of TS 38.214 [12] for the carrier with DMRS bundling are not triggered by any transmission within any actual TDW on the other carrier.NOTE 3: If the modulation scheme higher than QPSK is scheduled for transmission on any carrier configured with DMRS bundling, DMRS bundling is not applicable (i.e., the error case and up to UE implementation). | BC | No | N/A | N/A |
| ***dmrs-BundlingPUSCH-multiSlotPerBC-r17***Indicates whether the UE supports DM-RS bundling for TB processing over multi-slot (TBoMS) PUSCH over consecutive symbols.UE indicating support of this feature shall also indicate support of *maxDurationDMRS-Bundling-r17* and *tb-ProcessingMultiSlotPUSCH-r17* in at least one of the bands in the band combination.This feature is applicable to following multiple carrier scenarios in addition to single carrier scenarios:- FR1+FR2 UL CA, FR1+FR2 DC, and EN-DC with NR on FR2. DMRS bundling configuration is limited to one uplink NR carrier in total on all FRs at a time.- FR1 inter-band DL CA with a "single" uplink band configured, meaning no switching to transmit SRS on another carrier.- DL CA with "additional" UL carrier configured with SRS only (i.e. no PUCCH/PUSCH configured).- FR1 inter-band UL CA with DMRS bundling.- SUL with DMRS bundling.For the last three scenarios listed above, DMRS bundling can be applied with the following conditions:- Concurrent transmissions scheduled/configured over multiple carriers are not expected by UE.- Only configuration of a single TAG.- Only applicable for the back-to-back case (i.e., zero gap between two transmissions within an actual TDW).- Only one band can be configured with DMRS bundling at a time.NOTE 1: Under the above conditions, phase continuity and power consistency within any actual TDW on one carrier is not impacted by operations on a different carrier.NOTE 2: Under the above conditions, the events defined in clause 6.1.7 of TS 38.214 [12] for the carrier with DMRS bundling are not triggered by any transmission within any actual TDW on the other carrier.NOTE 3: If the modulation scheme higher than QPSK is scheduled for transmission on any carrier configured with DMRS bundling, DMRS bundling is not applicable (i.e., the error case and up to UE implementation).NOTE 4: If a UE reports support of *tb-ProcessingRepMultiSlotPUSCH-r17* and *dmrs-BundlingPUSCH-multiSlot-r17* in a band in the band combination and *dmrs-BundlingPUSCH-multiSlotPerBC-r17* is supported for the band combination, the UE supports DMRS bundling for the repetitions of TBoMS for the band. | BC | No | N/A | N/A |
| ***dmrs-BundlingPUSCH-RepTypeAPerBC-r17***Indicates whether the UE supports DM-RS bundling for PUSCH repetition type A over consecutive symbols.UE indicating support of this feature shall also indicate support of *maxDurationDMRS-Bundling-r17* in at least one of the bands in the band combination and at least one of *type1-PUSCH-RepetitionMultiSlots*, *type2-PUSCH-RepetitionMultiSlots* or *pusch-RepetitionMultiSlots*.This feature is applicable to following multiple carrier scenarios in addition to single carrier scenarios:- FR1+FR2 UL CA, FR1+FR2 DC, and EN-DC with NR on FR2. DMRS bundling configuration is limited to one uplink NR carrier in total on all FRs at a time.- FR1 inter-band DL CA with a "single" uplink band configured, meaning no switching to transmit SRS on another carrier.- DL CA with "additional" UL carrier configured with SRS only (i.e. no PUCCH/PUSCH configured)- FR1 inter-band UL CA with DMRS bundling- SUL with DMRS bundlingFor the last three scenarios listed above, DMRS bundling can be applied with the following conditions:- Concurrent transmissions scheduled/configured over multiple carriers are not expected by UE- Only configuration of a single TAG- Only applicable for the back-to-back case (i.e., zero gap between two transmissions within an actual TDW)- Only one band can be configured with DMRS bundling at a timeNOTE 1: Under the above conditions, phase continuity and power consistency within any actual TDW on one carrier is not impacted by operations on a different carrier.NOTE 2: Under the above conditions, the events defined in clause 6.1.7 of TS 38.214 [12] for the carrier with DMRS bundling are not triggered by any transmission within any actual TDW on the other carrier.NOTE 3: If the modulation scheme higher than QPSK is scheduled for transmission on any carrier configured with DMRS bundling, DMRS bundling is not applicable (i.e., the error case and up to UE implementation). | BC | No | N/A | N/A |
| ***dmrs-BundlingPUSCH-RepTypeBPerBC-r17***Indicates whether the UE supports DM-RS bundling for PUSCH repetition type B over consecutive symbols.UE indicating support of this feature shall also indicate support of *maxDurationDMRS-Bundling-r17* in at least one of the bands in the band combination and *pusch-RepetitionTypeB-r16*.This feature is applicable to following multiple carrier scenarios in addition to single carrier scenarios:- FR1+FR2 UL CA, FR1+FR2 DC, and EN-DC with NR on FR2. DMRS bundling configuration is limited to one uplink NR carrier in total on all FRs at a time.- FR1 inter-band DL CA with a "single" uplink band configured, meaning no switching to transmit SRS on another carrier.- DL CA with "additional" UL carrier configured with SRS only (i.e. no PUCCH/PUSCH configured).- FR1 inter-band UL CA with DMRS bundling.- SUL with DMRS bundling.For the last three scenarios listed above, DMRS bundling can be applied with the following conditions:- Concurrent transmissions scheduled/configured over multiple carriers are not expected by UE.- Only configuration of a single TAG.- Only applicable for the back-to-back case (i.e., zero gap between two transmissions within an actual TDW).- Only one band can be configured with DMRS bundling at a time.NOTE 1: Under the above conditions, phase continuity and power consistency within any actual TDW on one carrier is not impacted by operations on a different carrier.NOTE 2: Under the above conditions, the events defined in clause 6.1.7 of TS 38.214 [12] for the carrier with DMRS bundling are not triggered by any transmission within any actual TDW on the other carrier.NOTE 3: If the modulation scheme higher than QPSK is scheduled for transmission on any carrier configured with DMRS bundling, DMRS bundling is not applicable (i.e., the error case and up to UE implementation). | BC | No | N/A | N/A |
| ***dmrs-BundlingRestartPerBC-r17***Indicates whether the UE supports restarting DM-RS bundling after the events triggered by DCI or MAC CE that violate power consistency and phase continuity.UE indicating support of this feature shall also indicate support of *maxDurationDMRS-Bundling-r17* in at least one of the bands in the band combination*.*NOTE: Events which are triggered by DCI or MAC CE, but do not require UE capability to resume maintaining power consistency and/or phase continuity as specified in clause 6.1.7 of TS 38.214 [12] are excluded from this feature. | BC | No | N/A | N/A |
| ***dualPA-Architecture***For band combinations with single-band with UL CA, this field indicates the support of dual PA and dual LO frequencies for FR1, or dual LO frequencies for FR2. If absent in such band combinations, the UE supports single PA and single LO frequency for all the ULs for FR1, or single LO frequency for all the ULs for FR2. For other band combinations, this field is not applicable. | BC | No | N/A | N/A |
| ***dynamicPUCCH-CellSwitchDiffLengthSingleGroup-r17***Indicates whether the UE supports PUCCH cell switching based on dynamic indication in the DCI scheduling the PUCCH for different length (in physical time) of overlapping PUCCH slots/sub-slots for a single PUCCH group only. The capability signalling comprises the following parameters:- *pucch-Group-r17* indicates for which PUCCH group the UE supports PUCCH cell switching based on dynamic indication. Value *primaryGroupOnly* indicates that only primary PUCCH group can support PUCCH cell switch, value *secondaryGroupOnly* indicates that only secondary PUCCH group can support PUCCH cell switch, and value *eitherPrimaryOrSecondaryGroup* indicates that either primary or secondary PUCCH group can support PUCCH cell switch.- *pucch-Group-Config-r17* indicates one or multiple of supported carrier type pairs that can support PUCCH cell switch, with *fr1-FR1-NonSharedTDD-r17* indicating the carrier type pair (FR1 licensed TDD, FR1 licensed TDD), *fr2-FR2-NonSharedTDD-r17* indicating the carrier type pair (FR2 licensed TDD, FR2 licensed TDD), and *fr1-FR2-NonSharedTDD-r17* indicating the carrier type pair (FR1 licensed TDD, FR2 licensed TDD).NOTE: This feature applies to cells in the same TAG only. If UE supporting this FG also supports both *diffNumerologyWithinPUCCH-GroupSmallerSCS* and *diffNumerologyWithinPUCCH-GroupLargerSCS* or both *diffNumerologyWithinPUCCH-GroupSmallerSCS-CarrierTypes-r16* and *diffNumerologyWithinPUCCH-GroupLargerSCS-CarrierTypes-r16* or *maxUpTo3Diff-NumerologiesConfigSinglePUCCH-grp-r16* or *maxUpTo4Diff-NumerologiesConfigSinglePUCCH-grp-r16* when UE is not configured with two NR PUCCH groups, the UE supports the cases of both same and different numerologies between switchable cells. Otherwise, the UE supports the case of same numerology between switchable cells. | BC | No | TDD only | N/A |
| ***dynamicPUCCH-CellSwitchSameLengthSingleGroup-r17***Indicates whether the UE supports PUCCH cell switching based on dynamic indication in the DCI scheduling the PUCCH for same length (in physical time) of overlapping PUCCH slots/sub-slots for a single PUCCH group only. The capability signalling comprises the following parameters:- *pucch-Group-r17* indicates for which PUCCH group the UE supports PUCCH cell switching based on dynamic indication. Value *primaryGroupOnly* indicates that only primary PUCCH group can support PUCCH cell switch, value *secondaryGroupOnly* indicates that only secondary PUCCH group can support PUCCH cell switch, and value *eitherPrimaryOrSecondaryGroup* indicates that either primary or secondary PUCCH group can support PUCCH cell switch.- *pucch-Group-Config-r17* indicates one or multiple of supported carrier type pairs that can support PUCCH cell switch, with *fr1-FR1-NonSharedTDD-r17* indicating the carrier type pair (FR1 licensed TDD, FR1 licensed TDD), *fr2-FR2-NonSharedTDD-r17* indicating the carrier type pair (FR2 licensed TDD, FR2 licensed TDD), and *fr1-FR2-NonSharedTDD-r17* indicating the carrier type pair (FR1 licensed TDD, FR2 licensed TDD).NOTE: This feature applies to cells in the same TAG only. If UE supporting this FG also supports both *diffNumerologyWithinPUCCH-GroupSmallerSCS* and *diffNumerologyWithinPUCCH-GroupLargerSCS* or both *diffNumerologyWithinPUCCH-GroupSmallerSCS-CarrierTypes-r16* and *diffNumerologyWithinPUCCH-GroupLargerSCS-CarrierTypes-r16* or *maxUpTo3Diff-NumerologiesConfigSinglePUCCH-grp-r16* or *maxUpTo4Diff-NumerologiesConfigSinglePUCCH-grp-r16* when UE is not configured with two NR PUCCH groups, the UE supports the cases of both same and different numerologies between switchable cells. Otherwise, the UE supports the case of same numerology between switchable cells. | BC | No | TDD only | N/A |
| ***dynamicPUCCH-CellSwitchDiffLengthTwoGroups-r17***Indicates whether the UE supports PUCCH cell switching based on dynamic indication in the DCI scheduling the PUCCH for different length (in physical time) of overlapping PUCCH slots/sub-slots for two PUCCH groups. The capability indicates one or multiple of supported configuration(s) of {primary PUCCH group config, secondary PUCCH group config}. The capability signalling of each primary or secondary PUCCH group configuration indicates one or multiple of carrier type pairs that can support PUCCH cell switch, with *fr1-FR1-NonSharedTDD-r17* indicating the carrier type pair (FR1 licensed TDD, FR1 licensed TDD), *fr2-FR2-NonSharedTDD-r17* indicating the carrier type pair (FR2 licensed TDD, FR2 licensed TDD), and *fr1-FR2-NonSharedTDD-r17* indicating the carrier type pair (FR1 licensed TDD, FR2 licensed TDD).NOTE: This feature applies to cells in the same TAG only. If UE supporting this FG also supports both *diffNumerologyWithinPUCCH-GroupSmallerSCS* and *diffNumerologyWithinPUCCH-GroupLargerSCS* or both *diffNumerologyWithinPUCCH-GroupSmallerSCS-CarrierTypes-r16* and *diffNumerologyWithinPUCCH-GroupLargerSCS-CarrierTypes-r16*, the UE supports the cases of both same and different numerologies between switchable cells. Otherwise, the UE supports the case of same numerology between switchable cells. | BC | No | TDD only | N/A |
| ***dynamicPUCCH-CellSwitchSameLengthTwoGroups-r17***Indicates whether the UE supports PUCCH cell switching based on dynamic indication in the DCI scheduling the PUCCH for same length (in physical time) of overlapping PUCCH slots/sub-slots for two PUCCH groups. The capability indicates one or multiple of supported configuration(s) of {primary PUCCH group config, secondary PUCCH group config}. The capability signalling of each primary or secondary PUCCH group configuration indicates one or multiple of carrier type pairs that can support PUCCH cell switch, with *fr1-FR1-NonSharedTDD-r17* indicating the carrier type pair (FR1 licensed TDD, FR1 licensed TDD), *fr2-FR2-NonSharedTDD-r17* indicating the carrier type pair (FR2 licensed TDD, FR2 licensed TDD), and *fr1-FR2-NonSharedTDD-r17* indicating the carrier type pair (FR1 licensed TDD, FR2 licensed TDD).NOTE: This feature applies to cells in the same TAG only. If UE supporting this FG also supports both *diffNumerologyWithinPUCCH-GroupSmallerSCS* and *diffNumerologyWithinPUCCH-GroupLargerSCS* or both *diffNumerologyWithinPUCCH-GroupSmallerSCS-CarrierTypes-r16* and *diffNumerologyWithinPUCCH-GroupLargerSCS-CarrierTypes-r16*, the UE supports the cases of both same and different numerologies between switchable cells. Otherwise, the UE supports the case of same numerology between switchable cells. | BC | No | TDD only | N/A |
| ***fdm-CodebookForMux-UnicastMulticastHARQ-ACK-r17***Indicates whether the UE supports FDM-ed Type-1 and Type-2 HARQ-ACK codebooks for multiplexing HARQ-ACK for unicast and HARQ-ACK for multicast, comprised of the following functional components:- Support of FDM-ed Type-1 HARQ-ACK codebooks for multiplexing HARQ-ACK for unicast and ACK/NACK-based HARQ-ACK for multicast on PUCCH or PUSCH;- Support of Type-2 HARQ-ACK codebooks for multiplexing HARQ-ACK for unicast and HARQ-ACK for multicast on PUCCH or PUSCH with max number of G-RNTIs indicated in *maxNumberG-RNTI-HARQ-ACK-Codebook-r17*, which is not larger than max number of G-RNTIs indicated in *maxNumberG-RNTI-r17* or G-CS-RNTIs indicated in *maxNumberG-CS-RNTI-r17.*A UE supporting this feature shall also indicate support of *fdm-MulticastUnicast-r17*, and at least one of {*ack-NACK-FeedbackForMulticast-r17*, *nack-OnlyFeedbackForMulticast-r17*, *ack-NACK-FeedbackForSPS-Multicast-r17, nack-OnlyFeedbackForSPS-Multicast-r17*}.NOTE 1: FDM-ed Type-1 HARQ-ACK codebook is generated by concatenating the Type-1 sub-codebook for unicast and the Type-1 sub-codebook for multicast.NOTE 2: The Type-2 HARQ-ACK codebook is generated by concatenating the Type-2 sub-codebook for unicast and the Type-2 sub-codebook for multicast. | BC | No | N/A | N/A |
| ***half-DuplexTDD-CA-SameSCS-r16***Indicates whether the UE supports directional collision handling between reference and other cell(s) for half-duplex operation in TDD CA with same SCS. The UE can include this field for band combinations including only intra-band TDD CA or if *simultaneousRxTxInterBandCA* is not present for band combinations involving mix of intra-band TDD CA and inter-band TDD CA.If this field is included in *ca-ParametersNR-forDC-v1610* for IAB-MT, it indicates IAB-MT supports directional collision handling between reference and other cells for half-duplex operation in TDD NR-DC with same SCS across MCG and SCG. | BC | No | TDD only | N/A |
