**3GPP TSG RAN WG2 Meeting #113e R2-21xxxxx**

**Electronic meeting, 25th Jan – 5th Feb, 2020**

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **38.306** | **CR** | - | **rev** | **-** | **Current version:** | **16.3.0** |  |
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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:*** | Release-16 UE capabilities based on updated RAN1 and RAN4 feature lists | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Intel Corporation | | | | | | | | | |
| ***Source to TSG:*** | R2 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_UE\_pow\_sav-Core, NR\_IAB-Core, NR\_eMIMO-Core, NR\_IIOT-Core, NR\_2step\_RACH-Core, 5G\_V2X\_NRSL-Core, NR\_Mob\_enh-Core, NR\_pos-Core, NR\_unlic-Core, LTE\_NR\_DC\_CA\_enh-Core, NR\_SON\_MDT-Core, NR\_CLI\_RIM, NG\_RAN\_PRN-Core, TEI16, NR\_L1enh\_URLLC-Core | | | | |  | ***Date:*** | | | 2021-03-02 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | B |  | | | | | ***Release:*** | | | Rel-16 |
|  | *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-12 (Release 12)* *Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | Capture further Release-16 UE capabilities based on the RAN1 UE feature list (R1-2102006). The RAN4 UE feature list for this CR is based on (R4-2103367).  All the entries that are not concluded in the feature lists from both RAN1 and RAN4 feature lists are not considered as part of this CR. | | | | | | | | |
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| ***Summary of change:*** | | New Release-16 capabilities from RAN1/RAN4 are added based on the latest RAN1 and RAN4 feature list.   1. R1-2102006 Updated Rel16\_RAN1\_UE feature List 2. R4-2103367 RAN4 UE features list | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | New RAN1 and RAN4 related UE capabilities will not be captured in specifcations | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 2, 4.2.7.2, 4.2.7.2a, 4.2.7.4, 4.2.7.7, 4.2.7.10, 4.2.7.x, 4.2.9, A.5 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | | **Y** |  | Other core specifications | | | | TS 38.331 CR xxx | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

*Start oft change*

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 38.101-1: "NR; User Equipment (UE) radio transmission and reception Part 1: Range 1 Standalone".

[3] 3GPP TS 38.101-2: "NR; User Equipment (UE) radio transmission and reception Part 2: Range 2 Standalone".

[4] 3GPP TS 38.101-3: "NR; User Equipment (UE) radio transmission and reception Part 3: Range 1 and Range 2 Interworking operation with other radios".

[5] 3GPP TS 38.133: "NR; Requirements for support of radio resource management".

[6] 3GPP TS 38.211: "NR; Physical channels and modulation".

[7] 3GPP TS 37.340: "Evolved Universal Terrestrial Radio Access (E-UTRA) and NR Multi-connectivity".

[8] 3GPP TS 38.321: "NR; Medium Access Control (MAC) protocol specification".

[9] 3GPP TS 38.331: "NR; Radio Resource Control (RRC) protocol specification".

[10] 3GPP TS 38.212: "NR; Multiplexing and channel coding".

[11] 3GPP TS 38.213: "NR; Physical layer procedures for control".

[12] 3GPP TS 38.214: "NR; Physical layer procedures for data".

[13] 3GPP TS 38.215: "NR; Physical layer measurements".

[14] 3GPP TS 36.101: "Evolved Universal Terrestrial Radio Access (E-UTRA) radio transmission and reception".

[15] 3GPP TS 36.306: "Evolved Universal Terrestrial Radio Access (E-UTRA) User Equipment (UE) radio access capabilities".

[16] 3GPP TS 38.323: "NR; Packet Data Convergence Protocol (PDCP) specification".

[17] 3GPP TS 36.331: "Evolved Universal Terrestrial Radio Access (E-UTRA) Radio Resource Control (RRC); Protocol Specification".

[18] 3GPP TS 38.101-4: "NR; User Equipment (UE) radio transmission and reception Part 4: Performance requirements".

[19] 3GPP TS 36.213: "Evolved Universal Terrestrial Radio Access (E-UTRA); Physical layer procedures".

[20] 3GPP TS 25.306: "UE radio access capabilities".

[21] 3GPP TS 38.304: "User Equipment (UE) procedures in Idle mode and RRC Inactive state".

[22] 3GPP TS 37.355: " LTE Positioning Protocol (LPP)".

[23] 3GPP TS 38.340: "NR; Backhaul Adaptation Protocol (BAP) specification".

[24] 3GPP TR 38.822: "NR; User Equipment (UE) feature list".

[25] 3GPP TS 37.324: "E-UTRA and NR; Service Data Adaptation Protocol (SDAP) specification"

[26] 3GPP TS 38.314: "NR; Layer 2 Measurements".

[27] 3GPP TS 36.133: "Evolved Universal Terrestrial Radio Access (E-UTRA); Requirements for support of radio resource management".

[28] 3GPP TS 38.300: "NR; NR and NG-RAN Overall Description; Stage-2".

[xx] 3GPP TS 37.213: “Physical layer procedures for shared spectrum channel access”

