**3GPP TSG-RAN2 Meeting #126 *R2-240xxxx***

**Fukuoka, Japan, 20th – 24th May 2024**

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| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **38.306** | **CR** | **1084** | **rev** | **4** | **Current version:** | **18.1.0** |  |
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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:*** | Introduction of new intra-band EN-DC capabilities for inter-band EN-DC | | | | | | | | | |
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| ***Source to WG:*** | Google Inc., CATT | | | | | | | | | |
| ***Source to TSG:*** | R2 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_newRAT-Core, TEI17 | | | | |  | ***Date:*** | | | 2024-05-24 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **A** |  | | | | | ***Release:*** | | | Rel-18 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)  Rel-20 (Release 20)* | |
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| ***Reason for change:*** | | As indicated in RAN4 LS R4-2403809, there are two intra-band EN-DC components in some inter-band EN-DC band combinations in RAN4 specifications. The existing IEs *supportedBandwidthCombinationSetIntraENDC* and the IE *intraBandENDC-Support,* and *intraBandENDC-Support-UL* are not sufficient to indicate BCSs and spectrum contiguity capabilities for these inter-band EN-DC band combinations. | | | | | | | | |
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| ***Summary of change:*** | | Introduce new IEs to support inter-band (NG)EN-DC band combinations with multiple intra-band (NG)EN-DC components. | | | | | | | | |
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| ***Consequences if not approved:*** | | Inter-band (NG)EN-DC band combinations with multiple intra-band (NG)EN-DC components cannot be fully supported  **Impact analysis**  Impacted functionality:  Inter-band (NG)EN-DC band combinations with multiple intra-band (NG)EN-DC components  Interoperability:  If the UE is implemented in accordance with the changes and the network is not, the network might not know the UE capabilities of inter-band (NG)EN-DC band combinations with multiple intra-band (NG)EN-DC components.  It the network is implemented in accordance with the changes and the UE is not, the UE could not correctly signal the UE capabilities of inter-band (NG)EN-DC band combinations with multiple intra-band (NG)EN-DC components. | | | | | | | | |
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| ***Clauses affected:*** | | 4.2.7.1, 4.2.7.2, 4.2.7.9 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | | **X** |  | Other core specifications | | | | TS 38.331 CR 4750 | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | | R2-2403523->R2-2405474 (revision 2)->R2-2405964 (revision 3) | | | | | | | | |

#### 4.2.7.1 *BandCombinationList* parameters

| Definitions for parameters | Per | M | FDD-TDD  DIFF | FR1-FR2  DIFF |
| --- | --- | --- | --- | --- |
| ***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. | 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 |
| ***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: For each "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. | 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 |
| ***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 entry number of the first-listed band with UL in the band combination that affects this DL.  - *entryNumberSwitch-18* indicates the entry number of the first-listed band with UL in the band combination that switches together with this UL.  The UE supporting this feature shall indicate support of *supportedSRS-Resources.*  NOTE: 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 entry number of the first-listed band with UL in the band combination that affects this DL.  *-* *entryNumberSwitchBeyond4Rx-r17* indicates the entry number of the first-listed band with UL in the band combination that switches together with this UL.  The UE indicating support of this shall indicate support of *srs-TxSwitch.*  NOTE: 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 |
| ***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 section 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-v17xy***  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 section 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 us, n140us represents 140us, 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 us, n140us represents 140us, 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. | 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, when Rel-18 UL Tx switching is configured by *uplinkTxSwitchingMoreBands-r18*. If the capability is not reported, the switching period reported in *switchingPeriodFor2T-r18* or *switchingPeriodFor1T-r18* applies, as specified in TS 38.214 [12] and TS 38.101-1 [2].  - *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* indicateds 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 us, *n140us* represents 140us, 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***  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 us, n140us represents 140us, 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 us, n140us represents 140us, and so on. | 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 |

#### 4.2.7.2 *BandNR parameters*

| Definitions for parameters | Per | M | FDD-TDD  DIFF | FR1-FR2  DIFF |
| --- | --- | --- | --- | --- |
| ***ack-NACK-FeedbackForMulticastWithDCI-Enabler-r17***  Indicates whether the UE supports DCI-based enabling/disabling ACK/NACK based HARQ-ACK feedback configured per G-RNTI by RRC signalling via DCI format 4\_2.  A UE supporting this feature shall also indicate support of *ack-NACK-FeedbackForMulticast-r17* and *dynamicMulticastDCI-Format4-2-r17*. | Band | No | N/A | N/A |
| ***ack-NACK-FeedbackForSPS-MulticastWithDCI-Enabler-r17***  Indicates whether the UE supports DCI-based enabling/disabling ACK/NACK based HARQ-ACK feedback configured per G-CS-RNTI for multicast by RRC signalling via DCI format 4\_2.  A UE supporting this feature shall also indicate support of *ack-NACK-FeedbackForSPS-Multicast-r17* and *sps-MulticastDCI-Format4-2-r17*. | Band | No | N/A | N/A |