| ***higherPowerLimit-r17***Indicates whether UE supports increase in maximum output power above the power class indication for inter-band UL CA and NR-DC band combinations as defined in clause 6.2A of TS 38.101-1 [2]. | BC | No | N/A | FR1 only |
| ***interCA-NonAlignedFrame-r16***Indicates whether the UE supports inter-band carrier aggregation operation where, within the same cell group, the frame boundaries of the SpCell and the SCell(s) are not aligned, the slot boundaries are aligned and the lowest subcarrier spacing of the subcarrier spacings given in scs-SpecificCarrierList for SpCell is smaller than or equal to the lowest subcarrier spacing of the subcarrier spacings given in scs-SpecificCarrierList for each of the non-aligned SCells. | BC | No | N/A | N/A |
| ***interCA-NonAlignedFrame-B-r16***Indicates whether the UE supports inter-band carrier aggregation operation where, within the same cell group, the frame boundaries of the SpCell and the SCell(s) are not aligned, the slot boundaries are aligned and the lowest subcarrier spacing of the subcarrier spacings given in *scs-SpecificCarrierList* for SpCell is larger than the lowest subcarrier spacing of the subcarrier spacings given in *scs-SpecificCarrierList* for at least one of the non-aligned SCells.A UE indicating support of interCA-NonAlignedFrame-B-r16 shall also indicate support of interCA-NonAlignedFrame-r16. | BC | No | N/A | N/A |
| ***interFreqDAPS-r16***Indicates whether the UE supports inter-frequency handover, e.g. support of simultaneous DL reception of PDCCH and PDSCH from source and target cell. A UE indicating this capability shall also support inter-frequency synchronous DAPS handover, and single UL transmission for inter-frequency DAPS handover. The capability signalling comprises of the following parameters:- *interFreqAsyncDAPS-r16* indicates whether the UE supports asynchronous DAPS handover.- *interFreqDiffSCS-DAPS-r16* indicates whether the UE supports different SCSs in source PCell and inter-frequency target PCell in DAPS handover. The UE only includes this field if different SCSs can be supported in both UL and DL. If absent, the UE does not support either UL or DL SCS being different in DAPS handover.- *interFreqMultiUL-TransmissionDAPS-r16* indicates whether the UE supports simultaneous UL transmission in source PCell and target PCell during a DAPS handover. The UE can include this field only if any of *semiStaticPowerSharingDAPS-Mode1-r16*, *semiStaticPowerSharingDAPS-Mode2-r16* or *dynamicPowersharingDAPS-r16* are included. Otherwise, the UE does not include this field.- *interFreqSemiStaticPowerSharingDAPS-Mode1-r16* indicates whether the UE supports semi-static UL power sharing mode 1 during DAPS handover between source and target cells of same FR.- *interFreqSemiStaticPowerSharingDAPS-Mode2-r16* indicates whether the UE supports semi-static UL power sharing mode 2 during DAPS handover between source and target cells of same FR. It is only applicable to DAPS Handover in synchronous scenarios. The UE only includes this field if *semiStaticPowerSharingDAPS-Mode1-r16* is included. Otherwise, the UE does not include this field.- *interFreqDynamicPowersharingDAPS-r16* indicates the value of T offset (short or long) that the UE supports for dynamic UL power sharing during DAPS handover between source and target cells of same FR. The UE only include this field if *semiStaticPowerSharingDAPS-Mode1-r16* is included. Otherwise, the UE does not include this field.- *interFreqUL-TransCancellationDAPS-r16* indicates support of cancelling UL transmission to the source PCell for inter-frequency DAPS handover. | BC | No | N/A | N/A |
| ***interFreqL1-MeasConfig-r18***Indicates whether UE supports inter-frequency L1-RSRP measurement and reporting based on SSB(s) of candidate cell(s).This capability signalling comprises of the following parameters:- *supportedMaxIntraInterFreqCellsConfig-r18* indicates the maximum number of RRC configured candidate cells for intra- and inter-frequency L1-RSRP measurement;- *supportedMaxIntraInterFreqCellsPerReport-r18* indicates maximum number of candidate cells in one report where a SSBRI-RSRP pair is used for each beam report for intra- and inter-frequency L1-RSRP measurement;- *supportedMaxIntraInterFreqBeamsPerCellReports-r18* indicates maximum number of candidate beams per candidate cell in one report where a SSBRI-RSRP pair is used for each beam report for intra- and inter-frequency L1-RSRP measurement;- *supportedMaxIntraInterFreqBeamsReports-r18* indicates maximum number of candidate cells beams in total across all cells in one report where a SSBRI-RSRP pair is used for each beam report for intra- and inter-frequency L1-RSRP measurement;UE supporting this feature shall also indicate support of *intraFreqL1-MeasConfig-r18*. | BC | No | N/A | N/A |
| ***interFreqSSB-L1-MeasWithoutGaps-r18***Indicates whether UE supports SSB based inter-frequency L1-RSRP measurements on SSBs within active DL BWP without measurement gaps (without interruption on serving cell(s)) for LTM.UE supporting this feature shall also indicate support of *interFreqL1-MeasConfig-r18.* | BC | No | N/A | N/A |
| ***intraBandFreqSeparationUL-AggBW-GapBW-r16***Indicates the UL frequency separation class between lower edge of lowest CC and upper edge of highest CC of Intra-band UL non-contiguous CA, i.e. including both the aggregated bandwidth and the gap bandwidth. 3 frequency separation classes are introduced and the values are defined in Table 5.3A.5-2 of TS 38.101-1 [2]. | BC | No | N/A | FR1 only |
| ***intraBandNR-CA-non-collocated-r18***Indicates whether the UE supports TDD-TDD intra-band non-collocated NR-CA operation with MTTD/MRTD requirements according to Table 7.5.4-1/Table 7.6.4-2 in TS 38.133 [5] and UE RF requirements for intra-band non-collocated NR-CA including 7.10A in TS 38.101-1 [2], and TDD-TDD intra-band NR-CA operation with MRTD according to Table 7.6.4-1 in TS 38.133 [5] and UE RF requirements for intra-band NR-CA except for 7.10A in TS 38.101-1 [2]. If the capability is not reported, the UE only supports TDD-TDD intra-band NR-CA operation with MRTD according to Table 7.6.4-1 in TS 38.133 [5] and UE RF requirements for intra-band NR-CA except for 7.10A in TS 38.101-1 [2].A UE supporting this feature shall also support network controlled indication of the MTTD/MRTD and RF requirements by *nonCollocatedTypeNR-CA-r18* for intra-band non-collocated NR-CA, as defined in TS 38.331 [9]. | BC | No | N/A | FR1 only |
| ***intraFreqL1-MeasConfig-r18***Indicates whether UE supports intra-frequency L1-RSRP measurement and reporting based on SSB(s) of candidate cell(s).This capability signalling comprises of the following parameters:- *supportedMaxIntraFreqCellsConfig-r18* indicates the maximum number of RRC configured candidate cells for intra-frequency L1-RSRP measurement;- *supportedMaxIntraFreqCellsPerReport-r18* indicates the maximum number of candidate cells in one report where a SSBRI-RSRP pair is used for each beam report for intra-frequency L1-RSRP measurement;- *supportedMaxReportBeamsPerReportedCell-r18* indicates the maximum number of candidate beams per candidate cell in one report where a SSBRI-RSRP pair is used for each beam report for intra-frequency L1-RSRP measurement;- *supportedMaxReportBeamsReports-r18* indicates the maximum number of candidate beams in total across all cells in one report where a SSBRI-RSRP pair is used for each beam report for intra-frequency L1-RSRP measurement;- *supportedMaxAperiodic-LTM-CSI-ReportConfig-r18* indicates maximum number of aperiodic *LTM-CSI-ReportConfig*;- *supportedMaxPeriodic-LTM-CSI-ReportConfig-r18* indicates maximum number of periodic *LTM-CSI-ReportConfig*;- *supportedMaxSemiPersistent-LTM-CSI-ReportConfig-r18* indicates maximum number of semi-persistant *LTM-CSI-ReportConfig*;UE supporting this feature shall also indicate support of *periodicBeamReport* or *aperiodicBeamReport* or *sp-BeamReportPUCCH* or *sp-BeamReportPUSCH.* | BC | No | N/A | N/A |
| ***jointSearchSpaceSwitchAcrossCells-r16***Indicates whether the UE supports being configured with a group of cells and switching search space set group jointly over these cells. If the UE supports this feature, the UE needs to report *searchSpaceSwitchWithDCI-r16* or *searchSpaceSwitchWithoutDCI-r16*. | BC | No | N/A | N/A |
| ***maxCC-32-DL-HARQ-ProcessFR2-2-r17***Indicates the maximum number of component carriers that can be configured with 32 DL HARQ processes. Value n1 means maximum 1 component carrier, value n2 means maximum 2 component carriers, and so on.UE supporting this feature shall indicate support of *support32-DL-HARQ-ProcessPerSCS-r17*. | BC | No | N/A | N/A |
| ***maxCC-32-UL-HARQ-ProcessFR2-2-r17***Indicates the maximum number of component carriers that can be configured with 32 UL HARQ processes. Value n1 means 1 component carrier, value n2 means 2 component carriers, and so on.UE supporting this feature shall indicate support of *support32-UL-HARQ-ProcessPerSCS-r17*. | BC | No | N/A | N/A |
| ***maxFreqLayersL1-Meas-r18***Indicates the number of frequency layers for L1-RSRP measurement.This capability signalling comprises of the following parameters:- *supportedMaxIntraInterFreqLayersWithoutGaps-r18* indicates the maximum number of frequency layers UE can measure for intra- and inter-frequency without measurement gaps L1-RSRP measurement. A UE indicating support for this component shall also indicate support for *intraFreqL1-MeasConfig-r18* and/or *interFreqSSB-L1-MeasWithoutGaps-r18.*- *supportedMaxIntraInterFreqLayersWithGaps-r18* indicates the maximum number of frequency layers UE can measure for inter-frequency L1-RSRP measurement with measurement gaps. A UE indicating support for this component shall also indicate support for *ltm-InterFreqMeasGap-r18*. | BC | No | N/A | N/A |
| ***maxNeighCellsPerFreqLayerL1-Meas-r18***Indicates the number of neighbouring cells per frequency layer for L1-RSRP measurement.This capability signalling comprises of the following parameters:- *supportedMaxNeighCellsPerFreqLayersWithoutGaps-r18* indicates the max number of neighbour cells UE can measure for L1-RSRP per frequency layer for intra-frequency or inter-frequency without measurement gaps. A UE indicating support for this component shall also indicate support for *intraFreqL1-MeasConfig-r18* or *interFreqSSB-L1-MeasWithoutGaps-r18.*- *supportedMaxNeighCellsPerFreqLayersWithGaps-r18* indicates the max number of neighbour cells UE can measure for L1-RSRP per frequency layer for inter-frequency with measurement gaps. A UE indicating support for this component shall also indicate support for *ltm-InterFreqMeasGap-r18.* | BC | No | N/A | N/A |
| ***maxNumberTAG-AcrossCC-r18***Indicates the maximum number of TAGs across all CCs in a band combination when UE supports multi-DCI Multi-TRP operation with two TA enhancement.It is applied to NR CA, NR-DC, (NG)EN-DC/NE-DC and DAPS handover. For (NG)EN-DC/NE-DC, it indicates number of TAGs only for NR CG. The number of TAGs for the LTE MCG is signalled by existing LTE TAG capability signalling. For NR CA/NR-DC band combination, if the band combination comprised of more than one band entry (i.e., inter-band or intra-band non-contiguous band combination), it indicates that different timing advances on different band entries are supported. It is mandatory for the UE to support more than one TAG for NR-DC and it is mandatory for UE to support 2 TAGs for inter-frequency DAPS. For the mixed inter-band and intra-band NR CA/NR-DC band combination, if the network configures more non-contiguous UL serving cells than the number of supported TAG, the UE only supports the configuration where all UL CCs of the same frequency band are configured with the same Timing Advance Group ID.A UE supporting this feature shall indicate support of *multiDCI-IntraCellMultiTRP-TwoTA-r18* or *multiDCI-InterCellMultiTRP-TwoTA-r18*.NOTE: UE only supports the configuration where all UL CCs of the same frequency band are configured with up to 2 Timing Advance Group ID. | BC | No | N/A | N/A |
| ***maxSSB-PerFreqLayerL1-Meas-r18***Indicates the maximum number of SSB resources for L1-RSRP measurement per frequency layer UE can measure.This capability signalling comprises of the following parameters:- *supportedMaxSSB-PerFreqLayersWithoutGaps-r18* indicates the max number of SSB resources UE can measure for L1-RSRP per frequency layer for intra-frequency or inter-frequency without measurement gaps. A UE indicating support for this component shall also indicate support for *intraFreqL1-MeasConfig-r18* or *interFreqSSB-L1-MeasWithoutGaps-r18.*- *supportedMaxSSB-PerFreqLayersWithGaps-r18* indicates the max number of SSB resources UE can measure for L1-RSRP per frequency layer for inter-frequency with measurement gaps. A UE indicating support for this component shall also indicate support for *ltm-InterFreqMeasGap-r18*. | BC | No | N/A | N/A |
| ***maxUplinkDutyCycle-interBandCA-PC2-r17***Indicates the maximum average percentage of symbols during a certain evaluation period that can be scheduled for uplink transmission so as to ensure compliance with applicable electromagnetic energy absorption requirements provided by regulatory bodies. The average percentage of uplink symbols is specified in 6.2A.1.3, 6.2H.3.1 and 6.2L.3.1 in TS 38.101-1 [2] and the capability applies to the CA combinations listed in table 6.2A.1.3-1, 6.2H.3.1-1 and 6.2L.3.1-1 in TS 38.101-1 [2]. If the field is absent, UE may use P-MPRc as defined in 6.2.4 in TS 38.101-1 [2] if necessary.Value n50 corresponds to 50%, value n60 corresponds to 60% and so on.NOTE 1: Specific targeted UL duty cycle percentage is not assumed if the field is absent.NOTE 2: This field is applicable for both power class 2 and power class 1.5 inter-band UL CA. | BC | No | N/A | FR1 only |
| ***maxUplinkDutyCycle-SULcombination-PC2-r17***Indicates the maximum average percentage of symbols during a certain evaluation period that can be scheduled for uplink transmission so as to ensure compliance with applicable electromagnetic energy absorption requirements provided by regulatory bodies. The average percentage of uplink symbols is specified in 6.2C.1 in TS 38.101-1 [2] and the capability applies to all the SUL configurations with 1 SUL band + 1 TDD band.If the field is absent, UE shall work on power class 2 regardless of UL duty cycle and may use P-MPRc as defined in 6.2.4 in TS 38.101-1 [2] if necessary.Value n50 corresponds to 50%, value n60 corresponds to 60% and so on.NOTE: Specific targeted UL duty cycle percentage is not assumed if the field is absent. | BC | No | N/A | FR1 only |
| ***maxUpTo3Diff-NumerologiesConfigSinglePUCCH-grp-r16***Indicates the UE support of up to 3 different numerologies in the same PUCCH group where UE is not configured with two NR PUCCH groups by indicating one or multiple NR carrier types {FR1 licensed TDD (*fr1-NonSharedTDD-r16*), FR1 unlicensed TDD (*fr1-SharedTDD-r16*), FR1 licensed FDD (*fr1-NonSharedFDD-r16*), FR2(*fr2-r16*)} that can transmit the PUCCH for NR part of (NG)EN-DC, NE-DC and NR-CA.NOTE: When the carrier type of NUL is indicated for PUCCH transmission location, the SUL in the same cell as in the NUL can also be configured for PUCCH transmission. | BC | No | N/A | N/A |
| ***maxUpTo4Diff-NumerologiesConfigSinglePUCCH-grp-r16***Indicates the UE support of up to 4 different numerologies in the same PUCCH group where UE is not configured with two NR PUCCH groups by indicating one or multiple the NR carrier types {FR1 licensed TDD (*fr1-NonSharedTDD-r16*), FR1 unlicensed TDD (*fr1-SharedTDD-r16*), FR1 licensed FDD (*fr1-NonSharedFDD-r16*), FR2(*fr2-r16*)} that can transmit the PUCCH for NR part of (NG)EN-DC, NE-DC and NR-CA.NOTE: When the carrier type of NUL is indicated for PUCCH transmission location, the SUL in the same cell as in the NUL can also be configured for PUCCH transmission. | BC | No | N/A | N/A |