*Next change*

#### 4.2.7.2 *BandNR parameters*

| Definitions for parameters | Per | M | FDD-TDD  DIFF | FR1-FR2  DIFF |
| --- | --- | --- | --- | --- |
| ***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 supports of either *configuredUL-GrantType1* or *configuredUL-GrantType2*.  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 | CY | N/A | N/A |
| ***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 |
| ***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] and TS 38.101-2 [3]. | 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. UE indicates support of this feature indicates support of *beamCorrespondenceWithoutUL-BeamSweeping*. 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. UE indicates support of this feature indicates support of *beamCorrespondenceWithoutUL-BeamSweeping*. 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***  Indicates the number of OFDM symbols between the last symbol of SSB/CSI-RS and 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 |
| ***beamSwitchTiming***  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 last symbol containing the indication to the first symbol of CSI-RS. The UE includes this field for each supported sub-carrier spacing. | Band | No | N/A | FR2 only |
| ***beamSwitchTiming-r16***  Indicates the minimum number of required OFDM symbols (sym224, sym336) between the DCI triggering aperiodic CSI-RS and the corresponding aperiodic CSI-RS transmission in a CSI-RS resource set configured with repetition 'ON'. | Band | No | N/A | FR2 only |
| ***bwp-DiffNumerology***  Indicates whether the UE supports BWP adaptation up to 4 BWPs with the different numerologies, via DCI and timer. For the UE capable of this feature, 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 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. For the UE capable of this feature, 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 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 |
| ***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, and all the remaining bits in *channelBWs-DL-v1590* shall be set to 0.  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, the network may ignore this capability for and validate instead the *channelBW-90mhz* and the *supportedBandwidthCombinationSet*. For serving cells with other channel bandwidths the network validates the *channelBWs-DL*, the *supportedBandwidthCombinationSet*, the *asymmetricBandwidthCombinationSet* (for a band supporting asymmetric channel bandwidth as defined in clause 5.3.6 of TS 38.101-1 [2]) and *supportedBandwidthDL*. | Band | Yes | 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, and all the remaining bits in *channelBWs-UL-v1590* shall be set to 0.  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 the network may ignore this capability for and validate instead the *channelBW-90mhz* and the *supportedBandwidthCombiantionSet*. For serving cells with other channel bandwidths the network validates the *channelBWs-UL*, the *supportedBandwidthCombinationSet*, the *asymmetricBandwidthCombinationSet* (for a band supporting asymmetric channel bandwidth as defined in clause 5.3.6 of TS 38.101-1 [2]) and *supportedBandwidthUL*. | Band | Yes | N/A | N/A |
| ***channelBW-DL-IAB-r16***  Indicates whether the IAB-MT supports channel bandwidth of 100 MHz for a given SCS in FR1 for DL or whether the IAB-MT supports channel bandwidth of 200 MHz for a given SCS in FR2 for DL. | Band | No | N/A | N/A |
| ***channelBW-UL-IAB-r16***  Indicates whether the IAB-MT supports channel bandwidth of 100 MHz for a given SCS in FR1 for UL or whether the IAB-MT supports channel bandwidth of 200 MHz for a given SCS in FR2 for UL. | Band | No | N/A | N/A |
| ***codebookComboParametersAddition-r16***  Indicates the UE supports of the mixed codebook combinations and the corresponding parameters supported by the UE.  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 is the possible mixed codebook combinations:  - {Type 1 Single Panel, Type 2, Null}  - {Type 1 Single Panel, Type 2 with port selection, Null}  - {Type 1 Single Panel, eType 2 with R=1, Null}  - {Type 1 Single Panel, eType 2 with R=2, Null}  - {Type 1 Single Panel, eType 2 with R=1 and port selection, Null}  - {Type 1 Single Panel, eType 2 with R=2 and port selection, Null}  - {Type 1 Single Panel, Type 2, Type 2 with port selection}  - {Type 1 Multi Panel, Type 2, Null}  - {Type 1 Multi Panel, Type 2 with port selection, Null}  - {Type 1 Multi Panel, eType 2 with R=1, Null}  - {Type 1 Multi anel, eType 2 with R=2, Null}  - {Type 1 Multi Panel, eType 2 with R=1 with port selection, Null}  - {Type 1 Multi Panel, eType 2 with R=2 with port selection, Null}  - {Type 1 Multi Panel, Type 2, Type 2 with port selection}  Parameters 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*:  For *supportedCSI-RS-ResourceListAdd-r16* related to the additional codebooks:  - The minimum of *maxNumberTxPortsPerResource* is '*p4*';  - The minimum value of *totalNumberTxPortsPerBand* is 4.  If a UE reports one or more mixed codebook combinations, then usage of active CSI-RS resources and ports for multiple codebooks in any slot is allowed only within those combinations. For coexisting of mixed codebooks in any slot, gNB needs to consider the mixed codebook combination capability as well as per codebook capability of each codebook type in the mixed codebook combination.  UE indicates support of a codebook type in the mixed codebook combination shall indicates support of the individual codebook type in the per band capability. | Band | No | N/A | N/A |