| ***activeConfiguredGrant-r16***  Indicates whether the UE supports up to 12 configured/active configured grant configurations in a BWP of a serving cell. This field includes the following parameters:  - *maxNumberConfigsPerBWP-r16* indicates the maximum number of configured/active configured grant configurations in a BWP of a serving cell.  - *maxNumberConfigsAllCC-r16* indicates the maximum number of configured/active configured grant configurations across all serving cells in a MAC entity, and across MCG and SCG in case of NR-DC.  The UE can include this feature only if the UE indicates support of either *configuredUL-GrantType1* *or configuredUL-GrantType1-v1650* and/or *configuredUL-GrantType2 or configuredUL-GrantType2-v1650*.  NOTE:  - For all the reported bands in FR1, a same X1 value is reported for *maxNumberConfigsAllCC-r16*. For all the reported bands in FR2, a same X2 value is reported for *maxNumberConfigsAllCC-r16*.  - The total number of configured/active configured grant configurations across all serving cells in FR1 is no greater than X1.  - The total number of configured/active configured grant configurations across all serving cells in FR2 is no greater than X2.  - If the CA have some serving cell(s) in FR1 and some serving cell(s) in FR2, the total number of configured/active configured grant configurations across all serving cells is no greater than max(X1, X2). | Band | No | N/A | N/A |
| ***additionalActiveTCI-StatePDCCH***  Indicates whether the UE supports one additional active TCI-State for control in addition to the supported number of active TCI-States for PDSCH. The UE can include this field only if *maxNumberActiveTCI-PerBWP* in *tci-StatePDSCH* is set to *n1*. Otherwise, the UE does not include this field. | Band | No | N/A | N/A |
| ***antennaArrayType-r18***  Indicates whether the UE supports the RF and RRM requirements with antenna array as specified in TS 38.101-1 [2] clause 6.1J, 7.1J and TS 38.133 [5]. If the field is absent, the RF and RRM requirements with omni-directional antenna applies as specified in TS 38.101-1 [2] clause 6.1J, 7.1J and TS 38.133 [5]. The UE indicating support of this feature shall also indicate support of *airToGroundNetwork-r18*. This field is only applicable for bands as specified for ATG in clause 5.2J of TS 38.101-1 [2]. | Band | CY | N/A | FR1 only |
| ***aperiodicBeamReport***  Indicates whether the UE supports aperiodic 'CRI/RSRP' or 'SSBRI/RSRP' reporting on PUSCH. The UE provides the capability for the band number for which the report is provided (where the measurement is performed). | Band | Yes | N/A | N/A |
| ***aperiodicCSI-RS-AdditionalBandwidth-r17***  Indicates the UE supported TRS bandwidths for fast SCell activation, in addition to 52 RBs, for a 10MHz UE channel bandwidth. This field only applies for the BWPs configured with 52 RBs size and 15kHz SCS, in FDD bands and indicates the values:  Value *addBW-Set1* indicates 28, 32, 36, 40, 44, 48 RBs.  Value *addBW-Set2* indicates 32, 36, 40, 44, 48 RBs.  The UE can include this feature only if the UE indicates support of *aperiodicCSI-RS-FastScellActivation-r17*. | Band | No | FDD only | FR1 only |
| ***aperiodicCSI-RS-FastScellActivation-r17***  Indicates whether the UE supports aperiodic CSI-RS for tracking for fast SCell activation, i.e.,  1) Aperiodic CSI-RS for tracking for fast SCell activation is triggered by enhanced SCell activation/deactivation MAC CE;  2) Aperiodic CSI-RS for tracking for fast SCell activation is triggered within the BWP indicated by *firstActiveDownlinkBWP-Id* for the SCell.  This field includes the following parameters:  - *maxNumberAperiodicCSI-RS-PerCC-r17* indicates the maximum number of aperiodic CSI-RS resource set configurations for tracking for fast SCell activation that can be configured to UE per CC in a reported band. Value n8 corresponds to 8, n16 corresponds to 16, and so on.  - *maxNumberAperiodicCSI-RS-AcrossCCs-r17* indicates the maximum number of aperiodic CSI-RS resource set configurations for tracking for fast SCell activation that can be configured to UE across CCs in a reported band. Value n8 corresponds to 8, n16 corresponds to 16, and so on.  NOTE:  - *maxNumberAperiodicCSI-RS-PerCC-r17* and *maxNumberAperiodicCSI-RS-AcrossCCs-r17* values refer to the number of RS configurations for fast SCell activation that can be indicated by the MAC CE.  - The NZP-CSI-RS configured as RS for tracking for fast SCell activation are not considered when counting the maximum NZP-CSI-RS configurations of CSI-RS and CSI-IM reception for CSI feedback. | Band | No | N/A | N/A |
| ***aperiodicTRS***  Indicates whether the UE supports DCI triggering aperiodic TRS associated with periodic TRS. | Band | No | N/A | Yes |
| ***asymmetricBandwidthCombinationSet***  Defines the supported asymmetric channel bandwidth combination for the band as defined in the TS 38.101-1 [2]. Field encoded as a bit map, where bit N is set to "1" if UE support asymmetric channel bandwidth combination set N for this band as defined in the TS 38.101-1 [2]. The leading / leftmost bit (bit 0) corresponds to the asymmetric channel bandwidth combination set 1, the next bit corresponds to the asymmetric channel bandwidth combination set 2 and so on. UE shall support asymmetric channel bandwidth combination set 0. If the field is absent, the UE supports asymmetric channel bandwidth combination set 0. | Band | No | N/A | N/A |
| ***bandNR***  Defines supported NR frequency band by NR frequency band number, as specified in TS 38.101-1 [2], TS 38.101-2 [3], and TS 38.101-5 [34]. | Band | Yes | N/A | N/A |
| ***beamCorrespondenceCSI-RS-based-r16***  Indicates whether the UE support for beam correspondence based on CSI-RS has the ability to select its uplink beam based on measurement of CSI-RS. If a UE supports beam correspondence based on CSI-RS, then the network can expect the UE to also fulfil Rel-15 beam correspondence requirements.  If UE supports neither *beamCorrespondenceSSB-based-r16*  nor *beamCorrespondenceCSI-RS-based-r16*, gNB can expect the UE to fulfill beam correspondence based on Rel-15 beam correspondence requirements. | Band | No | TDD only | FR2 only |
| ***beamCorrespondenceSSB-based-r16***  Indicates whether the UE support for beam correspondence based on SSB has the ability to select its uplink beam based on measurement of SSB. If a UE supports beam correspondence based on SSB, then the network can expect the UE to also fulfil Rel-15 beam correspondence requirements.  If UE supports neither *beamCorrespondenceSSB-based-r16*  nor *beamCorrespondenceCSI-RS-based-r16*, gNB can expect the UE to fulfil beam correspondence based on Rel-15 beam correspondence requirements. | Band | No | TDD only | FR2 only |