| ***mixCodeBookSpatialAdaptationPerBC-r18***Indicates the list of supported CSI-RS resources across all bands in a band combination by referring to *codebookVariantsList* for the mixed codebook types when UE supports mixed codebook combination for spatial domain adaptation with CSI feedback based on CSI report sub-configuration(s). The following parameters are included in *codebookVariantsList* for each code book type:- *maxNumberTxPortsPerResource* indicates the maximum number of Tx ports in a resource across all bands within a band combination;- *maxNumberResourcesPerBand* indicates the maximum number of resources across all CCs within a band combination, simultaneously;- *totalNumberTxPortsPerBand* indicates the total number of Tx ports across all CCs within a band combination, simultaneously.A UE supporting this feature shall also indicate support of *spatialAdaptation-CSI-FeedbackPerBC-r18*, or *spatialAdaptation-CSI-FeedbackPUSCH-PerBC-r18*, or *spatialAdaptation-CSI-FeedbackPUCCH-PerBC-r18*, or *spatialAdaptation-CSI-FeedbackAperiodic-PerBC-r18*. | BC | No | N/A | N/A |
| ***mode1-ForType1-CodebookGeneration-r17***Indicates whether the UE supports type1-Codebook-Generation-Mode configured as mode 1, for multiplexing HARQ-ACK for unicast and HARQ-ACK for multicast on PUCCH or PUSCH.A UE supporting this feature shall also indicate support of *mode2-TDM-CodebookForMux-UnicastMulticastHARQ-ACK-r17*. | BC | No | N/A | N/A |
| ***mode2-TDM-CodebookForMux-UnicastMulticastHARQ-ACK-r17***Indicates whether the UE supports Mode 2 TDM-ed Type-1 and Type-2 HARQ-ACK codebook for multiplexing HARQ-ACK for unicast and HARQ-ACK for multicast, comprised of the following functional components:- Support of Mode 2 TDM-ed Type-1 HARQ-ACK codebook for multiplexing HARQ-ACK for unicast and ACK/NACK-based HARQ-ACK for multicast on PUCCH or PUSCH;- Support of Type-2 HARQ-ACK codebooks for multiplexing HARQ-ACK for unicast and HARQ-ACK for multicast on PUCCH or PUSCH with max number of G-RNTIs indicated in *maxNumberG-RNTI-HARQ-ACK-Codebook-r17*, which is not larger than max number of G-RNTIs indicated in *maxNumberG-RNTI-r17* or G-CS-RNTIs indicated in *maxNumberG-CS-RNTI-r17.*A UE supporting this feature shall also indicate support of *ack-NACK-FeedbackForMulticast-r17* or *nack-OnlyFeedbackForMulticast-r17* or *ack-NACK-FeedbackForSPS-Multicast-r17* or *nack-OnlyFeedbackForSPS-Multicast-r17*.NOTE 1: Mode 2 TDM-ed Type-1 HARQ-ACK codebook is generated based on the union TDRA tables from unicast and multicast and the union of k1 sets from unicast and multicast.NOTE 2: The Type-2 HARQ-ACK codebook is generated by concatenating the Type-2 sub-codebook for unicast and the Type-2 sub-codebook for multicast. | BC | No | N/A | N/A |
| ***msgA-SUL-r16***Indicates whether the UE supports MSGA transmission in a band combination including SUL. A UE supporting this feature shall also indicate support of *twoStepRACH-r16*. | BC | No | N/A | N/A |
| ***mTRP-CSI-EnhancementPerBC-r17***Indicates support of CSI enhancements for multi-TRP including support of NZP CSI-RS resource pairs used as CMR (channel measurement resource) pairs for NCJT measurement hypothesis with N=1.This feature also includes following parameters:- *maxNumNZP-CSI-RS-r17* indicates the maximum number of NZP CSI-RS resources in one CSI-RS resource set: Ks,max- *cSI-Report-mode-r17* indicates the CSI report mode selection. Mode indicates mode 1 with X=0, mode2 indicates mode 2, both indicate the support of both mode 1 with X=0 and mode 2.- A list of supported combinations, up to 16, across all CCs simultaneously, where each combination is- *maxNumTx-Ports-r17* indicates the maximum number of Tx ports in one NZP CSI-RS resource associated with an NCJT measurement hypothesis- *maxTotalNumCMR-r17* indicates the maximum total number of CMRs for NCJT measurement- *maxTotalNumTx-PortsNZP-CSI-RS-r17*: indicates the maximum total number of Tx ports of NZP CSI-RS resources associated with NCJT measurement hypotheses- *codebookMode-NCJT-r17* indicates the supported codebook modes for NCJT CSI. | BC | No | N/A | N/A |
| ***multiCell-PDSCH-DCI-1-3-DiffSCS-r18***Indicates whether the UE supports monitoring DCI format 1\_3 for DL scheduling where scheduling cell is not included in a set of cells in same PUCCH group and supports Type-2 for 'Antenna port(s)' fieldThe number of unicast DL DCIs to process per N consecutive slots of scheduling cell for a set of cells configured for multi-cell PDSCH scheduling by DCI format 1\_3*-* One DCI format 1\_3 for the set of cells and,*-* One unicast DL DCI formats 1\_0/1\_1/1\_2 (if supported) for each of the cells that are not scheduled by DCI 1\_3*-* For low-to-high SCS, N = 1.*-* For high-to-low SCS, N is based on pair of (scheduling CC SCS, scheduled CC SCS): N=2 for (30,15), (60,30), (120,60) and N=4 for (60,15), (120,30), N = 8 for (120,15)The UE monitors SS set(s) for DCI format 1\_3 for a set of cells when search space set configurations for DCI format 1\_3 for the set of cells with the same *searchSpaceId* are provided on both the scheduling cell and a serving cell in the set of cells Scheduling cell is PCell or SCell, and a set of cells includes only SCells.The capability signalling comprises of the following parameters:*-* *coScheduledCellSCS-r18* indicates scheduling cell and co-scheduled cells have different SCS. The set of co-scheduled cells share the same SCS and carrier type.*-* *combinationCarrierType-r18* indicates scheduling cell and co-scheduled cells have same or different carrier type (FR1 licensed FDD or FR1 licensed TDD or FR1 unlicensed TDD or FR2-1 or FR2-2).*-* *maxNumberCoScheduledCell-r18* indicates the max number of co-scheduled cells per set of cells supported by UE.*-* *maxNumberSetsOfCellAcrossPUCCH-Group-r18* indicates the max number of sets of cells supported by UE across PUCCH groups.*-* *maxNumberSetsOfCellScheduling-r18* indicates the max number of sets of cells supported by UE for a same scheduling cell.*-* *harqFeedbackType-r18* indicates the supported HARQ feedback types. The UE shall report the same value for all BCs supporting *multiCell-PDSCH-DCI-1-3-DiffSCS-r18,* i.e. The UE shall report the same value for all supported BCs with *multiCell-PDSCH-DCI-1-3-DiffSCS-r18* reported.*-* *coScheduledCellIndicationScheme-r18* indicates the supported co-scheduled cell indication schemes.NOTE: Support of CCS with DL DCI formats 1\_1/1\_2 is according to crossCarrierSchedulingDL-DiffSCS-r16.NOTE: 480/960 kHz SCS is not applicable to multi-cell scheduling with DCI format 1\_3. | BC | No | N/A | N/A |
| ***multiCell-PDSCH-DCI-1-3-SameSCS-r18***Indicates whether the UE supports monitoring DCI format 1\_3 for DL scheduling with same SCS between scheduling cell and cells in the set and supports Type-2 for 'Antenna port(s)' field.The number of unicast DL DCIs to process per slot of scheduling cell for a set of cells configured for multi-cell PDSCH scheduling by DCI format 1\_3:- One DCI format 1\_3 for the set of cells and,- One unicast DL DCI formats 1\_0/1\_1/1\_2 (if supported) for each of the cells that are not scheduled by DCI 1\_3.Scheduling cell is PCell if set of cells includes PCell, and scheduling cell is PCell or an SCell if set of cells includes only SCells.The UE monitors SS set(s) for DCI format 1\_3 for a set of cells for the following cases:- Search space set configuration for DCI format 1\_3 for the set of cells is provided only on the scheduling cell, or;- Search space set configurations for DCI format 1\_3 for the set of cells with the same *searchSpaceId* are provided on both the scheduling cell and a serving cell in the set of cells with the scheduling cell being not in the set of cells.- A UE supporting this capability can additionally report *supportOfSearchSpace-r18* to indicate whether the UE support search space set configurations for DCI format 1\_3 for the set of cells with the same searchSpaceId are provided on both the scheduling cell and a serving cell in the set of cells with the scheduling cell being in the set of cells.The capability signalling comprises of the following parameters:*-* *coScheduledCellSCS-r18* indicates scheduling cell and co-scheduled cells have same SCS/carrier type.*-* *maxNumberCoScheduledCell-r18* indicates the max number of co-scheduled cells per set of cells supported by UE.*-* *maxNumberSetsOfCellAcrossPUCCH-Group-r18* indicates the max number of sets of cells supported by UE across PUCCH groups.*-* *maxNumberSetsOfCellScheduling-r18* indicates the max number of sets of cells supported by UE for a same scheduling cell.*-* *harqFeedbackType-r18* indicates the supported HARQ feedback types. The UE shall report the same value for all BC supporting *multiCell-PDSCH-DCI-1-3-SameSCS-r18,* i.e. The UE shall report the same value for all supported BCs with *multiCell-PDSCH-DCI-1-3-SameSCS-r18* reported.*-* *coScheduledCellIndicationScheme-r18* indicates the supported co-scheduled cell indication schemes.When multiple values are reported in *coScheduledCellSCS-r18* and if scheduling cell is not included in the set of cells, the UE supports multi-cell PDSCH scheduling by DCI format 1\_3 from one carrier type, indicated in *coScheduledCellSCS-r18*, to another carrier type, indicated in *coScheduledCellSCS-r18*, for the following scheduling cases:- FR1 licensed TDD to FR1 unlicensed TDD- FR2-1 to FR2-2- UE can additionally report *licensed-fdd-tdd-fr1* indicating the support of FR1 licensed FDD from/to FR1 licensed TDD.NOTE: Support of CCS with DL DCI formats 1\_1/1\_2 is according to *crossCarrierScheduling-SameSCS*.NOTE: 480/960 kHz SCS is not applicable to multi-cell scheduling with DCI format 1\_3. | BC | No | N/A | N/A |
| ***multiCell-PUSCH-DCI-0-3-DiffSCS-r18***Indicates whether the UE supports monitoring DCI format 0\_3 for UL scheduling where scheduling cell is not included in a set of cells in same PUCCH group and supports Type-2 for 'Antenna port(s)', 'Precoding information and number of layers' and 'SRS resource indicator' fields. Scheduling cell is PCell or SCell, and a set of cells includes only SCells.The number of unicast UL DCIs to process per N consecutive slots of scheduling cell for a set of cells configured for multi-cell PUSCH scheduling by DCI format 0\_3:- For FDD scheduling cell- Up to one DCI format 0\_3 for the set of cells and,- Up to one unicast UL DCI formats 0\_0/0\_1/0\_2 (if supported) for each of the cells- For a cell in a set of cells, no more than one DCI scheduling PUSCH for the cell- For TDD scheduling cell- Up to two DCI format 0\_3 for the set of cells and,- Up to two unicast UL DCI formats 0\_0/0\_1/0\_2 (if supported) for each of the cells- For a cell in a set of cells, no more than two DCI scheduling PUSCH for the cell- For low-to-high SCS, N = 1.- For high-to-low SCS, N is based on pair of (scheduling CC SCS, scheduled CC SCS): N=2 for (30,15), (60,30), (120,60) and N=4 for (60,15), (120,30), N = 8 for (120,15).The UE monitors SS set(s) for DCI format 0\_3 for a set of cells when search space set configurations for DCI format 0\_3 for the set of cells with the same *searchSpaceId* are provided on both the scheduling cell and a serving cell in the set of cells.The capability signalling comprises of the following parameters:*-* *coScheduledCellSCS-r18* indicates scheduling cell and co-scheduled cells have different SCS. The set of co-scheduled cells share the same SCS and carrier type.*-* *combinationCarrierType-r18* indicates scheduling cell and co-scheduled cells have same or different carrier type (FR1 licensed FDD or FR1 licensed TDD or FR1 unlicensed TDD or FR2-1 or FR2-2).*-* *maxNumberCoScheduledCell-r18* indicates the max number of co-scheduled cells per set of cells supported by UE.*-* *maxNumberSetsOfCellAcrossPUCCH-Group-r18* indicates the max number of sets of cells supported by UE across PUCCH groups.*-* *maxNumberSetsOfCellScheduling-r18* indicates the max number of sets of cells supported by UE for a same scheduling cell.*-* *coScheduledCellIndicationScheme-r18* indicates the supported co-scheduled cell indication schemes.NOTE: Support of CCS with UL DCI formats 0\_1/0\_2 is according to *crossCarrierSchedulingUL-DiffSCS-r16*.NOTE: 480/960 kHz SCS is not applicable to multi-cell scheduling with DCI format 0\_3. | BC | No | N/A | N/A |
| ***multiCell-PUSCH-DCI-0-3-SameSCS-r18***Indicates whether the UE supports monitoring DCI format 0\_3 for UL scheduling with same SCS between scheduling cell and cells in the set and supports Type-2 for 'Antenna port(s)', 'Precoding information and number of layers' and 'SRS resource indicator' fields. Scheduling cell is PCell if set of cells includes PCell, and scheduling cell is PCell or an SCell if set of cells includes only SCells.The number of unicast UL DCIs to process per slot of scheduling cell for a set of cells configured for multi-cell PUSCH scheduling by DCI format 0\_3:- For FDD scheduling cell:- Up to one DCI format 0\_3 for the set of cells and,- Up to one unicast UL DCI formats 0\_0/0\_1/0\_2 (if supported) for each of the cells- For a cell in a set of cells, no more than one DCI scheduling PUSCH for the cell- For TDD scheduling cell:- Up to two DCI format 0\_3 for the set of cells and,- Up to two unicast UL DCI formats 0\_0/0\_1/0\_2 (if supported) for each of the cells- For a cell in a set of cells, no more than two DCI scheduling PUSCH for the cell.The UE monitors SS set(s) for DCI format 0\_3 for a set of cells for the following cases:- Search space set configuration for DCI format 0\_3 for the set of cells is provided only on the scheduling cell, or;- Search space set configurations for DCI format 0\_3 for the set of cells with the same *searchSpaceId* are provided on both the scheduling cell and a serving cell in the set of cells with the scheduling cell being NOT in the set of cells.- A UE supporting this capability can additionally report *supportOfSearchSpace-r18* whether the UE support search space set configurations for DCI format 0\_3 for the set of cells with the same searchSpaceId are provided on both the scheduling cell and a serving cell in the set of cells with the scheduling cell being in the set of cells.The capability signalling comprises of the following parameters:*-* *coScheduledCellSCS-r18* indicates scheduling cell and co-scheduled cells have same SCS/carrier type.*-* *maxNumberCoScheduledCell-r18* indicates the max number of co-scheduled cells per set of cells supported by UE.*-* *maxNumberSetsOfCellAcrossPUCCH-Group-r18* indicates the max number of sets of cells supported by UE across PUCCH groups.*-* *maxNumberSetsOfCellScheduling-r18* indicates the max number of sets of cells supported by UE for a same scheduling cell.*-* *coScheduledCellIndicationScheme-r18* indicates the supported co-scheduled cell indication schemes.When multiple *coScheduledCellSCS-r18* values are reported and if scheduling cell is not included in the set of cells, support multi-cell PUSCH scheduling by DCI format 0\_3 from one carrier type, indicated in *coScheduledCellSCS-r18*, to another carrier type, indicated in *coScheduledCellSCS-r18*, for the following scheduling cases:- FR1 licensed TDD to FR1 unlicensed TDD- FR2-1 to FR2-2- UE can additionally report *licensed-fdd-tdd-fr1* indicating the support of FR1 licensed FDD from/to FR1 licensed TDD.NOTE: Support of CCS with UL DCI formats 0\_1/0\_2 is according to *crossCarrierScheduling-SameSCS*.NOTE: 480/960 kHz SCS is not applicable to multi-cell scheduling with DCI format 0\_3. | BC | No | N/A | N/A |