| ***codebookParameters***  Indicates the codebooks and the corresponding parameters supported by the UE.  Parameters for type I single panel codebook (type1 singlePanel) supported by the UE, which are mandatory to report:  - *supportedCSI-RS-ResourceList*;  - a UE shall support a *maxNumberTxPortsPerResource* minimum value of 4 for codebook type I single panel in FR1 in the case of a single active CSI-resource across all bands in a band combination, regardless of what it reports in *supportedCSI-RS-ResourceList* with *maxNumberTxPortsPerResource*;  - a UE shall support a *maxNumberTxPortsPerResource* minimum value of 8 when configured with wideband CSI report for codebook type I single panel in FR1 in the case of a single active CSI-resource across all bands in a band combination, regardless of what it reports in *supportedCSI-RS-ResourceList* with *maxNumberTxPortsPerResource*;  - a UE shall support a *maxNumberTxPortsPerResource* minimum value of 2 for codebook type I single panel in FR2 in the case of a single active CSI-resource across all bands in a band combination, regardless of what it reports in *supportedCSI-RS-ResourceList* with *maxNumberTxPortsPerResource*.  - *modes* indicates supported codebook modes (mode 1, both mode 1 and mode 2);  - *maxNumberCSI-RS-PerResourceSet* indicates the maximum number of CSI-RS resource in a resource set.  Parameters for type I multi-panel codebook (type1 multiPanel) supported by the UE, which are optional:  - *supportedCSI-RS-ResourceList*;  - *modes* indicates supported codebook modes (mode 1, mode 2, or both mode 1 and mode 2);  - *maxNumberCSI-RS-PerResourceSet* indicates the maximum number of CSI-RS resource in a resource set;  - *nrofPanels* indicates supported number of panels.  Parameters for type II codebook (type2) supported by the UE, which are optional:  - *supportedCSI-RS-ResourceList*;  - *parameterLx* indicates the parameter "Lx" in codebook generation where x is an index of Tx ports indicated by *maxNumberTxPortsPerResource*;  - *amplitudeScalingType* indicates the amplitude scaling type supported by the UE (wideband or both wideband and sub-band);  - *amplitudeSubsetRestriction* indicates whether amplitude subset restriction is supported for the UE.  Parameters for type II codebook with port selection (type2-PortSelection) supported by the UE, which are optional:  - *supportedCSI-RS-ResourceList*;  - *parameterLx* indicates the parameter "Lx" in codebook generation where x is an index of Tx ports indicated by *maxNumberTxPortsPerResource*;  - *amplitudeScalingType* indicates the amplitude scaling type supported by the UE (wideband or both wideband and sub-band).  *supportedCSI-RS-ResourceList* includes list of the following parameters:  - *maxNumberTxPortsPerResource* indicates the maximum number of Tx ports in a resource;  - *maxNumberResourcesPerBand* indicates the maximum number of resources across all CCs within a band simultaneously;  - *totalNumberTxPortsPerBand* indicates the total number of Tx ports across all CCs within a band simultaneously.  For each codebook type, the UE may report another list of supported CSI-RS resources via *supportedCSI-RS-ResourceListAlt* in *codebookParametersPerBand*. For type I single panel codebook (type1 singlePanel) supportedCSI-RS-ResourceListAlt,  - a UE shall report at least one triplet in supportedCSI-RS-ResourceListAlt with maxNumberTxPortsPerResource greater than or equal to 8 for FR1;  - a UE shall report at least one triplet in supportedCSI-RS-ResourceListAlt with maxNumberTxPortsPerResource greater than or equal to 2 for FR2. | Band | FD | N/A | N/A |
| ***codebookParametersAddition-r16***  Indicates the UE support of additional codebooks and the corresponding parameters supported by the UE.  Codebook etype 2 R=1 support parameter combination 1 to 6 and rank 1 to 2. Parameters for etype 2 R=1 (*etype2R1-r16*) supported by the UE, which are optional:  - *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;  - *maxNumberResourcesPerBand* indicates the maximum number of resources across all CCs in a band, simultaneously;  - *totalNumberTxPortsPerBand* indicates the total number of Tx ports across all CCs in a band, simultaneously.  - *paramComb7-8-r16* indicates the support of parameter combinations 7-8 for etype 2 R=1  - *rank3-4-r16* indicates the support of rank 3,4.  - *amplitudeSubsetRestriction-r16* indicates the support of amplitude subset restriction.  Parameters for etype 2 R=2 (*etype2R2-r16*) supported by the UE, which are optional:  - *supportedCSI-RS-ResourceListAdd-r16*;  UE supporting *etype2R2-r16*supports also indicates support of *etype2R1-r16*.  Codebook etype 2 R=1 with port selection supports 6 parameter combinations and rank 1,2. Parameters for etype 2 R=1 with port selection (*etype2R1-PortSelection-r16*) supported by the UE, which are optional:  - *supportedCSI-RS-ResourceListAdd-r16*;  - *rank3-4-r16* indicates the support of rank 3,4  Parameters for etype 2 R=2 with port selection (*etype2R2-PortSelection-r16*) supported by the UE, which are optional:  - *supportedCSI-RS-ResourceListAdd-r16*;  UE supporting *etype2R2-PortSelection-r16* also indicates support of *etype2R1-PortSelection-r16*.  For *supportedCSI-RS-ResourceListAdd-r16* related to the additional codebooks:  - The minimum of *maxNumberTxPortsPerResource* is '*p4*';  - The minimum value of *totalNumberTxPortsPerBand* is 4. | Band | No | N/A | N/A |
| ***condHandover-r16***  Indicates whether the UE supports conditional handover including execution condition, candidate cell configuration and maximum 8 candidate cells. UE shall set the capability value consistently for all FDD-FR1 bands, all TDD-FR1 bands and all TDD-FR2 bands respectively. | Band | No | N/A | N/A |
| ***condHandoverFailure-r16***  Indicates whether the UE supports conditional handover during re-establishment procedure when the selected cell is configured as candidate cell for condition handover. UE shall set the capability value consistently for all FDD-FR1 bands, all TDD-FR1 bands and all TDD-FR2 bands respectively. | Band | No | N/A | N/A |
| ***condHandoverTwoTriggerEvents-r16***  Indicates whether the UE supports 2 trigger events for same execution condition. This feature is mandatory supported if the UE supports *condHandover-r16*. UE shall set the capability value consistently for all FDD-FR1 bands, all TDD-FR1 bands and all TDD-FR2 bands respectively. | Band | CY | N/A | N/A |