| ***beamCorrespondenceWithoutUL-BeamSweeping***  Indicates how UE supports FR2 beam correspondence as specified in TS 38.101-2 [3], clause 6.6. The UE that fulfils the beam correspondence requirement without the uplink beam sweeping (as specified in TS 38.101-2 [3], clause 6.6) shall set the field to *supported*. The UE that fulfils the beam correspondence requirement with the uplink beam sweeping (as specified in TS 38.101-2 [3], clause 6.6) shall not report this field. | Band | Yes | N/A | FR2 only |
| ***beamManagementSSB-CSI-RS***  Defines support of SS/PBCH and CSI-RS based RSRP measurements. The capability comprises signalling of  - *maxNumberSSB-CSI-RS-ResourceOneTx* indicates maximum total number of configured one port NZP CSI-RS resources and SS/PBCH blocks that are supported by the UE to measure L1-RSRP as specified in TS 38.215 [13] within a slot and across all serving cells (see NOTE). On FR2, it is mandatory to report >=8; On FR1, it is mandatory with capability signalling to report >=8.  - *maxNumberCSI-RS-Resource* indicates maximum total number of configured NZP-CSI-RS resources that are supported by the UE to measure L1-RSRP as specified in TS 38.215 [13] across all serving cells (see NOTE). It is mandated to report at least n8 for FR1.  - *maxNumberCSI-RS-ResourceTwoTx* indicates maximum total number of two ports NZP CSI-RS resources that are supported by the UE to measure L1-RSRP as specified in TS 38.215 [13] within a slot and across all serving cells (see NOTE).  - *supportedCSI-RS-Density* indicates density of one RE per PRB for one port NZP CSI-RS resource for RSRP reporting, if supported. On FR2, it is mandatory to report either "three" or "oneAndThree"; On FR1, it is mandatory with capability signalling to report either "three" or "oneAndThree".  - *maxNumberAperiodicCSI-RS-Resource* indicates maximum number of configured aperiodic CSI-RS resources across all serving cells (see NOTE). For FR1 and FR2, the UE is mandated to report at least n4.  NOTE: If the UE sets a value other than *n0* in an FR1 band, it shall set that same value in all FR1 bands. If the UE sets a value other than *n0* in an FR2 band, it shall set that same value in all FR2 bands. The UE supports a total number of resources equal to the maximum of the FR1 and FR2 value, but no more than the FR1 value across all FR1 serving cells and no more than the FR2 value across all FR2 serving cells. | Band | Yes | N/A | FD |
| ***beamReportTiming, beamReportTiming-v1710***  Indicates the number of OFDM symbols between the end of the last symbol of SSB/CSI-RS and the start of the first symbol of the transmission channel containing beam report. The UE provides the capability for the band number for which the report is provided (where the measurement is performed). The UE includes this field for each supported sub-carrier spacing. | Band | Yes | N/A | N/A |
| ***beamSweepingFactorReduction-r18***  Indicates whether the UE supports beam sweeping factor reduction for FR2 unknown SCell activation.  The capability comprises signalling of  - *reduceForCellDetection* indicates reducing beam sweeping factor for cell detection if UE has full set (N=8) of beam sweeping during AGC settling part during FR2-1 unknown SCell activation procedure.  - *reduceForSSB-L1-RSRP-Meas* indicates reducing beam sweeping factor for SSB based L1-RSRP measurement if UE has full set (N=8) of beam sweeping during AGC settling part during FR2-1 unknown SCell activation procedure.  UE is required to meet the shortened SCell activation delay requirement in TS 38.133 [5] if the feature is supported. | Band | No | TDD only | FR2-1 only |
| ***beamSwitchTiming, beamSwitchTiming-v1710***  Indicates the minimum number of OFDM symbols between the DCI triggering of aperiodic CSI-RS and aperiodic CSI-RS transmission. The number of OFDM symbols is measured from the end of the last symbol containing the indication to the start of the first symbol of CSI-RS. The UE includes this field for each supported sub-carrier spacing.  NOTE: *beamSwitchTiming* of value (*sym224* or *sym336* for 60kHz and 120kHz SCS, *sym896* or *sym1344* for 480kHz SCS and *sym1792* or *sym2688* for 960kHz SCS) will be used to determine UE expectation/behaviour for aperiodic CSI-RS for tracking and latency requirements for L1-RSRP reporting as described in clause 5.1.6.1.1 of TS 38.214 [12], while UE behaviour/assumption regarding before or after beam switch timing is unspecified for measuring AP CSI-RS for CSI acquisition (without *trs-Info* and without repetition) and for beam management (with repetition 'off'). | Band | No | N/A | FR2 only |
| ***beamSwitchTiming-r16, beamSwitchTiming-r17***  Indicates the minimum number of required OFDM symbols (sym224, sym336 for 60kHz and 120kHz SCS, *sym896* or *sym1344* for 480kHz SCS and *sym1792* or *sym2688* for 960kHz SCS) between the DCI triggering aperiodic CSI-RS and the corresponding aperiodic CSI-RS transmission in a CSI-RS resource set configured with repetition 'ON' if *enableBeamSwitchTiming-r16* is configured.  For CSI-RS configured with repetition "*off*", the UE applies beam switch time of sym48 if *beamSwitchTiming-r16* is reported and *enableBeamSwitchTiming-r16* is configured. For CSI-RS configured without repetition and without *trs-info*, the UE applies beam switch time of sym48 if *beamSwitchTiming-r16* is reported and *enableBeamSwitchTiming-r16* is configured. | Band | No | N/A | FR2 only |
| ***bfd-Relaxation-r17***  Indicates whether the UE supports BFD relaxation criteria and requirement as specified in TS 38.133 [5]. UE shall set the capability value consistently for all FDD-FR1 bands, all TDD-FR1 bands, all TDD-FR2-1 bands and all TDD-FR2-2 bands respectively.  UE indicating support of this feature shall also indicate support of *maxNumberCSI-RS-BFD, maxNumberSSB-BFD* and *maxNumberCSI-RS-SSB-CBD.* | Band | No | N/A | N/A |
| ***bwp-DiffNumerology***  Indicates whether the UE supports BWP adaptation up to 4 BWPs with the different numerologies, via DCI and timer. Except for SUL, the UE only supports the same numerology for the active UL and DL BWP. For the UE that is capable of this feature but is not indicating *supportOfRedCap-r17* nor *supportOfERedCap-r18*, the bandwidth of a UE-specific RRC configured DL BWP includes the bandwidth of the CORESET#0 (if CORESET#0 is present) and SSB for PCell and PSCell (if configured). For the UE which is a (e)RedCap UE capable of this feature, the bandwidth of a UE-specific RRC configured DL BWP may not include the bandwidth of the CORESET#0 (if configured) and SSB for PCell. For SCell(s), the bandwidth of the UE-specific RRC configured DL BWP includes SSB, if there is SSB on SCell(s). | Band | No | N/A | N/A |