| ***multiCellL1-measRTD-greaterThan-CP-r18***Indicates the capability of simultaneous L1-RSRP measurements for more than one cell when the max RTD among the cells on the same frequency layer or in the same active BWP is larger than CP length of the cell on the frequency layer or in the same active BWP.A UE supporting this feature shall also indicate support of either *intraFreqL1-MeasConfig-r18, interFreqSSB-L1-MeasWithoutGaps-r18* or *ltm-InterFreqMeasGap-r18.* | BC | No | N/A | N/A |
| ***multiPUCCH-ConfigForMulticast-r17***Indicates whether the UE supports *PUCCH-ConfigurationList* for multicast HARQ-ACK feedback, separate from that of unicast configurations.A UE supporting this feature shall also indicate support of *singlePUCCH-ConfigForMulticast-r17* and *priorityIndicatorInDCI-Multicast-r17*. | BC | No | N/A | N/A |
| ***mux-HARQ-ACK-UnicastMulticast-r17***Indicates whether the UE supports multiplexing HARQ-ACK for unicast and for multicast with the same priority and different HARQ-ACK codebook types in a PUCCH or in a PUSCH.A UE supporting this feature shall also indicate support of *ack-NACK-FeedbackForMulticast-r17* or *nack-OnlyFeedbackForMulticast-r17* or *ack-NACK-FeedbackForSPS-Multicast-r17* or *nack-OnlyFeedbackForSPS-Multicast-r17*. | BC | No | N/A | N/A |
| ***nack-OnlyFeedbackForMulticast-r17***Indicates whether the UE supports NACK-only based HARQ-ACK feedback for multicast RRC-based enabling/disabling with ACK/NACK transforming, comprised of the following functional components:- Supports NACK-only based HARQ-ACK feedback and enabling/disabling NACK-only based HARQ-ACK feedback configured by RRC signalling for dynamic scheduling for multicast, including:- A single TB with NACK-only feedback transmitted in PUCCH- Multiple TB with NACK-only feedback transmitted in PUCCH by transforming into ACK/NACK bits- Supports shared PUCCH resource configurations with unicast;- Supports one or multiple TB with NACK-only feedback transmitted in PUSCH by transforming into ACK/NACK bits;- Supports One or multiple TB with NACK-only feedback transmitted in PUCCH by transforming into ACK/NACK bits when multiplexing with other UCI.A UE supporting this feature shall also indicate support of *ack-NACK-FeedbackForMulticast-r17*. | BC | No | N/A | N/A |
| ***nack-OnlyFeedbackForSPS-Multicast-r17***Indicates whether the UE supports RRC-based enabling/disabling NACK-only based feedback for SPS group-common PDSCH for multicast, comprised of the following functional components:- Support NACK-only based HARQ-ACK feedback, and support of enabling/disabling NACK-only based HARQ-ACK feedback configured by RRC signalling for SPS group-common PDSCH without PDCCH scheduling, including:- A single TB with NACK-only feedback transmitted in PUCCH- Multiple TBs with NACK-only feedback transmitted in PUCCH by transforming into ACK/NACK bits- Support of shared PUCCH resource configurations with unicast- One or multiple TB with NACK-only feedback transmitted in PUSCH by transforming into ACK/NACK bits- One or multiple TB with NACK-only feedback transmitted in PUCCH by transforming into ACK/NACK bits when multiplexing with other UCIA UE supporting this feature shall also indicate support of *ack-NACK-FeedbackForSPS-Multicast-r17*. | BC | No | N/A | N/A |
| ***nack-OnlyFeedbackSpecificResourceForMulticast-r17***Indicates whether the UE supports NACK-only based HARQ-ACK feedback for multicast corresponding to a specific sequence or a PUCCH transmission, comprised of the following functional components:- Supports NACK-only based HARQ-ACK feedback for dynamic scheduling for multicast, including:- Up to 4 TBs with NACK-only feedback transmitted in PUCCH by select one PUCCH resource- Supports separate PUCCH resource configurations from unicast;- Supports single TB with NACK-only feedback transmitted in PUCCH;- Supports up to 4TBs with NACK-only feedback transmitted in PUSCH by transforming into ACK/NACK bits.A UE supporting this feature shall also indicate support of *nack-OnlyFeedbackForMulticast-r17*. | BC | No | N/A | N/A |
| ***nack-OnlyFeedbackSpecificResourceForSPS-Multicast-r17***Indicates whether the UE supports NACK-only based HARQ-ACK feedback for multicast corresponding to a specific sequence or a PUCCH transmission for SPS group-common PDSCH for multicast, comprised of the following functional components:- Supports NACK-only based HARQ-ACK feedback for SPS PDSCH for multicast, including:- Up to 2TBs with NACK-only feedback transmitted in PUCCH by select one PUCCH resource- Supports separate *SPS-PUCCH-AN-List* from unicast;- Single TB with NACK-only feedback transmitted in PUCCH;- Up to 2TBs with NACK-only feedback transmitted in PUSCH by transforming into ACK/NACK bits.UE supporting this feature shall also indicate support of *nack-OnlyFeedbackForSPS-Multicast-r17*. | BC | No | N/A | N/A |
| ***non-AlignedFrameBoundaries-r17***Indicates whether UE supports carrier aggregation with non-aligned frame boundaries for PCell/PSCell and SCell configured with cross-carrier scheduling to PCell/PSCell (sSCell) in inter-band CA. The capability indicates the band pairs of the {PCell/PSCell SCS in kHz, sSCell SCS in kHz} combination which supports non-aligned frame boundary PCell/PSCell and SCell. The band-pair is encoded as a bitmap with size L \* (L – 1) / 2, and bit N (leftmost bit is indexed as bit 0) is set to "1" if the UE supports non-frame boundary for PCell/PSCell and SCell for the band pair (x, y), where L is the number of band entries in the band combination, x and y are the indices of the band entry in the band combination (the first band entry is indexed as 0), x < y, and N = x\*(2\*L – x – 1)/2 + y – x – 1.UE indicating support of this feature shall indicate support of *crossCarrierSchedulingSCell-SpCellTypeA-r17* or *crossCarrierSchedulingSCell-SpCellTypeB-r17*. | BC | No | N/A | FR1 only |
| ***nonCodebook-CSI-RS-SRS-PerBC-r18***Indicates the list of supported CSI-RS resources supporting association between CSI-RS and SRS for non-codebook case by referring to *codebookVariantsList*. The following parameters are included in *codebookVariantsList*:- *maxNumberTxPortsPerResource* indicates the maximum number of Tx ports in a resource of a feature set per CC, simultaneously.- *maxNumberResourcesPerBand* indicates the maximum number of resources across all CCs in a feature set per CC, simultaneously.- *totalNumberTxPortsPerBand* indicates the total number of Tx ports across all CCs in a feature set per CC, simultaneously.A UE supporting this feature shall indicate support of *nonCodebook-8TxPUSCH-r18* and *nonCodebook-CSI-RS-SRS-r18*. | BC | No | N/A | N/A |
| ***parallelTxMsgA-SRS-PUCCH-PUSCH-r16***Indicates whether the UE supports parallel transmission of MsgA in PCell and SRS/ PUCCH/ PUSCH across CCs in an inter-band CA band for NR SA. A UE supporting this feature shall also indicate support of *parallelTxPRACH-SRS-PUCCH-PUSCH*. | BC | No | N/A | N/A |
| ***parallelTxMsgA-SRS-PUCCH-PUSCH-intraBand-r17***Indicates whether the UE supports parallel transmission of MsgA in SpCell and SRS/ PUCCH/ PUSCH across CCs in an intra-band non-contiguous CA band combination or across CCs in an intra-band non-contiguous CA of the Cell Group in which intra-band non-contiguous CA is configured (i.e. the UE capability is applicable to NR-DC band combination where only one of the Cell Groups is configured with intra-band non-contiguous CA and the Cell Group contains a single intra-band non-contiguous CA component). The UE indicating support of this field shall also indicate support of *parallelTxMsgA-SRS-PUCCH-PUSCH-r16*. | BC | No | N/A | N/A |
| ***parallelTxSRS-PUCCH-PUSCH***Indicates whether the UE supports parallel transmission of SRS and PUCCH/ PUSCH across CCs in an inter-band CA band combination for NR SA. | BC | No | N/A | N/A |
| ***parallelTxSRS-PUCCH-PUSCH-intraBand-r17***Indicates whether the UE supports parallel transmission of SRS and PUCCH/ PUSCH across CCs in an intra-band non-contiguous CA band combination or across CCs in an intra-band non-contiguous CA of the Cell Group in which intra-band non-contiguous CA is configured (i.e. the UE capability is applicable to NR-DC band combination where only one of the Cell Groups is configured with intra-band non-contiguous CA and the Cell Group contains a single intra-band non-contiguous CA component). | BC | No | N/A | N/A |
| ***parallelTxPRACH-SRS-PUCCH-PUSCH***Indicates whether the UE supports parallel transmission of PRACH and SRS/PUCCH/PUSCH across CCs in an inter-band CA band combination for NR SA. | BC | No | N/A | N/A |
| ***parallelTxPRACH-SRS-PUCCH-PUSCH-intraBand-r17***Indicates whether the UE supports parallel transmission of PRACH and SRS/PUCCH/PUSCH across CCs in an intra-band non-contiguous CA band combination or across CCs in an intra-band non-contiguous CA of the Cell Group in which intra-band non-contiguous CA is configured (i.e. the UE capability is applicable to NR-DC band combination where only one of the Cell Groups is configured with intra-band non-contiguous CA and the Cell Group contains a single intra-band non-contiguous CA component). | BC | No | N/A | N/A |
| ***parallelTxPUCCH-PUSCH-r17***Indicates whether the UE supports simultaneous PUCCH and PUSCH transmissions of different priority across CCs in an inter-band CA band combination for NR SA. | BC | No | N/A | N/A |
| ***parallelTxPUCCH-PUSCH-SamePriority-r17***Indicates whether the UE supports simultaneous PUCCH and PUSCH transmissions of same priority across CCs in an inter-band CA band combination for NR SA as specified in clause 9 of TS 38.213 [11]. | BC | No | N/A | N/A |
| ***pdcch-BlindDetectionCA-Mixed-r16, pdcch-BlindDetectionCA-Mixed-v16a0***This field indicates mixed operation of two variants of the number of blind detections in case of CA. UE indicating support of this feature shall also indicate support of *pdcch-MonitoringMixed-r16*. UE indicating support of *pdcch-BlindDetectionCA-Mixed-v16a0* shall also indicate support of *pdcch-MonitoringMixed-r16*.Only one between *pdcch-BlindDetectionCA-Mixed-r16* and *pdcch-BlindDetectionCA-Mixed-NonAlignedSpan-r16* can be reported by UE. | BC | No | N/A | N/A |
| ***pdcch-BlindDetectionCA-Mixed-r18***Indicates the supported combinations of the capability on the number of CCs for CCE/BD scaling with DL CA with mix of Rel-16 and Rel-15 PDCCH monitoring capabilities on different carriers.The capability signalling comprises the following parameters:*-* *blindDetectionCA-Mixed-r18* indicates the supported combination(s) of (*pdcch-BlindDetectionCA1-r16* (for Rel-15), *pdcch-BlindDetectionCA2-r16* (for Rel-16)*-* *supportedSpanArrangement-r18* indicates the supported span arrangement for CAWhen a UE reports both *pdcch-BlindDetectionCA-MixedExt-r16* and this capability, the value reported in this capability is used if the configured span pattern of any serving cell satisfies *pdcch-MonitoringSpan2-2-r18*.UE indicating support of this feature shall also indicate support of (7,3) or (4,3) span based PDCCH monitoring for *pdcch-MonitoringMixed-r16* and (2,2) span based PDCCH monitoring for *pdcch-MonitoringMixed-r18* with additional restriction(s).The minimum of the summation of capability on the number of CCs with Rel-15 PDCCH monitoring capability and the capability on the number of CCs with Rel-16 PDCCH monitoring capability is 3.Only one between *pdcch-BlindDetectionCA-Mixed-r18* and *pdcch-BlindDetectionCA-Mixed-NonAlignedSpan-r18* can be reported by UE. | BC | No | N/A | N/A |
| ***pdcch-BlindDetectionCA-Mixed-NonAlignedSpan-r16, pdcch-BlindDetectionCA-Mixed-NonAlignedSpan-v16a0***This field indicates mixed operation of two variants of the number of blind detections in case of CA when the UE supports aligned span and non-aligned span. In the case of non-aligned span, when the configured number of CCs with Rel-16 PDCCH monitoring is larger than the UE reported value, PDCCH monitoring occasion(s) should be configured only on same symbol(s) every slot. UE indicating support of this feature shall also indicate support of *pdcch-MonitoringMixed-r16*. The minimum of the summation of capability on the number of CCs with Rel-15 PDCCH monitoring capability and the capability on the number of CCs with Rel-16 PDCCH monitoring capability is 3.UE indicating support of *pdcch-BlindDetectionCA-Mixed-NonAlignedSpan-v16a0* shall also indicate support of *pdcch-BlindDetectionCA-Mixed-NonAlignedSpan-r16*. Only one between *pdcch-BlindDetectionCA-Mixed-r16* and *pdcch-BlindDetectionCA-Mixed-NonAlignedSpan-r16* can be reported by UE. | BC | No | N/A | N/A |
| ***pdcch-BlindDetectionCA-Mixed-NonAlignedSpan-r18***Indicates the supported combination of the capability on the number of CCs for CCE/BD scaling with DL CA with mix of Rel-16 and Rel-15 PDCCH monitoring capabilities on different carriers with restriction for non-aligned span case.In case of non-aligned span when the configured number of cells with Rel-16 PDCCH monitoring is larger than the UE reported value, PDCCH monitoring occasion(s) should be configured only on same symbol(s) every slot.When a UE reports both *pdcch-BlindDetectionCA-Mixed-NonAlignedSpan-r16* and this capability, the value reported in this capability is used if the configured span pattern of any serving cell satisfies *pdcch-MonitoringSpan2-2-r18*.UE indicating support of this feature shall also indicate support of (7,3) or (4,3) span based PDCCH monitoring for *pdcch-MonitoringMixed-r16* and (2,2) span based PDCCH monitoring for *pdcch-MonitoringMixed-r18* with additional restriction(s).The minimum of the summation of capability on the number of CCs with Rel-15 PDCCH monitoring capability and the capability on the number of CCs with Rel-16 PDCCH monitoring capability is 3.Only one between *pdcch-BlindDetectionCA-Mixed-r18* and *pdcch-BlindDetectionCA-Mixed-NonAlignedSpan-r18* can be reported by UE. | BC | No | N/A | N/A |
| ***pdcch-BlindDetectionMCG-UE-r16, pdcch-BlindDetectionSCG-UE-r16***This field indicates the number of blind detections supported for MCG and SCG, respectively as specified in clause 10 in TS 38.213 [11] for the NR-DC. UE shall report the fields for MCG and for SCG together if supported.If a UE supports *pdcch-MonitoringCA-r16* or *pdcch-MonitoringCA-NonAlighedSpan-r16*, then the capability defined by *pdcch-MonitoringCA-r16* or *pdcch-MonitoringCA-NonAlighedSpan-r16* is applied to the feature as defined in clause 10 in TS 38.213 [11]. | BC | No | N/A | N/A |
| ***pdcch-BlindDetectionMCG-SCG-List-r17***Indicates the supported combinations of the capability on the number of CCs for monitoring a maximum number of BDs and non-overlapped CCEs for MCG and for SCG (i.e. *pdcch-BlindDetectionMCG-UE-r17* and *pdcch-BlindDetectionSCG-UE-r17*) when configured for NR-DC operation with Rel-17 PDCCH monitoring capability on all the serving cells.UE indicating support of this feature shall also indicate support of *dl-FR2-2-SCS-480kHz-r17* or *dl-FR2-2-SCS-960kHz-r17.*NOTE: If the UE reports *pdcch-MonitoringCA-r17*,- Candidate values for pdcch-BlindDetectionMCG-UE-r17 is 1 to *pdcch-MonitoringCA-r17*-1- Candidate values for pdcch-BlindDetectionSCG-UE-r17 is 1 *pdcch-MonitoringCA-r17*-1- *pdcch-BlindDetectionMCG-UE-r17* + *pdcch-BlindDetectionSCG-UE-r17* >= *pdcch-MonitoringCA-r17*Otherwise, the value of *pdcch-BlindDetectionMCG-UE-r17* or of*pdcchBlindDetectionSCG-UE-r17* is {1, 2, 3} | BC | No | N/A | N/A |