| ***condPSCellChange-r16***  Indicates whether the UE supports conditional PSCell change including execution condition, candidate cell configuration and maximum 8 candidate cells. UE shall set the capability value consistently for all FDD-FR1 bands, all TDD-FR1 bands and all TDD-FR2 bands respectively. | Band | No | N/A | N/A |
| ***condPSCellChangeTwoTriggerEvents-r16***  Indicates whether the UE supports 2 trigger events for same execution condition. This feature is mandatory supported if the UE supports *condPSCellChange-r16*. UE shall set the capability value consistently for all FDD-FR1 bands, all TDD-FR1 bands and all TDD-FR2 bands respectively. | Band | CY | N/A | N/A |
| ***crossCarrierScheduling-SameSCS***  Indicates whether the UE supports cross carrier scheduling for the same numerology with carrier indicator field (CIF) in carrier aggregation where numerologies for the scheduling cell and scheduled cell are same. | Band | No | N/A | N/A |
| ***csi-ReportFramework***  Indicates whether the UE supports CSI report framework. This capability signalling comprises the following parameters:  - *maxNumberPeriodicCSI-PerBWP-ForCSI-Report* indicates the maximum number of periodic CSI report setting per BWP for CSI report;  - *maxNumberPeriodicCSI-PerBWP-ForBeamReport* indicates the maximum number of periodic CSI report setting per BWP for beam report.  - *maxNumberAperiodicCSI-PerBWP-ForCSI-Report* indicates the maximum number of aperiodic CSI report setting per BWP for CSI report;  - *maxNumberAperiodicCSI-PerBWP-ForBeamReport* indicates the maximum number of aperiodic CSI report setting per BWP for beam report;  - *maxNumberAperiodicCSI-triggeringStatePerCC* indicates the maximum number of aperiodic CSI triggering states in *CSI-AperiodicTriggerStateList* per CC;  - *maxNumberSemiPersistentCSI-PerBWP-ForCSI-Report* indicates the maximum number of semi-persistent CSI report setting per BWP for CSI report;  - *maxNumberSemiPersistentCSI-PerBWP-ForBeamReport* indicates the maximum number of semi-persistent CSI report setting per BWP for beam report;  - *simultaneousCSI-ReportsPerCC* indicates the number of CSI report(s) for which the UE can measure and process reference signals simultaneously in a CC of the band for which this capability is provided. The CSI report comprises periodic, semi-persistent and aperiodic CSI and any latency classes and codebook types. The CSI report in simultaneousCSI-ReportsPerCC includes the beam report and CSI report.  The UE is mandated to report *csi-ReportFramework*. | Band | Yes | N/A | N/A |
| ***csi-ReportFrameworkExt-r16***  Indicates whether the UE supports the extension of the maximum number of configured aperiodic CSI report settings for all codebook types. The capability signalling comprises the following:  *maxNumberAperiodicCSI-PerBWP-ForCSI-ReportExt-r16* indicates the extended maximum number of aperiodic CSI report setting per BWP for CSI report. If present, the value of *maxNumberAperiodicCSI-PerBWP-ForCSI-Report-r16* shall replace the corresponding value in *csi-ReportFramework*. | Band | No | N/A | N/A |
| ***csi-RS-ForTracking***  Indicates support of CSI-RS for tracking (i.e. TRS). This capability signalling comprises the following parameters:  - *maxBurstLength* indicates the TRS burst length. Value 1 indicates 1 slot and value 2 indicates both of 1 slot and 2 slots. In this release UE is mandated to report value 2;  - *maxSimultaneousResourceSetsPerCC* indicates the maximum number of TRS resource sets per CC which the UE can track simultaneously;  - *maxConfiguredResourceSetsPerCC* indicates the maximum number of TRS resource sets configured to UE per CC. It is mandated to report at least 8 for FR1 and 16 for FR2;  - *maxConfiguredResourceSetsAllCC* indicates the maximum number of TRS resource sets configured to UE across CCs. If the UE includes the field in an FR1 band, it shall set the same value in all FR1 bands. If the UE includes the field in an FR2 band, it shall set the 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. The UE is mandated to report at least 16 for FR1 and 32 for FR2.  The UE is mandated to report *csi-RS-ForTracking*. | Band | Yes | N/A | N/A |
| ***csi-RS-IM-ReceptionForFeedback***  Indicates support of CSI-RS and CSI-IM reception for CSI feedback. This capability signalling comprises the following parameters:  - *maxConfigNumberNZP-CSI-RS-PerCC* indicates the maximum number of configured NZP-CSI-RS resources per CC;  - *maxConfigNumberPortsAcrossNZP-CSI-RS-PerCC* indicates the maximum number of ports across all configured NZP-CSI-RS resources per CC;  - *maxConfigNumberCSI-IM-PerCC* indicates the maximum number of configured CSI-IM resources per CC;  - *maxNumberSimultaneousNZP-CSI-RS-PerCC* indicates the maximum number of simultaneous CSI-RS-resources per CC;  - *totalNumberPortsSimultaneousNZP-CSI-RS-PerCC* indicates the total number of CSI-RS ports in simultaneous CSI-RS resources per CC.  The UE is mandated to report csi-RS-IM-ReceptionForFeedback. | Band | Yes | N/A | N/A |
| ***csi-RS-ProcFrameworkForSRS***  Indicates support of CSI-RS processing framework for SRS. This capability signalling comprises the following parameters:  - *maxNumberPeriodicSRS-AssocCSI-RS-PerBWP* indicates the maximum number of periodic SRS resources associated with CSI-RS per BWP;  - *maxNumberAperiodicSRS-AssocCSI-RS-PerBWP* indicates the maximum number of aperiodic SRS resources associated with CSI-RS per BWP;  - *maxNumberSP-SRS-AssocCSI-RS-PerBWP* indicates the maximum number of semi-persistent SRS resources associated with CSI-RS per BWP;  - *simultaneousSRS-AssocCSI-RS-PerCC* indicates the number of SRS resources that the UE can process simultaneously in a CC, including periodic, aperiodic and semi-persistent SRS. | Band | No | N/A | N/A |