| ***bwp-SameNumerology***  Indicates whether UE supports BWP adaptation (up to 2/4 BWPs) with the same numerology, via DCI and timer. Except for SUL, the UE only supports the same numerology for the active UL and DL BWP. For the UE that is capable of this feature but is not indicating *supportOfRedCap-r17* nor *supportOfERedCap-r18*, the bandwidth of a UE-specific RRC configured DL BWP includes the bandwidth of the CORESET#0 (if CORESET#0 is present) and SSB for PCell and PSCell (if configured). For the UE which is a (e)RedCap UE capable of this feature, the bandwidth of a UE-specific RRC configured DL BWP may not include the bandwidth of the CORESET#0 (if configured) and SSB for PCell. For SCell(s), the bandwidth of the UE-specific RRC configured DL BWP includes SSB, if there is SSB on SCell(s). | Band | No | N/A | N/A |
| ***bwp-WithoutRestriction***  Indicates support of BWP operation without bandwidth restriction. The Bandwidth restriction in terms of DL BWP for PCell and PSCell means that the bandwidth of a UE-specific RRC configured DL BWP may not include the bandwidth of CORESET #0 (if configured) and SSB. For SCell(s), it means that the bandwidth of DL BWP may not include SSB. | Band | No | N/A | N/A |
| ***cancelOverlappingPUSCH-r16***  Indicates whether UE supports the cancellation of the (repetition of the) PUSCHs transmission on all other intra-band serving cell(s). The cancellation of the (repetition of the) PUSCH transmission on a the set of intra-band serving cell(s) includes all symbols from the earliest symbol that is overlapping with the first cancelled symbol of the PUSCH on the serving cell for which the DCI format 2\_4 is applicable to. If the UE supports this feature, the UE needs to report *pa-PhaseDiscontinuityImpacts* and *ul-CancellationSelfCarrier-r16*. | Band | No | N/A | N/A |
| ***cg-PUSCH-UTO-UCI-Ind-r18***  Indicates whether the UE supports multiplexing of the unused transmission occasions UCI (UTO-UCI) on a CG-PUSCH.  The UE indicating support of this feature shall also indicate support of at least one of *configuredUL-GrantType1, configuredUL-GrantType1-v1650, configuredUL-GrantType2, configuredUL-GrantType2-v1650*. | Band | No | N/A | N/A |
| ***cg-SDT-r17***  Indicates whether the UE supports transmission of data and/or signalling over allowed radio bearers in RRC\_INACTIVE state via configured grant type 1 (i.e. CG-SDT), as specified in TS 38.331 [9]. Except for NTN bands, UE shall set the capability value consistently for all FDD-FR1 bands, all TDD-FR1 bands and all TDD-FR2 bands respectively. For NTN, UE shall set the capability value consistently for all FDD-FR1 NTN bands.  UE supports multiple CG-SDT configurations when a UE indicates the support of this feature and *activeConfiguredGrant-r16*; otherwise UE only supports one CG-SDT configuration. | Band | No | N/A | N/A |
| ***cg-SDT-PeriodicityExt-r18***  Indicates whether the UE supports to extend the range of CG-SDT periodicities for MO-SDT and/or MT-SDT, as specified in TS 38.331 [9].  A UE supporting this feature shall also indicate the support of *ra-InsteadCG-SDT-r18*. A UE supporting this feature shall also indicate the support of *cg-SDT-r17* or *mt-CG-SDT-r18.* | Band | No | N/A | N/A |
| ***channelBWs-DL***  Indicates for each subcarrier spacing the UE supported channel bandwidths. Absence of the *channelBWs-DL* (without suffix) for a band or absence of specific scs-XXkHz entry for a supported subcarrier spacing means that the UE supports the channel bandwidths among [5, 10, 15, 20, 25, 30, 40, 50, 60, 80, 100] and [50, 100, 200] that were defined in clause 5.3.5 of TS 38.101-1 version 15.7.0 [2] and TS 38.101-2 version 15.7.0 [3] for the given band or the specific SCS entry. For IAB-MT, to determine whether the IAB-MT supports a channel bandwidth of 100 MHz, the network checks c*hannelBW-DL-IAB-r16*.  For FR1, the bits in *channelBWs-DL* (without suffix) starting from the leading / leftmost bit indicate 5, 10, 15, 20, 25, 30, 40, 50, 60 and 80MHz. For FR2, the bits in *channelBWs-DL* (without suffix) starting from the leading / leftmost bit indicate 50, 100 and 200MHz. The third / rightmost bit (for 200MHz) shall be set to 1. For IAB-MT the third / rightmost bit (for 200MHz) is ignored. To determine whether the IAB-MT supports a channel bandwidth of 200 MHz, the network checks *channelBW-DL-IAB-r16*.  For FR1, the leading/leftmost bit in *channelBWs-DL-v1590* indicates 70MHz, the second leftmost bit indicates 45MHz, the third leftmost bit indicates 35MHz, the fourth leftmost bit indicates 100MHz and all the remaining bits in *channelBWs-DL-v1590* shall be set to 0. The fourth leftmost bit (for 100MHz) is not applicable for bands n41, n48, n77, n78, n79 and n90 as defined in TS 38.101-1 [2]. For each band, (e)RedCap UEs shall indicate supporting the maximum of those channel bandwidths that are less than or equal to 20 MHz for FR1 and less than or equal to 100 Mhz for FR2, taking restrictions in TS 38.101-1 [2] and TS 38.101-2 [3] into consideration. For each band, NTN capable UEs shall indicate the supported channel bandwidths for FR1, taking restrictions in TS 38.101-5 [34] into consideration.  This feature is applicable only for FR1 and FR2-1 band, otherwise it is absent.  NOTE: To determine whether the UE supports a specific SCS for a given band, the network validates the *supportedSubCarrierSpacingDL* and the *scs-60kHz*. To determine whether the UE supports a channel bandwidth of 90 MHz for the band combination with other bandwidth combination set than BCS5, the network may ignore this capability and validate instead the *channelBW-90mhz*, the *supportedBandwidthCombinationSet*, the *supportedBandwidthCombinationSetIntraENDC*, and *supportedBandwidthCombinationSetIntraENDC-v17xy*. To determine whether the UE supports a channel bandwidth of 90 MHz for the band combination with BCS5, the network may ignore this capability and validate instead the *channelBW-90mhz*, the *supportedBandwidthCombinationSet*, the *supportedBandwidthCombinationSetIntraENDC*, *supportedAggBW-FR1-r17*, and *supportedBandwidthCombinationSetIntraENDC-v17xy*. To determine whether the UE supports a channel bandwidth of 400 MHz, the network may ignore this capability and validate the *supportedBandwidthCombinationSet*, the *supportedBandwidthCombinationSetIntraENDC*, the *supportedBandwidthDL*, and *supportedBandwidthCombinationSetIntraENDC-v17xy*. For serving cell(s) with other channel bandwidths:  - If *supportedAggBW-FR1-r17* is reported, the network validates the *channelBWs-DL*, the *supportedBandwidthCombinationSet*, the *supportedBandwidthCombinationSetIntraENDC*, the *asymmetricBandwidthCombinationSet* (for a band supporting asymmetric channel bandwidth as defined in clause 5.3.6 of TS 38.101-1 [2]), *supportedBandwidthDL-v1780*, *supportedMinBandwidthDL*, *supportedAggBW-FR1-r17*, and *supportedBandwidthCombinationSetIntraENDC-v17xy.