| ***pdcch-BlindDetectionMCG-SCG-List-r18***Indicates the supported combination of capability on the number of CCs 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.When a UE reports both *pdcch-BlindDetectionCG-UE-MixedExt-r16* and this capability, the value reported in this capability is used if the configured span pattern of any serving cell satisfies *pdcch-MonitoringSpan2-2-r18*.UE indicating support of this feature shall also indicate support of (7,3) or (4,3) span based PDCCH monitoring for *pdcch-MonitoringMixed-r16* and (2,2) span based PDCCH monitoring for *pdcch-MonitoringMixed-r18* with additional restriction(s).One combination of (*pdcch-BlindDetectionMCG-UE1* (for Rel-15), *pdcch-BlindDetectionSCG-UE1* (for Rel-15) , *pdcch-BlindDetectionMCG-UE2* (for Rel-16), *pdcch-BlindDetectionSCG-UE2* (for Rel-16)) corresponds to one combination of (*pdcch-BlindDetectionCA1* (for Rel-15), *pdcch-BlindDetectionCA2* (for Rel-16)).If the UE reports *pdcch-BlindDetectionCA1-r16* (for Rel-15),- Candidate values for *pdcch-BlindDetectionMCG-UE1* (for Rel-15) is 0 to *pdcch-BlindDetectionCA1-r16* (for Rel-15),- Candidate values for *pdcch-BlindDetectionSCG-UE1* (for Rel-15) is 0 to *pdcch-BlindDetectionCA1-r16* (for Rel-15),- *pdcch-BlindDetectionMCG-UE1* (for Rel-15) + *pdcch-BlindDetectionSCG-UE1* (for Rel-15) >= *pdcch-BlindDetectionCA1-r16* (for Rel-15).Otherwise, if N\_(NR-DC,max,r15)^(DL,cells) is a maximum total number of downlink cells for which the UE is provided *monitoringCapabilityConfig-r16* = *r15monitoringcapability*:- Candidate values for *pdcch-BlindDetectionMCG-UE-r15* is [0, 1, 2]- Candidate values for *pdcch-BlindDetectionSCG-UE-r15* is [0, 1, 2]- *pdcch-BlindDetectionMCG-UE-r15* + *pdcch-BlindDetectionSCG-UE-r15* >= N\_(NR-DC,max,r15)^(DL,cells)If the UE reports *pdcch-BlindDetectionCA2-r16* (for Rel-16),- Candidate values for *pdcch-BlindDetectionMCG-UE2* (for Rel-16) is 0 to *pdcch-BlindDetectionCA2-r16* (for Rel-16),- Candidate values for *pdcch-BlindDetectionSCG-UE2* (for Rel-16) is 0 to *pdcch-BlindDetectionCA2-r16* (for Rel-16),- *pdcch-BlindDetectionMCG-UE2* (for Rel-16) + *pdcch-BlindDetectionSCG-UE2* (for Rel-16) >= *pdcch-BlindDetectionCA2-r16* (for Rel-16).Otherwise, if N\_(NR-DC,max,r16)^(DL,cells) is a maximum total number of downlink cells for which the UE is provided *monitoringCapabilityConfig-r16* = *r16monitoringcapability*:- Candidate values for *pdcch-BlindDetectionMCG-UE2* (for Rel-16) is [0, 1]- Candidate values for *pdcch-BlindDetectionSCG-UE2* (for Rel-16) is [0, 1]- *pdcch-BlindDetectionMCG-UE2* (for Rel-16) + *pdcch-BlindDetectionSCG-UE2* (for Rel-16) >= N\_(NR-DC,max,r16)^(DL,cells)NOTE: If a UE supports *pdcch-BlindDetectionCA-MixedExt-r18*, then the capability defined by *pdcch-BlindDetectionCA-MixedExt-r18* is applied to this feature. | BC | No | N/A | N/A |
| ***pdcch-BlindDetectionMCG-UE-Mixed-r16, pdcch-BlindDetectionSCG-UE-Mixed-r16, pdcch-BlindDetectionMCG-UE-Mixed-v16a0, pdcch-BlindDetectionSCG-UE-Mixed-v16a0***This field indicates mixed operation of two variants of the number of blind detections supported for MCG and SCG, respectively. UE shall report the fields for MCG and for SCG together if supported. UE indicating support of *pdcch-BlindDetectionMCG-UE-Mixed-v16a0* and *pdcch-BlindDetectionSCG-UE-Mixed-v16a0* shall also indicate support of *pdcch-BlindDetectionMCG-UE-Mixed-r16* and *pdcch-BlindDetectionSCG-UE-Mixed-r16*.If a UE supports *pdcch-BlindDetectionCA-Mixed*or *pdcch-BlindDetectionCA-Mixed-NonAlignedSpan*, then the capability defined by *pdcch-BlindDetectionCA-Mixed*or *pdcch-BlindDetectionCA-Mixed-NonAlignedSpan* is applied to the combination of *pdcch-BlindDetectionMCG-UE-Mixed and pdcch-BlindDetectionSCG-UE-Mixed* correspondingly as defined in clause 10 in TS 38.213 [11]. | BC | No | N/A | N/A |
| ***pdcch-BlindDetectionMixedList1-r17***Indicates the supported combinations of the number of carriers for CCE/BD scaling for MCG and for SCG when configured for NR-DC operation and/or with DL CA with mix of Rel-15 and Rel-17 PDCCH monitoring capabilities on different carriers.UE indicating support of this feature shall also indicate support of *dl-FR2-2-SCS-480kHz-r17* or *dl-FR2-2-SCS-960kHz-r17*.NOTE 1: For DL CA combinations, the range of *pdcch-BlindDetectionCA1-r17* (for Rel-15) + *pdcch-BlindDetectionCA2-r17* (for Rel-17) is {4, …,16}.NOTE 2: For NR-DC operation:If the UE reports *pdcch-BlindDetectionCA1-r17* (for Rel-15),- Candidate values for *pdcch-BlindDetectionMCG-UE1* (for Rel-15) are 0 to *pdcch-BlindDetectionCA1-r17* (for Rel-15)- Candidate values for *pdcch-BlindDetectionSCG-UE1* (for Rel-15) are 0 to *pdcch-BlindDetectionCA1-r17* (for Rel-15)- *pdcch-BlindDetectionMCG-UE1* (for Rel-15) + *pdcch-BlindDetectionSCG-UE1* (for Rel-15) >= *pdcch-BlindDetectionCA1-r17* (for Rel-15),Otherwise,- Candidate values for *pdcch-BlindDetectionMCG-UE1* (for Rel-15) are {0, 1, 2, 3}- Candidate values for *pdcch-BlindDetectionSCG-UE1* (for Rel-15) are {0, 1, 2, 3}If the UE reports *pdcch-BlindDetectionCA2-r17* (for Rel-17),- Candidate values for *pdcch-BlindDetectionMCG-UE2* (for Rel-17) are 0 to *pdcch-BlindDetectionCA2-r17* (for Rel-17)- Candidate values for *pdcch-BlindDetectionSCG-UE2* (for Rel-17) are 0 to *pdcch-BlindDetectionCA2-r17* (for Rel-17)- *pdcch-BlindDetectionMCG-UE2* (for Rel-17) + *pdcch-BlindDetectionSCG-UE2* (for Rel-17) >= *pdcch-BlindDetectionCA2-r17* (for Rel-17),Otherwise,- Candidate values for *pdcch-BlindDetectionMCG-UE2* (for Rel-17) are {0, 1, 2, 3}- Candidate values for *pdcch-BlindDetectionSCG-UE2* (for Rel-17) are {0, 1, 2, 3} | BC | No | N/A | N/A |
| ***pdcch-BlindDetectionMixedList2-r17***Indicates the supported combinations of the number of carriers for CCE/BD scaling for MCG and for SCG when configured for NR-DC operation and/or with DL CA with mix of Rel-16 and Rel-17 PDCCH monitoring capabilities on different carriers.UE indicating support of this feature shall also indicate support of *dl-FR2-2-SCS-480kHz-r17* or *dl-FR2-2-SCS-960kHz-r17*NOTE 1: For DL CA combinations, the range of *pdcch-BlindDetectionCA1-r17* (for Rel-16) + *pdcch-BlindDetectionCA2-r17* (for Rel-17) is {3, …,16}NOTE 2: For NR-DC operation:If the UE reports *pdcch-BlindDetectionCA1-r17* (for Rel-16),- Candidate values for *pdcch-BlindDetectionMCG-UE1* (for Rel-16) are 0 to *pdcch-BlindDetectionCA1-r17* (for Rel-16)- Candidate values for *pdcch-BlindDetectionSCG-UE1* (for Rel-16) are 0 to *pdcch-BlindDetectionCA1-r17* (for Rel-16)- *pdcch-BlindDetectionMCG-UE1* (for Rel-16) + *pdcch-BlindDetectionSCG-UE1* (for Rel-16) >= *pdcch-BlindDetectionCA1-r17* (for Rel-16),Otherwise,- Candidate values for *pdcch-BlindDetectionMCG-UE1* (for Rel-16) are {0, 1}- Candidate values for *pdcch-BlindDetectionSCG-UE1* (for Rel-16) are {0, 1}If the UE reports *pdcch-BlindDetectionCA2-r17* (for Rel-17),- Candidate values for *pdcch-BlindDetectionMCG-UE2* (for Rel-17) are 0 to *pdcch-BlindDetectionCA2-r17* (for Rel-17)- Candidate values for *pdcch-BlindDetectionSCG-UE2* (for Rel-17) are 0 to *pdcch-BlindDetectionCA2-r17* (for Rel-17)- *pdcch-BlindDetectionMCG-UE2* (for Rel-17) + *pdcch-BlindDetectionSCG-UE2* (for Rel-17) >= *pdcch-BlindDetectionCA2-r17* (for Rel-17),Otherwise,- Candidate values for *pdcch-BlindDetectionMCG-UE2* (for Rel-17) are {0, 1, 2}- Candidate values for *pdcch-BlindDetectionSCG-UE2* (for Rel-17) are {0, 1, 2} | BC | No | N/A | N/A |
| ***pdcch-BlindDetectionMixedList3-r17***Indicates the supported combinations of the number of carriers for CCE/BD scaling for MCG and for SCG when configured for NR-DC operation and/or with DL CA with mix of Rel-15, Rel-16 and Rel-17 PDCCH monitoring capabilities on different carriers.UE indicating support of this feature shall also indicate support of *dl-FR2-2-SCS-480kHz-r17* or *dl-FR2-2-SCS-960kHz-r17*NOTE 1: For DL CA combinations, the range of *pdcch-BlindDetectionCA1-r17* (for Rel-15) plus *pdcch-BlindDetectionCA2-r17* (for Rel-16) + *pdcch-BlindDetectionCA3-r17* (for Rel-17) is {3, …,16}.NOTE 2: For NR-DC operation:If the UE reports *pdcch-BlindDetectionCA1-r17* (for Rel-15),- Candidate values for *pdcch-BlindDetectionMCG-UE1* (for Rel-15) are 0 to *pdcch-BlindDetectionCA1-r17* (for Rel-15)- Candidate values for *pdcch-BlindDetectionSCG-UE1* (for Rel-15) are 0 to *pdcch-BlindDetectionCA1-r17* (for Rel-15)- *pdcch-BlindDetectionMCG-UE1* (for Rel-15) + *pdcch-BlindDetectionSCG-UE1* (for Rel-15) >= *pdcch-BlindDetectionCA1-r17* (for Rel-15),Otherwise,- Candidate values for *pdcch-BlindDetectionMCG-UE1* (for Rel-15) are {0, 1}- Candidate values for *pdcch-BlindDetectionSCG-UE1* (for Rel-15) are {0, 1}If the UE reports *pdcch-BlindDetectionCA2-r17* (for Rel-16),- Candidate values for *pdcch-BlindDetectionMCG-UE2* (for Rel-16) are 0 to *pdcch-BlindDetectionCA2-r17* (for Rel-16)- Candidate values for *pdcch-BlindDetectionSCG-UE2* (for Rel-16) are 0 to *pdcch-BlindDetectionCA2-r17* (for Rel-16)- *pdcch-BlindDetectionMCG-UE2* (for Rel-16) + *pdcch-BlindDetectionSCG-UE2* (for Rel-16) >= *pdcch-BlindDetectionCA2-r17* (for Rel-16),Otherwise,- Candidate values for *pdcch-BlindDetectionMCG-UE2* (for Rel-16) are {0, 1}- Candidate values for *pdcch-BlindDetectionSCG-UE2* (for Rel-16) are {0, 1}If the UE reports *pdcch-BlindDetectionCA3-r17* (for Rel-17),- Candidate values for *pdcch-BlindDetectionMCG-UE3* (for Rel-17) are 0 to *pdcch-BlindDetectionCA3-r17* (for Rel-17)- Candidate values for *pdcch-BlindDetectionSCG-UE2* (for Rel-17) are 0 to *pdcch-BlindDetectionCA3-r17* (for Rel-17)- *pdcch-BlindDetectionMCG-UE3* (for Rel-17) + *pdcch-BlindDetectionSCG-UE3* (for Rel-17) >= *pdcch-BlindDetectionCA3-r17* (for Rel-17),Otherwise,- Candidate values for *pdcch-BlindDetectionMCG-UE3* (for Rel-17) are {0, 1}- Candidate values for *pdcch-BlindDetectionSCG-UE3* (for Rel-17) are {0, 1} | BC | No | N/A | N/A |
| ***pdcch-BlindDetectionNRDC-r18***Indicates the supported combinations of 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.When a UE reports both *pdcch-BlindDetectionMCG-UE-r16 ,**pdcch-BlindDetectionSCG-UE-r16* and this capability, the value reported in this capability is used if the configured span pattern of any serving cell satisfies *pdcch-MonitoringSpan2-2-r18*.UE indicating support of this feature shall also indicate support of (7,3) or (4,3) span based PDCCH monitoring for *pdcch-Monitoring-r16* and (2,2) span based PDCCH monitoring for *pdcch-MonitoringSpan2-2-r18* with additional restriction(s).If the UE reports *pdcch-BlindDetectionCA2-r16* (for Rel-16),- Candidate values for *pdcch-BlindDetectionMCG-UE-Mixed-r18* (for Rel-16 MCG) is 1 to *pdcch-BlindDetectionCA2-r16*-1.- Candidate values for *pdcch-BlindDetectionSCG-UE-Mixed-r18* (for Rel-16 SCG) is 1 to *pdcch-BlindDetectionCA2-r16*-1.- *pdcch-BlindDetectionMCG-UE-Mixed-r18* + *pdcch-BlindDetectionSCG-UE-Mixed-r18* >= *pdcch-BlindDetectionCA2-r16*.Otherwise, if N\_(NR-DC,max,r16)^(DL,cells) is a maximum total number of downlink cells for which the UE is provided monitoringCapabilityConfig-r16 = r16monitoringcapability and the UE is configured on both the MCG and the SCG for NR-DC:- the value of *pdcch-BlindDetectionMCG-UE-Mixed-r18* (for Rel-16 MCG) or of *pdcch-BlindDetectionSCG-UE-Mixed-r18* (for Rel-16 SCG) is 1,- *pdcch-BlindDetectionMCG-UE-Mixed-r18* + *pdcch-BlindDetectionSCG-UE-Mixed-r18* >= N\_(NR-DC,max,r16)^(DL,cells).NOTE: If a UE supports *pdcch-MonitoringCA-r18* or *pdcch-MonitoringCA-NonAlignedSpan-r18*, then the capability defined by *pdcch-MonitoringCA-r18* or *pdcch-MonitoringCA-NonAlignedSpan-r18* is applied to this feature. | BC | No | N/A | N/A |
| ***pdcch-MonitoringCA-r16***Indicates the number of CCs for monitoring a maximum number of blind detections and non-overlapped CCEs per span when configured with DL CA with Rel-16 PDCCH monitoring capability on all the serving cells. This field also indicates supported span arrangement for CA. UE indicating support of this feature shall also indicate support of *pdcch-Monitoring-r16.* Only one between *pdcch-MonitoringCA-r16* and *pdcch-MonitoringCA-NonAlignedSpan-r16* can be reported by UE. | BC | No | N/A | N/A |
| ***pdcch-MonitoringCA-r17***Indicates the number of CCs for monitoring a maximum number of blind detections and non-overlapped CCEs per span when configured with DL CA with Rel-17 PDCCH monitoring capability on all the serving cells.UE indicating support of this feature shall also indicate support of *dl-FR2-2-SCS-480kHz-r17* or *dl-FR2-2-SCS-960kHz-r17.* | BC | No | N/A | N/A |
| ***pdcch-MonitoringCA-r18***Indicates whether the UE supports 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. This capability signalling comprises the following parameters:- *maxNumberOfMonitoringCC-r18* indicates 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;- *supportedSpanArrangement-r18* indicates the supported span arrangement for CA. Value *alignedOnly* indicates the supported span arrangement for CA is aligned spans only, Value *alignedAndNonAligned* indicates the supported span arrangement for CA includes aligned spans and non-aligned spans.When a UE reports both *pdcch-MonitoringCA-r16* and this capability, the value reported in this capability is used if the configured span pattern of any serving cell satisfies *pdcch-MonitoringSpan2-2-r18*. Only one between *pdcch-MonitoringCA-r18* and *pdcch-MonitoringCA-NonAlignedSpan-r18* can be reported by UE. | BC | No | N/A | N/A |
| ***pdcch-MonitoringCA-NonAlignedSpan-r16***Indicates the number of CCs for monitoring a maximum number of blind detections and non-overlapped CCEs per span when configured with DL CA with Rel-16 PDCCH monitoring capability on all the serving cells in the case UE supports aligned span and non-aligned span. In the case of non-aligned span, when the configured number of CCs with Rel-16 PDCCH monitoring is larger than the UE reported value and PDCCH monitoring occasion(s) should be configured only on same symbol(s) every slot. UE indicating support of this feature shall also indicate support of *pdcch-Monitoring-r16*. Only one between *pdcch-MonitoringCA-r16* and *pdcch-MonitoringCA-NonAlignedSpan-r16* can be reported by UE. | BC | No | N/A | N/A |
| ***pdcch-MonitoringCA-NonAlignedSpan-r18***Indicates whether the UE supports 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 *pdcch-MonitoringAnyOccasionsWithSpanGap*on all the serving cells with restriction for non-aligned span case.It also indicates whether the UE supports aligned span and non-aligned span. In case of non-aligned span when the configured number of cells with Rel-16 PDCCH monitoring capability is larger than the UE reported value, PDCCH monitoring occasion(s) should be configured only on same symbol(s) every slotThe UE supporting this feature shall also indicate support of *pdcch-Monitoring-r16* for (7,3) or (4,3) span based PDCCH monitoring.The UE supporting this feature shall also indicate support of *pdcch-MonitoringSpan2-2-r18* for (2, 2) span based PDCCH monitoring with additional restriction(s).When a UE reports both *pdcch-MonitoringCA-NonAlignedSpan-r16* and capability, the value reported in this capability is used if the configured span pattern of any serving cell satisfies *pdcch-MonitoringSpan2-2-r18*.Only one between *pdcch-MonitoringCA-r18* and *pdcch-MonitoringCA-NonAlignedSpan-r18* can be reported by UE. | BC | No | N/A | N/A |