| ***defaultQCL-PerCORESETPoolIndex-r16***  Indicates whether the UE supports default QCL assumption per CORESET pool index using multi-DCI based multi-TRP. The UE that indicates support of this feature shall support *multiDCI-MultiTRP-r16* and *simultaneousReceptionDiffTypeD-r16.* | Band | No | N/A | FR2 only |
| ***defaultQCL-TwoTCI-r16***  Indicates whether the UE supports default QCL assumption with two TCI states using single-DCI based multi-TRP. The UE can include this field only if *simultaneousReceptionDiffTypeD-r16*is present. Otherwise, the UE does not include this field. | Band | No | N/A | FR2 only |
| ***enhancedUL-TransientPeriod-r16***  Indicates whether the UE support enhanced UL performance for the transient period as specified in clause 6.3.3 of TS 38.101-1 [2]. If not reported, the UE supports transient period of 10us. | Band | No | N/A | FR1 only |
| ***extendedCP***  Indicates whether the UE supports 60 kHz subcarrier spacing with extended CP length for reception of PDCCH, and PDSCH, and transmission of PUCCH, PUSCH, and SRS. | Band | No | N/A | N/A |
| ***groupBeamReporting***  Indicates whether UE supports RSRP reporting for the group of two reference signals. | Band | No | N/A | N/A |
| ***groupSINR-reporting-r16***  Indicates whether UE supports group based L1-SINR reporting. UE indicates support of this feature shall indicate support of *ssb-csirs-SINR-measurement-r16.* | Band | No | N/A | N/A |
| ***jointReleaseConfiguredGrantType2-r16***  Indicates whether the UE supports joint release in a DCI for two or more configured grant Type 2 configurations for a given BWP of a serving cell. The UE can include this feature only if the UE indicates supports of *activeConfiguredGrant-r16*. | Band | No | N/A | N/A |
| ***jointReleaseSPS-r16***  Indicates whether the UE supports joint release in a DCI for two or more SPS configurations for a given BWP of a serving cell. The UE can include this feature only if the UE indicates supports of *sps-r16*. | Band | No | N/A | N/A |
| ***lowPAPR-DMRS-PDSCH-r16***  Indicates whether the UE supports low PAPR DMRS for PDSCH. | Band | No | N/A | N/A |
| ***lowPAPR-DMRS-PUCCH-r16***  Indicates whether the UE supports low PAPR DMRS for PUCCH format 3 and format 4 with transform precoding and with pi/2 BPSK modulation. UE indicates support of this feature shall indicate support of *pucch-F3-4-HalfPi-BPSK* and any combination of support of *pucch-F3-WithFH*, *pucch-F4-WithFH* and *pucch-F1-3-4WithoutFH*. | Band | No | N/A | N/A |
| ***lowPAPR-DMRS-PUSCHwithoutPrecoding-r16***  Indicates whether the UE supports low PAPR DMRS for PUSCH without transform precoding. | Band | No | N/A | N/A |
| ***lowPAPR-DMRS-PUSCHwithPrecoding-r16***  Indicates whether the UE supports low PAPR DMRS for PUSCH with transform precoding and with pi/2 BPSK modulation. UE indicates support of this feature shall indicate support of *pusch-HalfPi-BPSK*. | Band | No | N/A | N/A |
| ***maxNumberActivatedTCI-States-r16***  Indicates maximum number of activated TCI states. This capability signalling includes the following:  - *maxNumberPerCORESET-Pool-r16* indicates maximal number of activated TCI states per *CORESETPoolIndex* per BWP per CC including data and control  - *maxTotalNumberAcrossCORESET-Pool-r16* indicates maximal total number of activated TCI states across *CORESETPoolIndex* per BWP per CC including data and control  The UE that indicates support of this feature shall support *multiDCI-MultiTRP-r16*. | Band | No | N/A | N/A |
| ***maxNumberCSI-RS-BFD***  Indicates maximal number of CSI-RS resources across all CCs, and across MCG and SCG in case of NR-DC, for UE to monitor PDCCH quality. If *support64CandidateBeamRS-BFR-r16* is indicated, the maximum value that can be signalled is 64, otherwise the maximum value that can be signalled is 16. If the UE includes the field in an FR1 band, it shall set the same value in all FR1 bands. If the UE includes the field in an FR2 band, it shall set the 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. It is mandatory with capability signalling for FR2 and optional for FR1. | Band | CY | N/A | N/A |
| ***maxNumberCSI-RS-SSB-CBD***  Defines maximal number of different CSI-RS [and/or SSB] resources across all CCs, and across MCG and SCG in case of NR-DC, for new beam identifications. In this release, the maximum value that can be signalled is 128. If the UE includes the field in an FR1 band, it shall set the same value in all FR1 bands. If the UE includes the field in an FR2 band, it shall set the 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. It is mandatory with capability signalling for FR2 and optional for FR1. The UE is mandated to report at least 32 for FR2. | Band | CY | N/A | N/A |
| ***maxNumberNonGroupBeamReporting***  Defines support of non-group based RSRP reporting using N\_max RSRP values reported. | Band | Yes | N/A | N/A |
| ***maxNumberRxBeam***  Defines whether UE supports receive beamforming switching using NZP CSI-RS resource. UE shall indicate a single value for the preferred number of NZP CSI-RS resource repetitions per CSI-RS resource set. Support of Rx beam switching is mandatory for FR2. | Band | CY | N/A | N/A |
| ***maxNumberRxTxBeamSwitchDL***  Defines the number of Tx and Rx beam changes UE can perform on this band within a slot. UE shall report one value per each subcarrier spacing supported by the UE. In this release, the number of Tx and Rx beam changes for scs-15kHz and scs-30kHz are not included. | Band | No | N/A | FR2 only |
| ***maxNumberSCellBFR-r16***  Defines the maximum number of SCells configured for SCell beam failure recovery simultaneously. The UE indicating support of this also indicates the capabilities of *maxNumberCSI-RS-BFD, maxNumberSSB-BFD* and *maxNumberCSI-RS-SSB-CBD.* | Band | No | N/A | N/A |