*  - Otherwise, the network validates the *channelBWs-DL*, the *supportedBandwidthCombinationSet*, the *supportedBandwidthCombinationSetIntraENDC*, the *asymmetricBandwidthCombinationSet* (for a band supporting asymmetric channel bandwidth as defined in clause 5.3.6 of TS 38.101-1 [2]), *supportedBandwidthDL/supportedBandwidthDL-v1710,* *supportedMinBandwidthDL*, *supportedAggBW-FR2-r17*, and *supportedBandwidthCombinationSetIntraENDC-v17xy.* | Band | Yes | N/A | N/A |
| ***channelBWs-DL-SCS-120kHz-FR2-2-r17***  Indicates the UE supported channel bandwidths in DL for the SCS 120kHz.  The bits in *channelBWs-DL-SCS-120kHz-FR2-2* starting from the leading / leftmost bit indicate 100 and 400MHz.  100 and 400 MHz are mandatory channel bandwidths if the UE supports 120 kHz SCS (i.e. the bit for 100 and 400MHz shall always be set to 1).  UE supporting this feature shall also indicate support of *dl-FR2-2-SCS-120kHz-r17*.  NOTE: To determine whether the UE supports a SCS 120kHz for a given band, the network validates the *supportedSubCarrierSpacingDL*. To determine the supported carrier bandwidths, the network validates the *channelBWs-DL-SCS-120kHz-FR2-2-r17*, the *supportedBandwidthCombinationSet* and the *supportedBandwidthDL-v1710*. | Band | CY | N/A | N/A |
| ***channelBWs-DL-SCS-480kHz-FR2-2-r17***  Indicates the UE supported channel bandwidths in DL for the SCS 480kHz.  The bits in *channelBWs-DL-SCS-480kHz-FR2-2* starting from the leading / leftmost bit indicate 400, 800 and 1600MHz.  400 MHz is a mandatory channel bandwidth if the UE supports 480 kHz SCS (i.e. the bit for 400MHz shall always be set to 1).  UE supporting this feature shall also indicate support of *dl-FR2-2-SCS-480kHz-r17*.  NOTE: To determine whether the UE supports a SCS 480kHz for a given band, the network validates the *supportedSubCarrierSpacingDL*. To determine the supported carrier bandwidths, the network validates the *channelBWs-DL-SCS-480kHz-FR2-2-r17*, the *supportedBandwidthCombinationSet* and *supportedBandwidthDL-v1710*. | Band | CY | N/A | N/A |
| ***channelBWs-DL-SCS-960kHz-FR2-2-r17***  Indicates the UE supported channel bandwidths in DL for the SCS 960kHz.  The bits in *channelBWs-DL-SCS-960kHz-FR2-2* starting from the leading / leftmost bit indicate 400, 800,1600 and 2000MHz.  400 MHz is a mandatory channel bandwidth if the UE supports 960 kHz SCS (i.e. the bit for 400MHz shall always be set to 1).  UE supporting this feature shall also indicate support of *dl-FR2-2-SCS-960kHz-r17*.  NOTE: To determine whether the UE supports a SCS 960kHz for a given band, the network validates the *supportedSubCarrierSpacingDL*. To determine the supported carrier bandwidths, the network validates the *channelBWs-DL-SCS-960kHz-FR2-2-r17*, the *supportedBandwidthCombinationSet* and *supportedBandwidthDL-v1710*. | Band | CY | N/A | N/A |
| ***channelBWs-UL***  Indicates for each subcarrier spacing the UE supported channel bandwidths.  Absence of the *channelBWs-UL* (without suffix) for a band or absence of specific scs-XXkHz entry for a supported subcarrier spacing means that the UE supports the channel bandwidths among [5, 10, 15, 20, 25, 30, 40, 50, 60, 80, 100] and [50, 100, 200] that were defined in clause 5.3.5 of TS 38.101-1 version 15.7.0 [2] and TS 38.101-2 version 15.7.0 [3] for the given band or the specific SCS entry. For IAB-MT, to determine whether the IAB-MT supports a channel bandwidth of 100 MHz, the network checks *channelBW-UL-IAB-r16*.  For FR1, the bits in *channelBWs-UL* (without suffix) starting from the leading / leftmost bit indicate 5, 10, 15, 20, 25, 30, 40, 50, 60 and 80MHz. For FR2, the bits in *channelBWs-UL* (without suffix) starting from the leading / leftmost bit indicate 50, 100 and 200MHz. The third / rightmost bit (for 200MHz) shall be set to 1. For IAB-MT the third / rightmost bit (for 200MHz) is ignored. To determine whether the IAB-MT supports a channel bandwidth of 200 MHz, the network checks *channelBW-UL-IAB-r16*.  For FR1, the leading/leftmost bit in *channelBWs-UL-v1590* indicates 70 MHz, the second leftmost bit indicates 45MHz, the third leftmost bit indicates 35MHz, the fourth leftmost bit indicates 100MHz and all the remaining bits in *channelBWs-UL-v1590* shall be set to 0. The fourth leftmost bit (for 100MHz) is not applicable for bands n41, n48, n77, n78, n79 and n90 as defined in TS 38.101-1 [2]. For each band, (e)RedCap UEs shall indicate supporting the maximum of those channel bandwidths that are less than or equal to 20 MHz for FR1 and less than or equal to 100 Mhz for FR2, taking restrictions in TS 38.101-1 [2] and TS 38.101-2 [3] into consideration. For each band, NTN capable UEs shall indicate the supported channel bandwidths for FR1, taking restrictions in TS 38.101-5 [34] into consideration.  This feature is applicable only for FR1 and FR2-1 band, otherwise it is absent.  NOTE: To determine whether the UE supports a specific SCS for a given band, the network validates the *supportedSubCarrierSpacingUL* and the *scs-60kHz*. To determine whether the UE supports a channel bandwidth of 90 MHz for the band combination with other bandwidth combination set than BCS5, the network may ignore this capability and validate instead the *channelBW-90mhz*, the *supportedBandwidthCombinationSet*, the *supportedBandwidthCombinationSetIntraENDC,* and *supportedBandwidthCombinationSetIntraENDC-v17xy*. To determine whether the UE supports a channel bandwidth of 90 MHz for the band combination with BCS5, the network may ignore this capability and validate instead the *channelBW-90mhz*, the *supportedBandwidthCombinationSet*, the *supportedBandwidthCombinationSetIntraENDC*, *supportedAggBW-FR1-r17,* and *supportedBandwidthCombinationSetIntraENDC-v17xy*. To determine whether the UE supports a channel bandwidth of 400 MHz, the network may ignore this capability and validate the *supportedBandwidthCombinationSet*, the *supportedBandwidthCombinationSetIntraENDC*, the *supportedBandwidthUL,* and *supportedBandwidthCombinationSetIntraENDC-v17xy*. For serving cell(s) with other channel bandwidths:  - If *supportedAggBW-FR1-r17* is reported, the network validates the *channelBWs-UL*, the *supportedBandwidthCombinationSet*, the *supportedBandwidthCombinationSetIntraENDC*, the *asymmetricBandwidthCombinationSet* (for a band supporting asymmetric channel bandwidth as defined in clause 5.3.6 of TS 38.101-1 [2]), *supportedBandwidthUL-v1780*, *supportedMinBandwidthUL*, *supportedAggBW-FR1-r17,* and *supportedBandwidthCombinationSetIntraENDC-v17xy.