| ***powerAdaptation-CSI-FeedbackAperiodicPerBC-r18***Indicates whether the UE supports power domain adaptation with CSI feedback based on CSI report sub-configuration(s) for periodic CSI reporting and single-panel type1 codebook. The UE supports CSI feedback based on CSI report sub-configuration(s), each containing one power offset for aperiodic CSI reporting. This capability signalling comprises the following parameters:- *maxNumberCSI-ResourceAcrossCC-r18* indicates the maximum number of simultaneous NZP-CSI-RS resources in active BWPs across all CCs within a band combination for SD-type1 and/or SD-type2;- *maxNumberPortsAcrossCC-r18* indicates index *N* of the maximum number of total CSI-RS ports in simultaneous NZP-CSI-RS resources in active BWPs across all CCs within a band combination for SD-type1 and/or SD-type2. The maximum number total CSI-RS ports in simultaneous NZP-CSI-RS resources is *N*\*8, where *N* = {1..32}.NOTE 1: For *maxNumberCSI-ResourceAcrossCC-r18* and *maxNumberPortsAcrossCC-r18*, NZP-CSI-RS resource and CSI-RS ports are counted for reporting settings with and without sub-configurations.NOTE 2: If a UE reports more than one capability from *spatialAdaptation-CSI-FeedbackPerBC-r18, spatialAdaptation-CSI-FeedbackPUSCH-PerBC-r18, spatialAdaptation-CSI-FeedbackAperiodicPerBC-r18, spatialAdaptation-CSI-FeedbackPUCCH-PerBC-r18, powerAdaptation-CSI-FeedbackPerBC-r18, powerAdaptation-CSI-FeedbackPUSCH-PerBC-r18, powerAdaptation-CSI-FeedbackAperiodicPerBC-r18, powerAdaptation-CSI-FeedbackPUCCH-PerBC-r18* and if the UE is configured with CSI report settings with sub-configurations corresponding to a subset of the above reported features, then the supported maximum of NZP-CSI-RS resources/ports across all periodic, semi-persistent, aperiodic CSI report settings with sub-configurations corresponding to all of spatial and power domain adaptations and without sub-configurations is determined by the minimum of the reported values from that subset.NOTE 3: If a UE reports both *spatialAdaptation-CSI-FeedbackAperiodicPerBC-r18* and *powerAdaptation-CSI-FeedbackAperiodicPerBC-r18*, and if the UE is configured with CSI report settings with sub-configurations corresponding to both *spatialAdaptation-CSI-FeedbackAperiodicPerBC-r18* and *powerAdaptation-CSI-FeedbackAperiodicPerBC-r18*, then the supported total number of periodic CSI reporting settings without sub-configurations plus the total number of sub-configurations across periodic CSI report settings with sub-configurations per BWP is determined by the minimum of the reported values from both *spatialAdaptation-CSI-FeedbackAperiodicPerBC-r18* and *powerAdaptation-CSI-FeedbackAperiodicPerBC-r18*.A UE supporting this feature shall also indicate support of *csi-ReportFramework* and *powerAdaptation-CSI-FeedbackAperiodic-r18*. | BC | No | N/A | N/A |
| ***powerAdaptation-CSI-FeedbackPerBC-r18***Indicates whether the UE supports power domain adaptation with CSI feedback based on CSI report sub-configuration(s) for periodic CSI reporting and single-panel type1 codebook. The UE supports CSI feedback based on CSI report sub-configuration(s), each containing one power offset for periodic CSI reporting. This capability signalling comprises the following parameters:- *maxNumberCSI-ResourceAcrossCC-r18* indicates the maximum number of simultaneous NZP-CSI-RS resources in active BWPs across all CCs within a band combination for SD-type1 and/or SD-type2;- *maxNumberPortsAcrossCC-r18* indicates index *N* of the maximum number of total CSI-RS ports in simultaneous NZP-CSI-RS resources in active BWPs across all CCs within a band combination for SD-type1 and/or SD-type2. The maximum number total CSI-RS ports in simultaneous NZP-CSI-RS resources is *N*\*8, where *N* = {1..32}.NOTE 1: For *maxNumberCSI-ResourceAcrossCC-r18* and *maxNumberPortsAcrossCC-r18*, NZP-CSI-RS resource and CSI-RS ports are counted for reporting settings with and without sub-configurations.NOTE 2: If a UE reports more than one capability from *spatialAdaptation-CSI-FeedbackPerBC-r18, spatialAdaptation-CSI-FeedbackPUSCH-PerBC-r18, spatialAdaptation-CSI-FeedbackAperiodicPerBC-r18, spatialAdaptation-CSI-FeedbackPUCCH-PerBC-r18, powerAdaptation-CSI-FeedbackPerBC-r18, powerAdaptation-CSI-FeedbackPUSCH-PerBC-r18, powerAdaptation-CSI-FeedbackAperiodicPerBC-r18, powerAdaptation-CSI-FeedbackPUCCH-PerBC-r18* and if the UE is configured with CSI report settings with sub-configurations corresponding to a subset of the above reported features, then the supported maximum of NZP-CSI-RS resources/ports across all periodic, semi-persistent, aperiodic CSI report settings with sub-configurations corresponding to all of spatial and power domain adaptations and without sub-configurations is determined by the minimum of the reported values from that subset.NOTE 3: If a UE reports both *spatialAdaptation-CSI-FeedbackPerBC-r18* and *powerAdaptation-CSI-FeedbackPerBC-r18*, and if the UE is configured with CSI report settings with sub-configurations corresponding to both *spatialAdaptation-CSI-FeedbackPerBC-r18* and *powerAdaptation-CSI-FeedbackPerBC-r18*, then the supported total number of periodic CSI reporting settings without sub-configurations plus the total number of sub-configurations across periodic CSI report settings with sub-configurations per BWP is determined by the minimum of the reported values from both *spatialAdaptation-CSI-FeedbackPerBC-r18* and *powerAdaptation-CSI-FeedbackPerBC-r18*.A UE supporting this feature shall also indicate support of *csi-ReportFramework* and *powerAdaptation-CSI-Feedback-r18*. | BC | No | N/A | N/A |
| ***powerAdaptation-CSI-FeedbackPUCCH-PerBC-r18***Indicates whether the UE supports power domain adaptation with CSI feedback based on CSI report sub-configuration(s) for semi-persistent CSI reporting on PUCCH and single-panel type1 codebook. The UE also supports CSI feedback based on CSI report sub-configuration(s), each containing one power offset for semi-persistent CSI reporting on PUCCH. This capability signalling comprises the following parameters:- *maxNumberCSI-ResourceAcrossCC-r18* indicates the maximum number of simultaneous NZP-CSI-RS resources in active BWPs across all CCs within a band combination;- *maxNumberPortsAcrossCC-r18* indicates index *N* of the maximum number of total CSI-RS ports in simultaneous NZP-CSI-RS resources in active BWPs across all CCs within a band combination. The maximum number total CSI-RS ports in simultaneous NZP-CSI-RS resources is *N*\*8, where *N* = {1..32}.NOTE 1: For *maxNumberCSI-ResourceAcrossCC-r18* and *maxNumberPortsAcrossCC-r18*, NZP-CSI-RS resource and CSI-RS ports are counted for reporting settings with and without sub-configurations.NOTE 2: If a UE reports more than one capability from *spatialAdaptation-CSI-FeedbackPerBC-r18, spatialAdaptation-CSI-FeedbackPUSCH-PerBC-r18, spatialAdaptation-CSI-FeedbackAperiodicPerBC-r18, spatialAdaptation-CSI-FeedbackPUCCH-PerBC-r18, powerAdaptation-CSI-FeedbackPerBC-r18, powerAdaptation-CSI-FeedbackPUSCH-PerBC-r18, powerAdaptation-CSI-FeedbackAperiodicPerBC-r18, powerAdaptation-CSI-FeedbackPUCCH-PerBC-r18* and if the UE is configured with CSI report settings with sub-configurations corresponding to a subset of the above reported features, then the supported maximum of NZP-CSI-RS resources/ports across all periodic, semi-persistent, aperiodic CSI report settings with sub-configurations corresponding to all of spatial and power domain adaptations and without sub-configurations is determined by the minimum of the reported values from that subset.NOTE 3: If a UE reports more than one capability from *spatialAdaptation-CSI-FeedbackPUSCH-PerBC-r18*, *spatialAdaptation-CSI-FeedbackPUCCH-PerBC-r18*, *powerAdaptation-CSI-FeedbackPUSCH-PerBC-r18* and *powerAdaptation-CSI-FeedbackPUCCH-PerBC-r18* and if the UE is configured with CSI report settings with sub-configurations corresponding to a subset of the reported features, then the supported total number of semi-persistent CSI reporting settings without sub-configurations plus the total number of sub-configurations across semi-persistent CSI report settings with sub-configurations per BWP is determined by the minimum of the reported values from that subset.A UE supporting this feature shall also indicate support of *csi-ReportFramework*, *sp-CSI-ReportPUCCH* and *powerAdaptation-CSI-FeedbackPUCCH-r18*. | BC | No | N/A | N/A |
| ***powerAdaptation-CSI-FeedbackPUSCH-PerBC-r18***Indicates whether the UE supports power domain adaptation with CSI feedback based on CSI report sub-configuration(s) for semi-persistent CSI reporting on PUSCH and single-panel type1 codebook. The UE also supports CSI feedback based on CSI report sub-configuration(s), each containing one power offset for semi-persistent CSI reporting. This capability signalling comprises the following parameters:- *maxNumberCSI-ResourceAcrossCC-r18* indicates the maximum number of simultaneous NZP-CSI-RS resources in active BWPs across all CCs within a band combination;- *maxNumberPortsAcrossCC-r18* indicates index *N* of the maximum number of total CSI-RS ports in simultaneous NZP-CSI-RS resources in active BWPs across all CCs within a band combination. The maximum number total CSI-RS ports in simultaneous NZP-CSI-RS resources is *N*\*8, where *N* = {1..32}.NOTE 1: For *maxNumberCSI-ResourceAcrossCC-r18* and *maxNumberPortsAcrossCC-r18*, NZP-CSI-RS resource and CSI-RS ports are counted for reporting settings with and without sub-configurations.NOTE 2: If a UE reports more than one capability from *spatialAdaptation-CSI-FeedbackPerBC-r18, spatialAdaptation-CSI-FeedbackPUSCH-PerBC-r18, spatialAdaptation-CSI-FeedbackAperiodicPerBC-r18, spatialAdaptation-CSI-FeedbackPUCCH-PerBC-r18, powerAdaptation-CSI-FeedbackPerBC-r18, powerAdaptation-CSI-FeedbackPUSCH-PerBC-r18, powerAdaptation-CSI-FeedbackAperiodicPerBC-r18, powerAdaptation-CSI-FeedbackPUCCH-PerBC-r18* and if the UE is configured with CSI report settings with sub-configurations corresponding to a subset of the above reported features, then the supported maximum of NZP-CSI-RS resources/ports across all periodic, semi-persistent, aperiodic CSI report settings with sub-configurations corresponding to all of spatial and power domain adaptations and without sub-configurations is determined by the minimum of the reported values from that subset.NOTE 3: If a UE reports more than one capability from *spatialAdaptation-CSI-FeedbackPUSCH-PerBC-r18*, *spatialAdaptation-CSI-FeedbackPUCCH-PerBC-r18*, *powerAdaptation-CSI-FeedbackPUSCH-PerBC-r18* and *powerAdaptation-CSI-FeedbackPUCCH-PerBC-r18* and if the UE is configured with CSI report settings with sub-configurations corresponding to a subset of the reported features, then the supported total number of semi-persistent CSI reporting settings without sub-configurations plus the total number of sub-configurations across semi-persistent CSI report settings with sub-configurations per BWP is determined by the minimum of the reported values from that subset.A UE supporting this feature shall also indicate support of *csi-ReportFramework*, *sp-CSI-ReportPUSCH* and *powerAdaptation-CSI-FeedbackPUSCH-r18*. | BC | No | N/A | N/A |
| ***prioSCellPRACH-OverSP-PeriodicSRS-Support-r17***Indicates whether the UE supports RRC configuration *prioSCellPRACH-OverSP-PeriodicSRS* as specified in TS 38.331 [9]. | BC | No | N/A | N/A |
| ***ptp-Retx-Multicast-r17***Indicates whether the UE supports PTP retransmission for multicast on the same cell as multicast initial transmission.A UE supporting this feature shall also indicate support of *ack-NACK-FeedbackForMulticast-r17*. | BC | No | N/A | N/A |
| ***ptp-Retx-SPS-Multicast-r17***Indicates whether the UE supports PTP retransmission associated with CS-RNTI for SPS multicast on the cell same as multicast initial transmission.A UE supporting this feature shall also indicate support of *ack-NACK-FeedbackForSPS-Multicast-r17*. | BC | No | N/A | N/A |
| ***pucch-ConfigForSPS-Multicast-r17***Indicates whether the UE supports *SPS-PUCCH-AN-List* for multicast HARQ-ACK feedback of all multicast SPS configuration(s), separate from that of SPS unicast configurations.A UE supporting this feature shall also indicate support of *ack-NACK-FeedbackForSPS-Multicast-r17*. | BC | No | N/A | N/A |
| ***qcl-MultiCellDCI-1-3-r18***Indicates whether the UE can be configured with *enabledDefaultBeamFormultiCellScheduling* for default QCL assumption for multi-cell scheduling by DCI format 1\_3 for same/different numerologies.When value "*both*" is reported, the UE supports this capability for same SCS and for different SCS combination(s) (i.e. *lowScheduling-highScheduled*, *highScheduling-lowScheduled*, *both*) reported for *multiCell-PDSCH-DCI-1-3-DiffSCS-r18*.A UE supporting this feature shall also indicate support of at least one of *multiCell-PDSCH-DCI-1-3-SameSCS-r18* and *multiCell-PDSCH-DCI-1-3-DiffSCS-r18*. | BC | No | N/A | N/A |
| ***scellDormancyWithinActiveTime-r16***Indicates whether the UE supports SCell dormancy indication received on SPCell with DCI format 0\_1/1\_1 sent within the active time as defined in clause 10.3 of TS 38.213 [11]. If the UE indicates the support of this, the UE supports one dormant BWP and at least one non-dormant BWP per carrier. To support more than one non-dormant BWP in a carrier, the UE indicates support of *upto4* in *bwp-SameNumerology* or *upto4* in *bwp-DiffNumerology*. One dormant BWP and one non-dormant BWP are UE specific BWPs even for UEs not supporting *bwp-SameNumerology.* | BC | No | N/A | N/A |
| ***scellDormancyOutsideActiveTime-r16***Indicates whether the UE supports SCell dormancy indication received on SPCell using DCI format 2\_6 sent outside the active time as defined in clause 10.3 of TS 38.213 [11]. A UE supporting this feature shall also indicate support of power saving DRX adaptation using *drx-Adaptation-r16* and shall also support one dormant BWP and at least one non-dormant BWP per carrier. To support more than one non-dormant BWP in a carrier, the UE indicates support of *upto4* in *bwp-SameNumerology* or *upto4* in *bwp-DiffNumerology*. One dormant BWP and one non-dormant BWP are UE specific BWPs even for UEs not supporting *bwp-SameNumerology.* | BC | No | N/A | N/A |
| ***semiStaticPUCCH-CellSwitchSingleGroup-r17***Indicates whether the UE supports semi-static PUCCH cell switching for a single PUCCH group only. The capability signalling comprises the following parameters:- *pucch-Group-r17* indicates for which PUCCH group the UE supports semi-static PUCCH cell switching using configured time-domain domain pattern of applicable PUCCH cell / carrier. Value *primaryGroupOnly* indicates that only primary PUCCH group can support PUCCH cell switch, value *secondaryGroupOnly* indicates that only secondary PUCCH group can support PUCCH cell switch, and value *eitherPrimaryOrSecondaryGroup* indicates that either primary or secondary PUCCH group can support PUCCH cell switch.- *pucch-Group-Config-r17* indicates one or multiple of supported carrier type pairs that can support PUCCH cell switch, with *fr1-FR1-NonSharedTDD-r17* indicating the carrier type pair (FR1 licensed TDD, FR1 licensed TDD), *fr2-FR2-NonSharedTDD-r17* indicating the carrier type pair (FR2 licensed TDD, FR2 licensed TDD), and *fr1-FR2-NonSharedTDD-r17* indicating the carrier type pair (FR1 licensed TDD, FR2 licensed TDD).NOTE: This feature applies to cells in the same TAG only. If UE supporting this FG also supports both *diffNumerologyWithinPUCCH-GroupSmallerSCS* and *diffNumerologyWithinPUCCH-GroupLargerSCS* or both *diffNumerologyWithinPUCCH-GroupSmallerSCS-CarrierTypes-r16* and *diffNumerologyWithinPUCCH-GroupLargerSCS-CarrierTypes-r16* or *maxUpTo3Diff-NumerologiesConfigSinglePUCCH-grp-r16* or *maxUpTo4Diff-NumerologiesConfigSinglePUCCH-grp-r16* when UE is not configured with two NR PUCCH groups, the UE supports the cases of both same and different numerologies between switchable cells. Otherwise, the UE supports the case of same numerology between switchable cells. | BC | No | TDD only | N/A |