| ***maxNumberSSB-BFD***  Defines maximal number of different SSBs across all CCs, and across MCG and SCG in case of NR-DC, for UE to monitor PDCCH quality. If *support64CandidateBeamRS-BFR-r16* is indicated, the maximum value that can be signalled is 64  , otherwise the maximum value that can be signalled is 16. If the UE includes the field in an FR1 band, it shall set the same value in all FR1 bands. If the UE includes the field in an FR2 band, it shall set the 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. It is mandatory with capability signalling for FR2 and optional for FR1. | Band | CY | N/A | N/A |
| ***maxUplinkDutyCycle-PC2-FR1***  Indicates the maximum 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. This field is only applicable for FR1 power class 2 UE as specified in clause 6.2.1 of TS 38.101-1 [2]. If the field is absent, 50% shall be applied. Value n60 corresponds to 60%, value n70 corresponds to 70% and so on. This capability is not applicable to IAB-MT. | Band | No | N/A | FR1 only |
| ***maxUplinkDutyCycle-FR2***  Indicates the maximum percentage of symbols during 1s that can be scheduled for uplink transmission at the UE maximum transmission power, so as to ensure compliance with applicable electromagnetic power density exposure requirements provided by regulatory bodies. This field is applicable for all power classes UE in FR2 as specified in TS 38.101-2 [3]. Value n15 corresponds to 15%, value n20 corresponds to 20% and so on. If the field is absent or the percentage of uplink symbols transmitted within any 1s evaluation period is larger than *maxUplinkDutyCycle-FR2*, the UE behaviour is specified in TS 38.101-2 [3]. This capability is not applicable to IAB-MT. | Band | No | N/A | FR2 only |
| ***modifiedMPR-Behaviour***  Indicates whether UE supports modified MPR behaviour defined in TS 38.101-1 [2] and TS 38.101-2 [3]. | Band | No | N/A | N/A |
| ***mpr-PowerBoost-FR2-r16***  Indicates whether UE supports uplink transmission power boost by suspension of in-band emission (IBE) requirements as specified in TS 38.101-2 [3]. | Band | No | TDD only | FR2 only |
| ***multipleRateMatchingEUTRA-CRS-r16***  Indicates whether the UE supports multiple E-UTRA CRS rate matching patterns, which is supported only for FR1. The capability signalling comprises the following parameters:  - *maxNumberPatterns-r16* indicates the maximum number of LTE-CRS rate matching patterns in total within a NR carrier using 15 kHz SCS. The UE can report the value larger than 2 only if UE reports the value of *maxNumberNon-OverlapPatterns-r16* is larger than 1.  - *maxNumberNon-OverlapPatterns-r16* indicates the maximum number of LTE-CRS non-overlapping rate matching patterns within a NR carrier using 15 kHz SCS.  The UE can include this feature only if the UE indicates support of *rateMatchingLTE-CRS*. | Band | No | N/A | FR1 only |
| ***multipleTCI***  Indicates whether UE supports more than one TCI state configurations per CORESET. UE is only required to track one active TCI state per CORESET. UE is required to support minimum between 64 and number of configured TCI states indicated by *tci-StatePDSCH*. This field shall be set to *supported*. | Band | Yes | N/A | N/A |
| ***nonGroupSINR-reporting-r16***  Indicates N\_max L1-SINR values reported when UE supports non-group based L1-SINR reporting. UE indicates support of this feature shall indicate support of *ssb-csirs-SINR-measurement-r16.* | Band | No | N/A | N/A |
| ***olpc-SRS-Pos-r16***  Indicates whether the UE supports OLPC for SRS for positioning. The capability signalling comprises the following parameters.  - *olpc-SRS-PosBasedOnPRS-Serving-r16* indicates whether the UE supports OLPC for SRS for positioning based on PRS from the serving cell in the same band. The UE can include this field only if the UE supports *NR-DL-PRS-ProcessingCapability-r16* defined in TS 37.355 [22], and *srs-PosResources-r16*. Otherwise, the UE does not include this field;  - *olpc-SRS-PosBasedOnSSB-Neigh-r16* indicates whether the UE supports OLPC for SRS for positioning based on SSB from the neighbouring cell in the same band. The UE can include this field only if the UE supports *srs-PosResources-r16*. Otherwise, the UE does not include this field;  - *olpc-SRS-PosBasedOnPRS-Neigh-r16* indicates whether the UE supports OLPC for SRS for positioning based on PRS from the neighbouring cell in the same band. The UE can include this field only if the UE supports *olpc-SRS-PosBasedOnPRS-Serving-r16*. Otherwise, the UE does not include this field;  - *maxNumberPathLossEstimatePerServing-r16* indicates the maximum number of pathloss estimates that the UE can simultaneously maintain for all the SRS resource sets for positioning per serving cell in addition to the up to four pathloss estimates that the UE maintains per serving cell for the PUSCH/PUCCH/SRS transmissios. The UE shall include this field if the UE supports any of *olpc-SRS-PosBasedOnPRS-Serving-r16, olpc-SRS-PosBasedOnSSB-Neigh-r16* and *olpc-SRS-PosBasedOnPRS-Neigh-r16.* Otherwise, the UE does not include this field. | Band | No | N/A | N/A |
| ***oneSlotPeriodicTRS-r16***  Indicates whether the UE supports one-slot periodic TRS configuration only when no two consecutive slots are indicated as downlink slots by *tdd-UL-DL-ConfigurationCommon* or *tdd-UL-DL-ConfigDedicated*. If the UE supports this feature, the UE needs to report *csi-RS-ForTracking*. | Band | No | TDD only | FR1 only |
| ***outOfOrderOperationDL-r16***  Indicates whether the UE supports out of order operation for DL. The UE that indicates support of this feature shall support *multiDCI-MultiTRP-r16.*  *- supportPDCCH-ToPDSCH-r16* indicates support out-of-order operation for PDCCH to PDSCH | Band | No | N/A | N/A |
| ***outOfOrderOperationUL-r16***  Indicates whether the UE supports out of order operation for UL. The UE that indicates support of this feature shall support *multiDCI-MultiTRP-r16.*  Note: Same closed loop index for power control across PUSCHs associated with different *CORESETPoolIndex* values is not supported by a UE indicating the support of this feature when TPC accumulation is enabled. | Band | No | N/A | N/A |