*  - Otherwise, the network validates the *channelBWs-UL*, the *supportedBandwidthCombinationSet*, the *supportedBandwidthCombinationSetIntraENDC*, the *asymmetricBandwidthCombinationSet* (for a band supporting asymmetric channel bandwidth as defined in clause 5.3.6 of TS 38.101-1 [2]), *supportedBandwidthUL/supportedBandwidthUL-v1710, supportedMinBandwidthUL*, *supportedAggBW-FR2-r17,* and *supportedBandwidthCombinationSetIntraENDC-v17xy.* | Band | Yes | N/A | N/A |

<unrelated part omitted>

#### 4.2.7.9 *MRDC-Parameters*

| Definitions for parameters | Per | M | FDD-TDD  DIFF | FR1-FR2  DIFF |
| --- | --- | --- | --- | --- |
| ***asyncIntraBandENDC***  Indicates whether the UE supports asynchronous FDD-FDD intra-band (NG)EN-DC and asynchronous FDD-FDD inter-band (NG)EN-DC/NE-DC where the frequency range of the E-UTRA band is a subset of the frequency range of the NR band, with MRTD and MTTD as specified in clause 7.5 and 7.6 of TS 38.133 [5]. If asynchronous FDD-FDD intra-band (NG)EN-DC is not supported, the UE supports only synchronous FDD-FDD intra-band (NG)EN-DC. For FDD-FDD inter-band (NG)EN-DC/NE-DC combination where the frequency range of the E-UTRA band is a subset of the frequency range of the NR band, if this capability is not supported, the MRTD and MTTD requirements indicated by *interBandMRDC-WithOverlapDL-Bands-r16* apply.  This capability applies to:  - Intra-band (NG)EN-DC combination without additional inter-band NR and LTE CA component;  - Intra-band (NG)EN-DC combination supporting both UL and DL intra-band (NG)EN-DC parts with additional inter-band NR/LTE CA component;  - Intra-band (NG)EN-DC combination without supporting UL in both the bands of the intra-band (NG)EN-DC UL part;  - Inter-band (NG)EN-DC/NE-DC combination, where the frequency range of the E-UTRA band is a subset of the frequency range of the NR band (as specified in Table 5.5B.4.1-1 of TS 38.101-3 [4]).  If this capability is included in an "Intra-band (NG)EN-DC combination supporting both UL and DL intra-band (NG)EN-DC parts with additional inter-band NR/LTE CA component" or in an "Intra-band (NG)EN-DC combination without supporting UL in both the bands of the intra-band (NG)EN-DC UL part", this capability applies to the intra-band (NG)EN-DC BC part. | BC | No | FDD only | FR1 only |
| ***condPSCellAdditionENDC-r17***  Indicates whether the UE supports conditional PSCell addition in EN-DC. The UE supporting this feature shall also support 2 trigger events for same execution condition in conditional PSCell addition in EN-DC. | BC | No | N/A | N/A |
| ***dualPA-Architecture***  For an intra-band band combination, this field indicates the support of dual PAs. If absent in an intra-band band combination, the UE supports single PA for all the ULs in the intra-band band combination. For other band combinations, this field is not applicable.  This capability applies to:  - Intra-band (NG)EN-DC/NE-DC combination without additional inter-band NR and LTE CA component;  - 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;  - Inter-band (NG)EN-DC/NE-DC combination, where the frequency range of the E-UTRA band is a subset of the frequency range of the NR band (as specified in Table 5.5B.4.1-1 of TS 38.101-3 [4]).  If this capability is included in 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", this capability applies to the intra-band (NG)EN-DC/NE-DC BC part. | BC | No | N/A | N/A |
| ***dynamicPowerSharingENDC***  Indicates whether the UE supports dynamic (NG)EN-DC power sharing between NR FR1 carriers and the LTE carriers. If the UE supports this capability the UE supports the dynamic power sharing behaviour as specified in clause 7 of TS 38.213 [11]. In this release of the specification, the UE supporting (NG)EN-DC shall set this field to *supported.* | BC | Yes | N/A | FR1 only |
| ***dynamicPowerSharingNEDC***  Indicates whether the UE supports dynamic NE-DC power sharing between NR FR1 carriers and the LTE carriers. If the UE supports this capability, the UE supports the dynamic power sharing behavior as specified in clause 7 of TS 38.213 [11]. | BC | Yes | N/A | FR1 only |
| ***higherPowerLimitMRDC-r17***  Indicates whether UE supports increase in maximum output power above the power class indication for inter-band UL (NG)EN-DC band combinations as defined in clause 6.2B of TS 38.101-3 [4]. | BC | No | N/A | FR1 only |
| ***intraBandENDC-Support***  Indicates whether the UE supports intra-band (NG)EN-DC with only non-contiguous spectrum, or with both contiguous and non-contiguous spectrum for the (NG)EN-DC combination as specified in TS 38.101-3 [4].  If the UE does not include this field for an intra-band (NG)EN-DC combination, the UE only supports the contiguous spectrum for all the intra-band (NG)EN-DC component(s) in the inter-band (NG)EN-DC band combination.  If *intrabandENDC-Support-UL* is absent and the band combination supports intra-band (NG)EN-DC only in DL, this field indicates the DL capability. If *intrabandENDC-Support-UL* is absent and the band combination supports intra-band (NG)EN-DC in DL and UL, this field indicates the common capability for both DL and UL. If *intrabandENDC-Support-UL* is included, *intraBandENDC-Support* indicates the DL capability.  For the inter-band (NG)EN-DC band combination with multiple intra-band (NG)EN-DC components as defined in section 5.5B in the TS 38.101-3 [4]:  - This field is applicable only if the UE supports the same spectrum contiguity capability in DL for all the intra-band (NG)EN-DC components.  - If the UE supports different spectrum contiguity capabilities for the intra-band (NG)EN-DC components, the UE shall not include this field. | BC | No | N/A | N/A |