| ***semiStaticPUCCH-CellSwitchTwoGroups-r17***Indicates whether the UE supports semi-static PUCCH cell switching for two PUCCH groups using configured time-domain domain pattern of applicable PUCCH cell / carrier. The capability indicates one or multiple of supported configuration(s) of {primary PUCCH group config, secondary PUCCH group config}. The capability signalling of each primary or secondary PUCCH group configuration indicates one or multiple of carrier type pairs that can support PUCCH cell switch, with *fr1-FR1-NonSharedTDD-r17* indicating the carrier type pair (FR1 licensed TDD, FR1 licensed TDD), *fr2-FR2-NonSharedTDD-r17* indicating the carrier type pair (FR2 licensed TDD, FR2 licensed TDD), and *fr1-FR2-NonSharedTDD-r17* indicating the carrier type pair (FR1 licensed TDD, FR2 licensed TDD).NOTE: This feature applies to cells in the same TAG only. If UE supporting this FG also supports both *diffNumerologyWithinPUCCH-GroupSmallerSCS* and *diffNumerologyWithinPUCCH-GroupLargerSCS* or both *diffNumerologyWithinPUCCH-GroupSmallerSCS-CarrierTypes-r16* and *diffNumerologyWithinPUCCH-GroupLargerSCS-CarrierTypes-r16*, the UE supports the cases of both same and different numerologies between switchable cells. Otherwise, the UE supports the case of same numerology between switchable cells. | BC | No | TDD only | N/A |
| ***simultaneousCSI-ReportsAllCC***Indicates whether the UE supports CSI report framework and the number of CSI report(s) which the UE can simultaneously process across all CCs, and across MCG and SCG in case of NR-DC. The CSI report comprises periodic, semi-persistent and aperiodic CSI and any latency classes and codebook types. The CSI report in *simultaneousCSI-ReportsAllCC* includes the beam report and CSI report. This parameter may further limit *simultaneousCSI-ReportsPerCC* in *MIMO-ParametersPerBand* and *Phy-ParametersFRX-Diff* for each band in a given band combination. | BC | Yes | N/A | N/A |
| ***simul-SRS-Trans-BC-r16***Indicates the number of SRS resources for positioning on a symbol for a given band combination. The UE can include this field only if the UE supports *srs-PosResources-r16*. Otherwise, the UE does not include this field;NOTE 1: For single-band band combinations, it defines the capability for intra-band CA, and for band combinations with at least two bands, it defines the capability for inter-band carrier aggregation.NOTE 2: if the UE does not indicate this capability for a band combination, the UE does not support the feature in this band combination. | BC | No | N/A | N/A |
| ***simul-SRS-MIMO-Trans-BC-r16***Indicates the number of SRS resources for positioning and SRS resource for MIMO on a symbol for a given BC. The UE can include this field only if the UE supports *srs-PosResources-r16*. Otherwise, the UE does not include this field.NOTE 1: If UE reports 2 for the candidate value, it means both the number of SRS resource for positioning and SRS resource for MIMO equals to 1.NOTE 2: For single-band band combinations, it defines the capability for intra-band carrier aggregation, and for band combinations with at least two bands, it defines the capability for inter-band carrier aggregation.NOTE 3: if the UE does not indicate this capability for a band combination, the UE does not support the feature in this band combination. | BC | No | N/A | N/A |
| ***simultaneousCSI-SubReportsAllCC-r18***Indicates whether the UE supports CSI report framework and the number of CSI report(s) which the UE can simultaneously process across all CCs, and across MCG and SCG in case of NR-DC. The CSI report comprises periodic, semi-persistent and aperiodic CSI and any latency classes and codebook types, and includes the beam report, and CSI report without sub-configurations plus CSI sub-report across CSI reports. This capability may further limit *simultaneousCSI-SubReportsPerCC-r18* in *MIMO-ParametersPerBand* and *Phy-ParametersFRX-Diff* for each band in a given band combination.NOTE 1: UE shall report the value in this capability being equal to or larger than that in *simultaneousCSI-ReportsAllCC*.NOTE 2: UE supporting at least one of *spatialAdaptation-CSI-Feedback-r18, spatialAdaptation-CSI-FeedbackPUSCH-r18, spatialAdaptation-CSI-FeedbackAperiodic-r18, spatialAdaptation-CSI-FeedbackPUCCH-r18, powerAdaptation-CSI-Feedback-r18, powerAdaptation-CSI-FeedbackPUSCH-r18, powerAdaptation-CSI-FeedbackAperiodic-r18,* and *powerAdaptation-CSI-FeedbackPUCCH-r18* shall report this feature.A UE supporting this feature shall also indicate support of *csi-ReportFramework*. | BC | No | N/A | N/A |
| ***simultaneousRxTxInterBandCA***Indicates whether the UE supports simultaneous transmission and reception in TDD-TDD and TDD-FDD inter-band NR CA. If this field is included in *ca-ParametersNR-ForDC*, it indicates the UE supports simultaneous transmission and reception between any UL/DL band pair within a cell group and across MCG and SCG in TDD-TDD and TDD-FDD inter-band NR-DC. It is mandatory for certain TDD-FDD and TDD-TDD band combinations defined in TS 38.101-1 [2], TS 38.101-2 [3] and TS 38.101-3 [4].This capability does not apply to the following components within TDD-TDD and TDD-FDD inter-band NR-CA or NR-DC combinations:- Intra-band NR-CA or NR-DC component- Inter-band NR-CA or NR-DC component where the frequency range of one TDD band is a subset of the frequency range of the other NR TDD band (as specified in TS 38.101-1 [2]). | BC | CY | N/A | N/A |
| ***simultaneousRxTxInterBandCAPerBandPair***Indicates whether the UE supports simultaneous transmission and reception in TDD-TDD and TDD-FDD inter-band NR CA for each band pair in the band combination.Encoded as a bitmap with size L \* (L – 1) / 2, and bit N (leftmost bit is indexed as bit 0) is set to "1" if the UE supports simultaneous transmission and reception for band pair (x, y), where L is the number of band entries in the band combination, x and y are the indices of the band entry in the band combination (the first band entry is indexed as 0), x < y, and N = x\*(2\*L – x – 1)/2 + y – x – 1.If this field is included in *ca-ParametersNR-ForDC*, each bit of this field indicates whether the UE supports simultaneous transmission and reception between each band pair, within a cell group and across MCG and SCG in TDD-TDD and TDD-FDD inter-band NR-DC.The UE does not include this field if the UE supports simultaneous transmission and reception for all applicable band pairs in the band combination (in which case *simultaneousRxTxInterBandCA* is included) or does not support for any band pair in the band combination. It is mandatory for certain band pairs as specified in TS 38.101-1 [2], TS 38.101-2 [3] and TS 38.101-3 [4]. The UE shall consistently set the bits which correspond to the same band pair. | BC | CY | N/A | N/A |
| ***simultaneousRxTxSUL***Indicates whether the UE supports simultaneous reception and transmission for a NR band combination including SUL. Mandatory/Optional support depends on band combination and captured in TS 38.101-1 [2]. | BC | CY | N/A | N/A |
| ***simultaneousRxTxSULPerBandPair***Indicates whether the UE supports simultaneous reception and transmission for a NR band combination including SUL for each band pair in the band combination.Encoded in the same manner as *simultaneousRxTxInterBandCAPerBandPair*.The UE does not include this field if the UE supports simultaneous transmission and reception for all applicable band pairs in the band combination (in which case *simultaneousRxTxSUL* is included) or does not support for any band pair in the band combination. It is mandatory for certain band pairs as specified in TS 38.101-1 [2]. The UE shall consistently set the bits which correspond to the same band pair. | BC | CY | N/A | N/A |
| ***simultaneousSRS-AssocCSI-RS-AllCC***Indicates support of CSI-RS processing framework for SRS and the number of SRS resources that the UE can process simultaneously across all CCs, and across MCG and SCG in case of NR-DC, including periodic, aperiodic and semi-persistent SRS. This parameter may further limit *simultaneousSRS-AssocCSI-RS-PerCC* in *MIMO-ParametersPerBand* and *Phy-ParametersFRX-Diff* for each band in a given band combination. | BC | No | N/A | N/A |
| ***simulTX-SRS-AntSwitchingInterBandUL-CA-r16***Indicates whether the UE support simultaneous transmission of SRS on different CCs for inter-band UL CA. The UE indicating support of this feature shall include at least one of the following capabilities:- *supportSRS-xTyR-xLessThanY-r16* indicates support transmission of SRS for xTyR (x<y) based antenna switching and SRS for CB/NCB/BM on different CCs in overlapped symbol(s) for inter-band UL CA.- *supportSRS-xTyR-xEqualToY-r16* indicates support transmission of SRS for xTyR (x=y) based antenna switching and SRS for CB/NCB/BM on different CCs in overlapped symbol(s) for inter-band UL CA.- *supportSRS-AntennaSwitching-r16* Indicates whether the UE support simultaneous transmission of SRS for antenna switching on different CCs in overlapped symbol(s) for inter-band UL CA.NOTE: For simultaneously antenna switching and antenna switching SRS in inter-band CAs with bands whose UL are switched together according to the reported *supportSRS-AntennaSwitching-r16*, the UE expects the same configuration of xTyR across the different CCs and the SRS resources overlapped in time domain from UE perspective are from the same UE antenna ports. | BC | No | N/A | N/A |
| ***singlePUCCH-ConfigForMulticast-r17***Indicates whether the UE supports a *PUCCH-Config* for multicast HARQ-ACK feedback, separate from that of unicast configurations.A UE supporting this feature shall also indicate support of *ack-NACK-FeedbackForMulticast-r17* or *nack-OnlyFeedbackForMulticast-r17*.NOTE: With *ack-NACK-FeedbackForMulticast-r17* or *nack-OnlyFeedbackForMulticast-r17* as prerequisite, this feature includes the case of ACK/NACK for multicast or NACK-only mode1 for multicast. | BC | No | N/A | N/A |
| ***spatialAdaptation-CSI-FeedbackAperiodicPerBC-r18***Indicates whether the UE supports spatial domain adaptation with CSI feedback based on CSI report sub-configuration(s) for aperiodic CSI reporting and single-panel type1 codebook. This capability signalling comprises the following parameters:- *maxNumberCSI-ResourceAcrossCC-r18* indicates the maximum number of simultaneous NZP-CSI-RS resources in active BWPs across all CCs within a band combination for SD-type1 and/or SD-type2;- *maxNumberPortsAcrossCC-r18* indicates index *N* of the maximum number of total CSI-RS ports in simultaneous NZP-CSI-RS resources in active BWPs across all CCs within a band combination for SD-type1 and/or SD-type2. The maximum number total CSI-RS ports in simultaneous NZP-CSI-RS resources is *N*\*8, where *N* = {1..32}.NOTE 1: For *maxNumberCSI-ResourceAcrossCC-r18* and *maxNumberPortsAcrossCC-r18*, NZP-CSI-RS resource and CSI-RS ports are counted for reporting settings with and without sub-configurations.NOTE 2: If a UE reports more than one capability from *spatialAdaptation-CSI-FeedbackPerBC-r18, spatialAdaptation-CSI-FeedbackPUSCH-PerBC-r18, spatialAdaptation-CSI-FeedbackAperiodicPerBC-r18, spatialAdaptation-CSI-FeedbackPUCCH-PerBC-r18, powerAdaptation-CSI-FeedbackPerBC-r18, powerAdaptation-CSI-FeedbackPUSCH-PerBC-r18, powerAdaptation-CSI-FeedbackAperiodicPerBC-r18, powerAdaptation-CSI-FeedbackPUCCH-PerBC-r18* and if the UE is configured with CSI report settings with sub-configurations corresponding to a subset of the above reported features, then the supported maximum of NZP-CSI-RS resources/ports across all periodic, semi-persistent, aperiodic CSI report settings with sub-configurations corresponding to all of spatial and power domain adaptations and without sub-configurations is determined by the minimum of the reported values from that subset.NOTE 3: If a UE reports both *spatialAdaptation-CSI-FeedbackAperiodicPerBC-r18* and *powerAdaptation-CSI-FeedbackAperiodicPerBC-r18*, and if the UE is configured with CSI report settings with sub-configurations corresponding to both *spatialAdaptation-CSI-FeedbackAperiodicPerBC-r18* and *powerAdaptation-CSI-FeedbackAperiodicPerBC-r18*, then the supported total number of aperiodic CSI reporting settings without sub-configurations plus the total number of sub-configurations across aperiodic CSI report settings with sub-configurations per BWP is determined by the minimum of the reported values from both *spatialAdaptation-CSI-FeedbackAperiodicPerBC-r18* and *powerAdaptation-CSI-FeedbackAperiodicPerBC-r18*.A UE supporting this feature shall also indicate support of *csi-ReportFramework* and *spatialAdaptation-CSI-FeedbackAperiodic-r18*. | BC | No | N/A | N/A |
| ***spatialAdaptation-CSI-FeedbackPerBC-r18***Indicates whether the UE supports spatial domain adaptation with CSI feedback based on CSI report sub-configuration(s) for periodic CSI reporting and single-panel type1 codebook. This capability signalling comprises the following parameters:- *maxNumberCSI-ResourceAcrossCC-r18* indicates the maximum number of simultaneous NZP-CSI-RS resources in active BWPs across all CCs within a band combination for SD-type1 and/or SD-type2;- *maxNumberPortsAcrossCC-r18* indicates index *N* of the maximum number of total CSI-RS ports in simultaneous NZP-CSI-RS resources in active BWPs across all CCs within a band combination for SD-type1 and/or SD-type2. The maximum number total CSI-RS ports in simultaneous NZP-CSI-RS resources is *N*\*8, where *N* = {1..32}.NOTE 1: For *maxNumberCSI-ResourceAcrossCC-r18* and *maxNumberPortsAcrossCC-r18*, NZP-CSI-RS resource and CSI-RS ports are counted for reporting settings with and without sub-configurations.NOTE 2: If a UE reports more than one capability from *spatialAdaptation-CSI-FeedbackPerBC-r18, spatialAdaptation-CSI-FeedbackPUSCH-PerBC-r18, spatialAdaptation-CSI-FeedbackAperiodicPerBC-r18, spatialAdaptation-CSI-FeedbackPUCCH-PerBC-r18, powerAdaptation-CSI-FeedbackPerBC-r18, powerAdaptation-CSI-FeedbackPUSCH-PerBC-r18, powerAdaptation-CSI-FeedbackAperiodicPerBC-r18, powerAdaptation-CSI-FeedbackPUCCH-PerBC-r18* and if the UE is configured with CSI report settings with sub-configurations corresponding to a subset of the above reported features, then the supported maximum of NZP-CSI-RS resources/ports across all periodic, semi-persistent, aperiodic CSI report settings with sub-configurations corresponding to all of spatial and power domain adaptations and without sub-configurations is determined by the minimum of the reported values from that subset.NOTE 3: If a UE reports both *spatialAdaptation-CSI-FeedbackPerBC-r18* and *powerAdaptation-CSI-FeedbackPerBC-r18*, and if the UE is configured with CSI report settings with sub-configurations corresponding to both *spatialAdaptation-CSI-FeedbackPerBC-r18* and *powerAdaptation-CSI-FeedbackPerBC-r18*, then the supported total number of periodic CSI reporting settings without sub-configurations plus the total number of sub-configurations across periodic CSI report settings with sub-configurations per BWP is determined by the minimum of the reported values from both *spatialAdaptation-CSI-FeedbackPerBC-r18* and *powerAdaptation-CSI-FeedbackPerBC-r18*.A UE supporting this feature shall also indicate support of *csi-ReportFramework* and *spatialAdaptation-CSI-Feedback-r18*. | BC | No | N/A | N/A |