| ***overlapPDSCHsFullyFreqTime-r16***  Indicates whether the UE support PDSCHs with fully overlapping Resource Elements. The UE that indicates support of this feature shall support *multiDCI-MultiTRP-r16.*  Note: A UE may assume that its maximum receive timing difference between the DL transmissions from two TRPs is within a Cyclic Prefix | Band | No | N/A | N/A |
| ***overlapPDSCHsInTimePartiallyFreq-r16***  Indicates whether the UE support PDSCHs with partially overlapping Resource Elements. The UE that indicates support of this feature shall support *multiDCI-MultiTRP-r16.* | Band | No | N/A | N/A |
| ***overlapRateMatchingEUTRA-CRS-r16***  Indicates whether the UE supports two LTE-CRS overlapping rate matching patterns within a part of NR carrier using 15 kHz SCS overlapping with a LTE carrier. If the UE supports this feature, the UE needs to report *multipleRateMatchingEUTRA-CRS-r16*. | Band | No | N/A | FR1 only |
| ***pdsch-256QAM-FR2***  Indicates whether the UE supports 256QAM modulation scheme for PDSCH for FR2 as defined in 7.3.1.2 of TS 38.211 [6]. | Band | No | N/A | FR2 only |
| ***pdsch-MappingTypeB-Alt-r16***  Indicates whether the UE supports PDSCH Type B scheduling of length 9 and 10 OFDM symbols, and DMRS shift for length-10 symbols. If the UE supports this feature, the UE needs to report *pdsch-MappingTypeB*. | Band | No | N/A | FR1 only |
| ***periodicBeamReport***  Indicates whether UE supports periodic 'CRI/RSRP' or 'SSBRI/RSRP' reporting using PUCCH formats 2, 3 and 4 in one slot. | Band | Yes | N/A | N/A |
| ***powerBoosting-pi2BPSK***  Indicates whether UE supports power boosting for pi/2 BPSK, when applicable as defined in 6.2 of TS 38.101-1 [2]. This capability is not applicable to IAB-MT. | Band | No | TDD only | FR1 only |
| ***ptrs-DensityRecommendationSetDL***  For each supported sub-carrier spacing, indicates preferred threshold sets for determining DL PTRS density. It is mandated for FR2. For each supported sub-carrier spacing, this field comprises:  - two values of *frequencyDensity*;  - three values of *timeDensity*. | Band | CY | N/A | N/A |
| ***ptrs-DensityRecommendationSetUL***  For each supported sub-carrier spacing, indicates preferred threshold sets for determining UL PTRS density. For each supported sub-carrier spacing, this field comprises:  - two values of *frequencyDensity*;  - three values of *timeDensity*;  - five values of *sampleDensity*. | Band | No | N/A | N/A |
| ***pucch-SpatialRelInfoMAC-CE***  Indicates whether the UE supports indication of *PUCCH-spatialrelationinfo* by a MAC CE per PUCCH resource. It is mandatory for FR2 and optional for FR1. | Band | CY | N/A | N/A |
| ***pusch-256QAM***  Indicates whether the UE supports 256QAM modulation scheme for PUSCH as defined in 6.3.1.2 of TS 38.211 [6]. | Band | No | N/A | N/A |
| ***pusch-TransCoherence***  Defines support of the uplink codebook subset by the UE for UL precoding for PUSCH transmission as described in clause 6.1.1.1 of TS 38.214 [12]. UE indicated support of partial coherent codebook subset shall also support non-coherent codebook subset. UE indicated support of full coherent codebook subset shall also support partial and non-coherent codebook subset. | Band | No | N/A | N/A |
| ***rateMatchingLTE-CRS***  Indicates whether the UE supports receiving PDSCH with resource mapping that excludes the REs determined by the higher layer configuration LTE-carrier configuring common RS, as specified in TS 38.214 [12]. | Band | Yes | N/A | N/A |
| ***separateCRS-RateMatching-r16***  Indicates whether the UE supports rate match around configured CRS patterns which is associated with *CORESETPoolIndex* (if configured) and are applied to the PDSCH scheduled with a DCI detected on a CORESET with the same value of *CORESETPoolIndex*. The UE that indicates support of this feature shall support *multiDCI-MultiTRP-r16* and *overlapRateMatchingEUTRA-CRS-r16.* This is only applicable for 15kHz SCS. | Band | No | N/A | FR1 only |
| ***semi-PersistentL1-SINR-Report-PUCCH-r16***  Indicates whether the UE supports semi-persistent L1-SINR report on PUCCH. The UE indicating support of this feature shall include at least one of the following capabilities:  - *supportReportFormat1-2OFDM-syms-r16* indicates support of report on PUCCH formats over 1 – 2 OFDM symbols once per slot (or piggybacked on a PUSCH)  - *supportReportFormat4-14OFDM-syms-r16* indicates support of report on PUCCH formats over 4 – 14 OFDM symbols once per slot (or piggybacked on a PUSCH).  The UE indicating support of this feature shall also indicate support of *ssb-csirs-SINR-measurement-r16.* | Band | No | N/A | N/A |
| ***semi-PersistentL1-SINR-Report-PUSCH-r16***  Indicates whether the UE supports semi-persistent L1-SINR report on PUSCH. The UE indicating support of this feature shall also indicate support of *ssb-csirs-SINR-measurement-r16.* | Band | No | N/A | N/A |
| ***simul-SpatialRelationUpdatePUCCHResGroup-r16***  Indicates whether the UE support PUCCH resource groups per BWP for simultaneous spatial relation update. The UE indicating support of this also indicates the capabilities of supported SRS resources and maximum supported spatial relations for the supported bands using *supportedSRS-Resources, maxNumberConfiguredSpatialRelations* and *pucch-SpatialRelInfoMAC-CE*. | Band | No | N/A | N/A |
| ***simulTX-SRS-AntSwitchingIntraBandUL-CA-r16***  Indicates whether the UE support simultaneous transmission of SRS on different CCs for intra-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 intra-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 intra-band UL CA.  - *supportSRS-AntennaSwitching* Indicates whether the UE support simultaneous transmission of SRS for antenna switching on different CCs in overlapped symbol(s) for intra-band UL CA. | Band | No | N/A | N/A |