| ***intrabandENDC-Support-UL***  Indicates whether the UE supports intra-band (NG)EN-DC in UL with only non-contiguous spectrum, or with both contiguous and non-contiguous spectrum for the intra-band (NG)EN-DC combination as specified in TS 38.101-3 [4]. The UE includes this field only if the UE supports different UL and DL capabilities for the intra-band (NG)EN-DC band combination.  When 'both' is indicated in *intrabandENDC-Support* and in *intraBandENDC-Support-UL*, the UE supports the following three cases of intra-band (NG)EN-DC: contiguous DL/contiguous UL, non-contiguous DL/non-contiguous UL, contiguous DL/non-contiguous UL.  For the inter-band (NG)EN-DC band combination with multiple intra-band (NG)EN-DC components as defined in section 5.5B in the TS 38.101-3 [4]:  - This field is applicable only if the UE supports the same spectrum contiguity capability in UL for all the intra-band (NG)EN-DC components.  - If the UE supports different spectrum contiguity capabilities in UL for the intra-band (NG)EN-DC components, the UE shall not include this field. | BC | No | N/A | N/A |
| ***intrabandENDC-Support-UL-v17xy***  Indicates whether the UE supports intra-band (NG)EN-DC in UL with only non-contiguous spectrum, or with both contiguous and non-contiguous spectrum 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 section 5.5B in the TS 38.101-3 [4].  The UE includes this field only if the UE supports different UL and DL capabilities for the corresponding intra-band (NG)EN-DC component.  When 'both' is indicated in *intrabandENDC-Support-v17xy* and in *intraBandENDC-Support-UL-v17xy*, the UE supports the following three cases of intra-band (NG)EN-DC: contiguous DL/contiguous UL, non-contiguous DL/non-contiguous UL, contiguous DL/non-contiguous UL for the corresponding intra-band (NG)EN-DC component. | BC | No | N/A | N/A |
| ***intrabandENDC-Support-v17xy***  Indicates whether the UE supports only non-contiguous spectrum, or with both contiguous and non-contiguous spectrum 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 section 5.5B in the TS 38.101-3 [4].  If the UE does not include this field, the UE only supports the contiguous spectrum for the corresponding intra-band (NG)EN-DC component.  If *intrabandENDC-Support-UL-v17xy* is absent for the corresponding intra-band (NG)EN-DC component and the corresponding intra-band (NG)EN-DC component supports DL only, this field indicates the DL capability for the corresponding intra-band (NG)EN-DC component. If *intrabandENDC-Support-UL-v17xy* is absent for the corresponding intra-band (NG)EN-DC component and the corresponding intra-band (NG)EN-DC component supports DL and UL, this field indicates the common capability for both DL and UL for the corresponding intra-band (NG)EN-DC component. If *intrabandENDC-Support-UL-v17xy* is included for the corresponding intra-band (NG)EN-DC component, *intraBandENDC-Support-v17xy* indicates the DL capability for the corresponding intra-band (NG)EN-DC component. | BC | No | N/A | N/A |
| ***interBandContiguousMRDC***  Indicates for an inter-band (NG)EN-DC/NE-DC combination, where the frequency range of the E-UTRA band is a subset of the frequency range of the NR band (as specified in Table 5.5B.4.1-1 of TS 38.101-3 [4]), that the UE supports intra-band contiguous (NG)EN-DC/NE-DC requirements (see TS 38.101-3 [4]). If the field is absent for such an inter-band (NG)EN-DC/NE-DC combination, the UE supports intra-band non-contiguous (NG)EN-DC/NE-DC requirements. | BC | CY | N/A | N/A |
| ***interBandMRDC-WithOverlapDL-Bands-r16***  Indicates whether the UE supports FDD-FDD or TDD-TDD inter-band (NG)EN-DC/NE-DC operation with overlapping or partially overlapping DL bands with an (NG)EN-DC MTTD/MRTD according to clause 7.5.2/7.6.2 in TS 38.133 [5] and NE-DC MTTD/MRTD according to clause 7.5.5/7.6.5 in TS 38.133 [5] and inter-band RF requirements. If the capability is not reported, the UE supports FDD-FDD or TDD-TDD inter-band operation with overlapping or partially overlapping DL bands with (NG)EN-DC/NE-DC MTTD/MRTD according to clause 7.5.3/7.6.3 in TS 38.133 [5] and intra-band RF requirements. | BC | No | N/A | FR1 only |
| ***maxUplinkDutyCycle-interBandENDC-FDD-TDD-PC2-r16***  Indicates the maximum percentage of symbols during a certain evaluation period that can be scheduled for NR uplink transmission and EUTRA FDD uplink transmission so as to ensure compliance with applicable electromagnetic energy absorption requirements provided by regulatory bodies. This field is only applicable for inter-band FDD+TDD EN-DC power class 2 UE as specified in TS 38.101-3 [4]. This capability signalling comprises of *maxUplinkDutyCycle-FDD-TDD-EN-DC1* and *maxUplinkDutyCycle-FDD-TDD-EN-DC2* which indicate the maxUplinkDutyCycle capability of NR band corresponding to different LTE reference configurations as described in TS 38.101-3 [4], clause 6.2B.1.3. Value n30 corresponds to 30%, value n40 corresponds to 40% and so on. | BC | No | N/A | FR1 only |
| ***maxUplinkDutyCycle-interBandENDC-TDD-PC2-r16***  Indicates the maximum percentage of symbols during a certain evaluation period that can be scheduled for NR uplink transmission under different EUTRA TDD uplink-downlink configurations so as to ensure compliance with applicable electromagnetic energy absorption requirements provided by regulatory bodies. This field is only applicable for inter-band TDD+TDD EN-DC power class 2 UE as specified in TS 38.101-3 [4]. If the field is absent, 30% shall be applied to all EUTRA TDD uplink-downlink configurations. If *eutra-TDD-Configx* is absent, 30% shall be applied to the corresponding EUTRA TDD uplink-downlink configuration.  Value n20 corresponds to 20%, value n40 corresponds to 40% and so on. | BC | No | TDD only | FR1 only |
| ***scg-ActivationDeactivationENDC-r17***  Indicates whether the UE supports activation (with or without RACH) and deactivation on SCG in EN-DC, upon SCG addition and upon reconfiguration of the SCG, as specified in TS 38.331 [9]. A UE supporting this feature shall indicate support of EN-DC as specified in TS 36.331 [17]. For the UE supporting this feature, it is mandatory to report *maxNumberCSI-RS-BFD* and *maxNumberSSB-BFD* for all NR bands of this band combination where the UE supports SpCell. | BC | No | N/A | N/A |
| ***scg-ActivationDeactivationResumeENDC-r17***  Indicates whether the UE supports activation (with or without RACH) and deactivation on SCG in EN-DC, upon reception of an *RRCReconfiguration* included in an *RRCConnectionResume* message, as specified in TS 38.331 [9] and TS 36.331 [17], A UE supporting this feature shall indicate support of EN-DC and support of *resumeWithSCG-Config-r16* as specified in TS 36.331 [17]. For the UE supporting this feature, it is mandatory to report *maxNumberCSI-RS-BFD* and *maxNumberSSB-BFD* for all NR bands of this band combination where the UE supports SpCell. | BC | No | N/A | N/A |