| ***spatialAdaptation-CSI-FeedbackPUCCH-PerBC-r18***Indicates whether the UE supports spatial domain adaptation with CSI feedback based on CSI report sub-configuration(s) for semi-persistent CSI reporting on PUCCH and single-panel type1 codebook. This capability signalling comprises the following parameters:- *maxNumberCSI-ResourceAcrossCC-r18* indicates the maximum number of simultaneous NZP-CSI-RS resources in active BWPs across all CCs within a band combination;- *maxNumberPortsAcrossCC-r18* indicates index *N* of the maximum number of total CSI-RS ports in simultaneous NZP-CSI-RS resources in active BWPs across all CCs within a band combination. The maximum number total CSI-RS ports in simultaneous NZP-CSI-RS resources is *N*\*8, where *N* = {1..32}.NOTE 1: For *maxNumberCSI-ResourceAcrossCC-r18* and *maxNumberPortsAcrossCC-r18*, NZP-CSI-RS resource and CSI-RS ports are counted for reporting settings with and without sub-configurations.NOTE 2: If a UE reports more than one capability from *spatialAdaptation-CSI-FeedbackPerBC-r18, spatialAdaptation-CSI-FeedbackPUSCH-PerBC-r18, spatialAdaptation-CSI-FeedbackAperiodicPerBC-r18, spatialAdaptation-CSI-FeedbackPUCCH-PerBC-r18, powerAdaptation-CSI-FeedbackPerBC-r18, powerAdaptation-CSI-FeedbackPUSCH-PerBC-r18, powerAdaptation-CSI-FeedbackAperiodicPerBC-r18, powerAdaptation-CSI-FeedbackPUCCH-PerBC-r18* and if the UE is configured with CSI report settings with sub-configurations corresponding to a subset of the above reported features, then the supported maximum of NZP-CSI-RS resources/ports across all periodic, semi-persistent, aperiodic CSI report settings with sub-configurations corresponding to all of spatial and power domain adaptations and without sub-configurations is determined by the minimum of the reported values from that subset.NOTE 3: If a UE reports more than one capability from *spatialAdaptation-CSI-FeedbackPUSCH-PerBC-r18*, *spatialAdaptation-CSI-FeedbackPUCCH-PerBC-r18*, *powerAdaptation-CSI-FeedbackPUSCH-PerBC-r18* and *powerAdaptation-CSI-FeedbackPUCCH-PerBC-r18* and if the UE is configured with CSI report settings with sub-configurations corresponding to a subset of the reported features, then the supported total number of semi-persistent CSI reporting settings without sub-configurations plus the total number of sub-configurations across semi-persistent CSI report settings with sub-configurations per BWP is determined by the minimum of the reported values from that subset.A UE supporting this feature shall also indicate support of *csi-ReportFramework, sp-CSI-ReportPUCCH* and *spatialAdaptation-CSI-FeedbackPUCCH-r18*. | BC | No | N/A | N/A |
| ***spatialAdaptation-CSI-FeedbackPUSCH-PerBC-r18***Indicates whether the UE supports spatial domain adaptation with CSI feedback based on CSI report sub-configuration(s) for semi-persistent CSI reporting on PUSCH and single-panel type1 codebook. This capability signalling comprises the following parameters:- *maxNumberCSI-ResourceAcrossCC-r18* indicates the maximum number of simultaneous NZP-CSI-RS resources in active BWPs across all CCs within a band combination;- *maxNumberPortsAcrossCC-r18* indicates index N of the maximum number of total CSI-RS ports in simultaneous NZP-CSI-RS resources in active BWPs across all CCs within a band combination. The maximum number total CSI-RS ports in simultaneous NZP-CSI-RS resources is *N*\*8, where *N* = {1..32}.NOTE 1: For *maxNumberCSI-ResourceAcrossCC-r18* and *maxNumberPortsAcrossCC-r18*, NZP-CSI-RS resource and CSI-RS ports are counted for reporting settings with and without sub-configurations.NOTE 2: If a UE reports more than one capability from *spatialAdaptation-CSI-FeedbackPerBC-r18, spatialAdaptation-CSI-FeedbackPUSCH-PerBC-r18, spatialAdaptation-CSI-FeedbackAperiodicPerBC-r18, spatialAdaptation-CSI-FeedbackPUCCH-PerBC-r18, powerAdaptation-CSI-FeedbackPerBC-r18, powerAdaptation-CSI-FeedbackPUSCH-PerBC-r18, powerAdaptation-CSI-FeedbackAperiodicPerBC-r18, powerAdaptation-CSI-FeedbackPUCCH-PerBC-r18* and if the UE is configured with CSI report settings with sub-configurations corresponding to a subset of the above reported features, then the supported maximum of NZP-CSI-RS resources/ports across all periodic, semi-persistent, aperiodic CSI report settings with sub-configurations corresponding to all of spatial and power domain adaptations and without sub-configurations is determined by the minimum of the reported values from that subset.NOTE 3: If a UE reports more than one capability from *spatialAdaptation-CSI-FeedbackPUSCH-PerBC-r18*, *spatialAdaptation-CSI-FeedbackPUCCH-PerBC-r18*, *powerAdaptation-CSI-FeedbackPUSCH-PerBC-r18* and *powerAdaptation-CSI-FeedbackPUCCH-PerBC-r18* and if the UE is configured with CSI report settings with sub-configurations corresponding to a subset of the reported features, then the supported total number of semi-persistent CSI reporting settings without sub-configurations plus the total number of sub-configurations across semi-persistent CSI report settings with sub-configurations per BWP is determined by the minimum of the reported values from that subset.A UE supporting this feature shall also indicate support of *csi-ReportFramework*, *sp-CSI-ReportPUSCH* and *spatialAdaptation-CSI-FeedbackPUSCH-r18*. | BC | No | N/A | N/A |
| ***stayOnTargetCC-SRS-CarrierSwitch-r17***Indicates whether the UE supports staying on the target CC when remaining SRS resource set(s) for SRS carrier switching exists. UE indicating support of this feature shall indicate support of *srs-CarrierSwitch*.NOTE 1: When UE supports this capability, if the time period between the SRS resource sets is smaller than the total required RF switching time to the source CC and back to the target CC and a higher priority UL transmission and/or DL reception is not scheduled on the source CC in the time period between the two SRS resources sets, the UE stays in the target CC in the period between the SRS resource sets; otherwise, the UE switches back to the source CC after transmitting each SRS resource set.NOTE 2: If the UE does not indicate this capability, the UE switches back to source CC between the SRS resource sets. | BC | No | N/A | N/A |
| ***supportedAggBW-FR1-r17***Indicates the supported maximum aggregated bandwidth in the FR1 NR CA (including NR CA part of (NG)EN-DC and NE-DC) and FR1 NR-DC band combination. It is also applicable to fallback band combinations except for a single CC (i.e. non-CA) case.- *supportedAggBW-FDD-DL/UL-r17* indicates the maximum aggregated bandwidth across FDD DL/UL CCs;- *supportedAggBW-TDD-DL/UL-r17* indicates the maximum aggregated bandwidth across TDD DL/UL CCs;- *supportedAggBW-TotalDL/UL-r17* indicates the maximum aggregated bandwidth across all DL/UL CCs.The field *supportedAggBW-FDD-DL/UL-r17* and *supportedAggBW-TDD-DL/UL-r17* can only be reported in TDD-FDD band combination.If *scalingFactorSCS-r17* is not reported, the reported value represents the maximum supported value for the aggregated bandwidth calculated as follows.$$Aggregated bandwidth (in MHz)=\sum\_{j=1}^{J}BW^{(j)}$$whereinJ is the number of aggregated CCs in the band combinationFor the j-th CC, $BW^{\left(j\right)}$ is the actual CC bandwidth.If *scalingFactorSCS-r17* is reported, the reported value represents the maximum supported value for the effective aggregated bandwidth calculated as follows.$$Effective aggregated bandwidth (in MHz)=\sum\_{j=1}^{J}\left(f^{(j)}⋅BW^{(j)}\right)$$whereinJ is the number of aggregated CCs in the band combinationFor the j-th CC, $BW^{\left(j\right)}$ is the actual CC bandwidth. $f^{(j)}$is the scaling factor and takes the following values.2, for CC of 15 kHz SCS1, for CC of 30 kHz SCS1/2, for CC of 60 kHz SCSThis field is only applicable to Bandwidth Combination Set 5 (BCS5). If the UE reports this capability, the UE shall report *supportedBandwidthDL-v1780* and *supportedBandwidthUL-v1780*. | BC | No | N/A | FR1 only |
| ***supportedCSI-RS-ResourceListAlt-r16***Indicates the list of supported CSI-RS resources across all bands in a band combination by referring to *codebookVariantsList*. The following parameters are included in *codebookVariantsList* for each code book type:- *maxNumberTxPortsPerResource* indicates the maximum number of Tx ports in a resource across all bands within a band combination;- *maxNumberResourcesPerBand* indicates the maximum number of resources across all CCs within a band combination, simultaneously;- *totalNumberTxPortsPerBand* indicates the total number of Tx ports across all CCs within a band combination, simultaneously.For each band in a band combination, supported values for these three parameters are determined in conjunction with *supportedCSI-RS-ResourceListAlt* reported in *MIMO-ParametersPerBand*. | BC | No | N/A | N/A |
| ***supportedMaxCellsWithoutGapsL1-Meas-r18***Indicates the max number of total cells of serving cells and neighbouring cells across all frequency layers of intra-frequency and inter-frequency without measurement gaps for L1 measurement.A UE indicating support for this feature shall also indicate support for *intraFreqL1-MeasConfig-r18* or *interFreqSSB-L1-MeasWithoutGaps-r18*. | BC | No | N/A | N/A |
| ***supportedMaxSSB-L1-Meas-r18***Indicates the max number of total SSB resources of serving cells and neighbouring cells across all frequency layers of intra-frequency and inter-frequency without measurement gaps for L1 measurement.A UE indicating support for this feature shall also indicate support for *intraFreqL1-MeasConfig-r18* or *interFreqSSB-L1-MeasWithoutGaps-r18*. | BC | No | N/A | N/A |
| ***supportedMaxSSB-WithinSlotL1-Meas-r18***Indicates the max number of SSB resources for L1-RSRP measurement that UE can measure within a slot across candidate cells for intra- and inter-frequency without gap L1-RSRP measurement.A UE indicating support for this feature shall also indicate support for *intraFreqL1-MeasConfig-r18* or *interFreqSSB-L1-MeasWithoutGaps-r18*. | BC | No | N/A | N/A |
| ***supportedNumberTAG***Defines the number of timing advance groups supported by the UE. It is applied to NR CA, NR-DC, (NG)EN-DC/NE-DC and DAPS handover. For (NG)EN-DC/NE-DC, it indicates number of TAGs only for NR CG. The number of TAGs for the LTE MCG is signalled by existing LTE TAG capability signalling. For NR CA/NR-DC band combination, if the band combination comprised of more than one band entry (i.e., inter-band or intra-band non-contiguous band combination), it indicates that different timing advances on different band entries are supported. If absent, the UE supports only one TAG for the NR part. It is mandatory for the UE to support more than one TAG for NR-DC and it is mandatory for the UE to support 2 TAGs for inter-frequency DAPS. For the mixed inter-band and intra-band NR CA/NR-DC band combination, if the network configures more non-contiguous UL serving cells than the number of supported TAG, the UE only supports the configuration where all UL CCs of the same frequency band are configured with the same Timing Advance Group ID. | BC | CY | N/A | N/A |
| ***tdcp-ReportPerBC-r18***Indicates whether the UE supports Y=1 delay value for TDCP report and amplitude report. The UE also supports to configure KTRS = 1 TRS resource set. The basic delay value <= D\_basic = 1 slot.This capability signalling comprises the following parameters:- *valueX-r18* indicates CPU occupation (OCPU=(Y+1)\*X).- *maxNumberActiveResource-r18* indicates the index *N* of the maximum number of simultaneously active CSI-RS resources for TDCP across all CCs within a band combination. The maximum number of simultaneously active CSI-RS resources for TDCP across all CCs within a band combination is *N*\*2, where *N* = {2..32}.A UE supporting this feature shall also indicate support of *csi-ReportFramework* and *simultaneousCSI-ReportsAllCC.*NOTE: Counting of simultaneously active CSI-RS resources follows existing specification TS 38.214 [12]. | BC | No | N/A | N/A |
| ***tdcp-ResourcePerBC-r18***Indicates the number of CSI-RS resources for TDCP that the UE supports.This capability signalling comprises the following parameters:- *maxNumberConfigPerCC-r18* indicates the maximum number of configured CSI-RS resources for TDCP per CC.- *maxNumberConfigAcrossCC-r18* indicates the index *N* of maximum number of configured CSI-RS resources for TDCP across all CCs within a band combination. The maximum number of configured CSI-RS resources for TDCP across all CCs within a band combination is *N*\*2, where *N* = {1..32}.- *maxNumberSimultaneousPerCC-r18* indicates the maximum number of simultaneously active CSI-RS resources for TDCP per CC.A UE supporting this feature shall indicate support of *tdcp-Report-r18*.NOTE: Counting of simultaneously active CSI-RS resources follows existing specification TS 38.214 [12]. | BC | No | N/A | N/A |
| ***timelineRelax-CJT-CSI-CA-r18***Indicates whether the UE supports timeline relaxation parameter for regular eType-II-CJT CSI, or for port selection FeType-II-CJT CSI. Value *n0* indicates 0, value *n2* indicates Z2.A UE supporting this feature shall also indicate support of *eType2CJT-r18* or *feType2CJT-r18*.NOTE: A UE that supports *eType2CJT-r18* or *feType2CJT-r18* must signal this feature. | BC | CY | N/A | N/A |
| ***twoPUCCH-Grp-ConfigurationsList-r16***Indicates one or multiple of supported configuration(s) of {primary PUCCH group config, secondary PUCCH group config} for the band combination where for each of the supported configuration the carrier type(s) (FR1-NonSharedTDD, FR1-SharedTDD, FR1-NonSharedFDD, FR2) that can be mapped to a PUCCH group and also the carrier types that can be configured with PUCCH transmission for primary PUCCH group and secondary PUCCH group for NR-CA band combination with 3 or more bands. The capability signalling of each primary or secondary PUCCH group configuration comprises of the following parameters:- *pucch-GroupMapping-r16* indicates the PUCCH group(s) that a carrier type can be mapped to.- pucch-TX-r16 indicates the PUCCH group(s) that a carrier type can be configured for PUCCH transmissionNOTE 1: For a band combination with SUL, the SUL band is counted as one of the bands.NOTE 2: For a band combination with SDL, the SDL band is counted as one of the bands. SDL is indicated as 'FR1-NonSharedFDD' carrier type. Per UE capabilities that are TDD only are not applicable to SDL.NOTE 3: When the carrier type of NUL is indicated for PUCCH transmission location, the SUL in the same cell as in the NUL can also be configured for PUCCH transmission.NOTE 4: When the carrier type of NUL is indicated for one PUCCH group config, the SUL in the same cell as in the NUL can also be configured for the PUCCH group.NOTE 5: If UE indicating this field does not support *diffNumerologyAcrossPUCCH-Group-CarrierTypes-r16*, the UE can only be configured with the same SCS across NR PUCCH groups. | BC | No | N/A | N/A |
| ***type3EnhHARQ-CB-DCI-1-3-r18***Indicates whether the UE supports feedback of enhanced type 3 HARQ-ACK codebook, triggered by a DCI 1\_3 and transmission of enhanced type 3 HARQ-ACK codebook using the first or second PUCCH configuration based on PHY priority indication in the triggering DCI (for a UE supporting two HARQ-ACK codebooks / PUCCH config in *simultaneous-2-1-HARQ-ACK-CB-r18*).This capability signalling comprises the following parameters:- *numberOfCodebook-r18* indicates the number of enhanced type 3 HARQ-ACK codebooks.- *maxNumberPUCCH-Trans-r18* indicates the maximum number of actual PUCCH transmissions for type 3 or enhanced type 3 HARQ-ACK codebook feedback within a slotThe UE only supports feedback of a dynamically selected enhanced type 3 HARQ-ACK codebook based on triggering information in DCI 1\_3 if the UE for *numberOfCodebook-r18* supports more than one enhanced type 3 HARQ-ACK codebook to be configured.If the UE also reports *enhancedType3-HARQ-CodebookFeedback-r17*, the same value is reported for *numberOfCodebook-r18* and *maxNumberPUCCH-Trans-r18.*A UE supporting this feature shall also indicate support of at least one of *multiCell-PDSCH-DCI-1-3-SameSCS-r18, multiCell-PDSCH-DCI-1-3-DiffSCS-r18*. | BC | No | N/A | N/A |
| ***type3HARQ-CB-DCI-1-3-r18***Indicates whether the UE supports feedback of type 3 HARQ-ACK codebook, triggered by a DCI 1\_3 scheduling at least a PDSCH and feedback of type 3 HARQ-ACK codebook, triggered by a DCI 1\_3 without scheduling a PDSCH using a reserved FDRA value.A UE supporting this feature shall also indicate support of at least one of *multiCell-PDSCH-DCI-1-3-SameSCS-r18, multiCell-PDSCH-DCI-1-3-DiffSCS-r18*. | BC | No | N/A | N/A |
| ***uplinkTxDC-TwoCarrierReport-r16***Indicates whether the UE supports the uplink Tx Direct Current subcarrier location(s) reporting when configured with uplink CA with two carriers.It is applicable only for (NG)EN-DC/NE-DC and NR CA where the NR has intra-band uplink CA with two uplink carriers. | BC | No | N/A | N/A |

\* \* \* End of Change \* \* \*