| ***simultaneousRxTxInterBandENDC***  Indicates whether the UE supports simultaneous transmission and reception in TDD-TDD and TDD-FDD inter-band (NG)EN-DC/NE-DC. It is mandatory for certain TDD-FDD and TDD-TDD band combinations defined in TS 38.101-3 [4].  This capability does not apply to the following components within TDD-TDD and TDD-FDD inter-band (NG)EN-DC/NE-DC combination:  - Intra-band (NG)EN-DC/NE-DC component  - Inter-band (NG)EN-DC/NE-DC component where the frequency range of the E-UTRA band is a subset of the frequency range of the NR band (as specified in Table 5.5B.4.1-1 of TS 38.101-3 [4]). | BC | CY | N/A | N/A |
| ***simultaneousRxTxInterBandENDCPerBandPair***  Indicates whether the UE supports simultaneous transmission and reception in TDD-TDD and TDD-FDD inter-band (NG)EN-DC/NE-DC 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 *simultaneousRxTxInterBandENDC* 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 38.101-3 [4]. The UE shall consistently set the bits which correspond to the same band pair.  Each bit of the capability only applies to TDD-TDD and TDD-FDD Inter-band (NG)EN-DC/NE-DC band pairs, except for the band pairs where the frequency range of the E-UTRA band is a subset of the frequency range of the NR band (as specified in Table 5.5B.4.1-1 of TS 38.101-3 [4]). | BC | CY | N/A | N/A |
| ***singleUL-HARQ-offsetTDD-PCell-r16***  Indicate support of HARQ offset for single UL transmission in synchronous (NG)EN-DC with LTE TDD PCell. UE indicates support of this feature shall indicate support of *tdm-restrictionTDD-endc-r16.* | BC | No | N/A | N/A |
| ***singleUL-Transmission***  Indicates that the UE does not support simultaneous UL transmissions as defined in TS 38.101-3 [4]. The UE may only include this field for certain band combinations defined in TS 38.101-3 [4]. If included for a particular band combination, the field applies to all fallback band combinations of this band combination that are defined in TS 38.101-3 [4] as being allowed to include this field and does not apply to any other fallback band combinations defined in TS 38.101-3 [4].  The UE shall include this field for band combinations containing a band pair for which single UL transmission is the only specified operation mode in TS 38.101-3 [4] and if the UE supports UL on both bands. Otherwise, this feature is optional. | BC | FD | N/A | N/A |
| ***spCellPlacement***  Indicates whether the UE supports a SpCell on FR1-FDD, FR1-TDD and/or FR2-TDD depending on which additional SCells of other frequency range(s) / duplex mode(s) are configured. It is applicable to SCG of (NG)EN-DC and MCG of NE-DC, where UL is configured on more than one of FR1-FDD, FR1-TDD and FR2-TDD in a cell group. If not included, the UE supports SpCell on any serving cell with UL in supported band combinations. | UE | No | N/A | N/A |
| ***tdm-Pattern***  Indicates whether the UE supports the *tdm-PatternConfig* for *single UL-transmission* associated functionality, as specified in TS 36.331 [17]. Support is conditionally mandatory in (NG)EN-DC for UEs that do not support dynamicPowerSharingENDC and for UEs that indicate single UL transmission for any (NG)EN-DC BC. Support is conditionally mandatory in NE-DC for UEs that do not support dynamicPowerSharingNEDC and for UEs that indicate single UL transmission for any NE-DC BC. The feature is optional otherwise. | BC | CY | N/A | FR1 only |
| ***tdm-restrictionDualTX-FDD-endc-r16***  Indicates whether the UE supports TDM restriction to LTE FDD PCell in (NG)EN-DC for dual UL transmission operation when *tdm-PatternConfig2-R16* is configured, as specified in TS 36.331 [17]. UE indicates support this feature shall also indicate support of *tdm-Pattern*. | BC | No | N/A | FR1 only |
| ***tdm-restrictionFDD-endc-r16***  Indicates whether the UE supports TDM restriction to LTE FDD PCell for single UL-transmission associated functionality when *tdm-PatternConfig2-R16* is configured, as specified in TS 36.331 [17]. This is applicable for FDD (NG)EN-DC. UE indicates support this feature shall also indicate support of *tdm-Pattern*. | BC | No | N/A | FR1 only |
| ***tdm-restrictionTDD-endc-r16***  Indicates whether the UE supports TDM restriction to LTE TDD PCell for single UL-transmission associated functionality when *tdm-PatternConfig2-R16* is configured, as specified in TS 36.331 [17]. This is applicable for synchronous TDD-TDD (NG)EN-DC. | BC | No | N/A | FR1 only |
| ***ul-SharingEUTRA-NR***  Indicates whether the UE supports (NG)EN-DC/NE-DC with EUTRA-NR coexistence in UL sharing via TDM only, FDM only, or both TDM and FDM from UE perspective as specified in TS 38.101-3 [4]. | BC | No | N/A | FR1 only |
| ***ul-SwitchingTimeEUTRA-NR***  Indicates support of switching type between LTE UL and NR UL for (NG)EN-DC/NE-DC with LTE-NR coexistence in UL sharing from UE perspective as defined in clause 6.3B of TS 38.101-3 [4]. It is mandatory to report switching time type 1 or type 2 if UE reports *ul-SharingEUTRA-NR* is *tdm* or *both*. | BC | CY | N/A | FR1 only |
| ***ul-TimingAlignmentEUTRA-NR***  Indicates whether to apply the same UL timing between NR and LTE for dynamic power sharing capable UE operating in a synchronous intra-band contiguous (NG)EN-DC. If this field is absent, UE shall be capable of handling a timing difference up to applicable MTTD requirements when operating in a synchronous intra-band contiguous (NG)EN-DC network, as specified in TS 38.133 [5].  This capability applies to:  - Intra-band contiguous (NG)EN-DC combination without additional inter-band NR and LTE CA component;  - Intra-band contiguous (NG)EN-DC combination supporting both UL and DL intra-band (NG)EN-DC parts with additional inter-band NR/LTE CA component;  - Inter-band (NG)EN-DC combination, where the frequency range of the E-UTRA band is a subset of the frequency range of the NR band (as specified in Table 5.5B.4.1-1 of TS 38.101-3 [4]).  If this capability is included in an "Intra-band contiguous (NG)EN-DC combination supporting both UL and DL intra-band (NG)EN-DC parts with additional inter-band NR/LTE CA component", this capability applies to the intra-band (NG)EN-DC BC part. | BC | No | N/A | N/A |