| ***simulSRS-MIMO-TransWithinBand-r16***  Indicates the number of SRS resources for positioning and SRS resource for MIMO on a symbol within a band across multiple CCs. The UE can include this field only if the UE supports *srs-PosResources-r16*. Otherwise, the UE does not include this field. | Band | No | N/A | N/A |
| ***simulSRS-TransWithinBand-r16***  Indicates the number of SRS resources for positioning on a symbol within a band across multiple CCs. The UE can include this field only if the UE supports *srs-PosResources-r16*. Otherwise, the UE does not include this field. | Band | No | N/A | N/A |
| ***simultaneousReceptionDiffTypeD-r16***  Indicates whether the UE supports simultaneous reception with different QCL Type D reference signal as specified in TS38.213 [11]. | Band | No | N/A | FR2 only |
| ***spatialRelations***  Indicates whether the UE supports spatial relations. The capability signalling comprises the following parameters.  - *maxNumberConfiguredSpatialRelations, maxNumberConfiguredSpatialRelations-v16xy* indicates the maximum number of configured spatial relations per CC for PUCCH and SRS. It is not applicable to FR1 and applicable to FR2 only. The UE is mandated to report 16 or higher values;  - *maxNumberActiveSpatialRelations* indicates the maximum number of active spatial relations with regarding to PUCCH and SRS for PUSCH, per BWP per CC. It is not applicable to FR1 and applicable and mandatory to report one or higher value for FR2 only;  - *additionalActiveSpatialRelationPUCCH* indicates support of one additional active spatial relation for PUCCH. It is mandatory with capability signalling if *maxNumberActiveSpatialRelations* is set to n1;  - *maxNumberDL-RS-QCL-TypeD* indicates the maximum number of downlink RS resources used for QCL type D in the active TCI states and active spatial relation information, which is optional.  The UE is mandated to report *spatialRelations* for FR2. if *maxNumberConfiguredSpatialRelations-v16xy* is reported, UE shall report value *n96* in *maxNumberConfiguredSpatialRelations* and the UE may assume that the value reported in *maxNumberConfiguredSpatialRelations* is used by Rel-15 gNB and ignored by gNB Rel-16 and beyond. | Band | FD | N/A | FD |
| ***spatialRelationsSRS-Pos-r16***  Indicates whether the UE supports spatial relations for SRS for positioning. It is only applicable for FR2. The capability signalling comprises the following parameters.  - *spatialRelation-SRS-PosBasedOnSSB-Serving-r16* indicates whether the UE supports spatial relation for SRS for positioning based on SSB from the serving cell in the same band. The UE can include this field only if the UE supports *srs-PosResources-r16*. Otherwise, the UE does not include this field;  - *spatialRelation-SRS-PosBasedOnCSI-RS-Serving-r16* indicates whether the UE supports spatial relation for SRS for positioning based on CSI-RS from the serving cell in the same band. The UE can include this field only if the UE supports *spatialRelation-SRS-PosBasedOnSSB-Serving-r16*. Otherwise, the UE does not include this field;  - *spatialRelation-SRS-PosBasedOnPRS-Serving-r16* indicates whether the UE supports spatial relation for SRS for positioning based on PRS from the serving cell in the same band. The UE can include this field only if the UE supports any of DL PRS Resources for DL AoD, DL PRS Resources for DL-TDOA or DL PRS Resources for Multi-RTT defined in TS37.355 [22], or *srs-PosResources-r16*. Otherwise, the UE does not include this field;  - *spatialRelation-SRS-PosBasedOnSRS-r16* indicates whether the UE supports spatial relation for SRS for positioning based on SRS in the same band. The UE can include this field only if the UE supports *srs-PosResources-r16*. Otherwise, the UE does not include this field;  - *spatialRelation-SRS-PosBasedOnSSB-Neigh-r16* indicates whether the UE supports spatial relation for SRS for positioning based on SSB from the neighbouring cell in the same band. The UE can include this field only if the UE supports *spatialRelation-SRS-PosBasedOnSSB-Serving-r16*. Otherwise, the UE does not include this field;  - *spatialRelation-SRS-PosBasedOnPRS-Neigh-r16* indicates whether the UE supports spatial relation for SRS for positioning based on PRS from the neighbouring cell in the same band. The UE can include this field only if the UE supports *spatialRelation-SRS-PosBasedOnPRS-Serving-r16*. Otherwise, the UE does not include this field; | Band | No | N/A | FR2 |
| ***sp-BeamReportPUCCH***  Indicates support of semi-persistent 'CRI/RSRP' or 'SSBRI/RSRP' reporting using PUCCH formats 2, 3 and 4 in one slot. | Band | No | N/A | N/A |
| ***sp-BeamReportPUSCH***  Indicates support of semi-persistent 'CRI/RSRP' or 'SSBRI/RSRP' reporting on PUSCH. | Band | No | N/A | N/A |
| ***sps-r16***  Indicates whether the UE support of up to 8 configured SPS configurations in a BWP of a serving cell and up to 32 configured SPS configurations in a cell group. This field includes the following parameters:  - *maxNumberConfigsPerBWP-r16* indicates the maximum number of active SPS configurations in a BWP of a serving cell.  - *maxNumberConfigsAllCC-r16* indicates the maximum number of active SPS 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 supports of *downlinkSPS*.  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 |
| ***srs-AssocCSI-RS***  Parameters for the calculation of the precoder for SRS transmission based on channel measurements using associated NZP CSI-RS resource (srs-AssocCSI-RS) as described in clause 6.1.1.2 of TS 38.214 [12]. UE supporting this feature shall also indicate support of non-codebook based PUSCH transmission.  This capability signalling includes list of the following parameters:  - *maxNumberTxPortsPerResource* indicates the maximum number of Tx ports in a resource;  - *maxNumberResourcesPerBand* indicates the maximum number of resources across all CCs within a band simultaneously;  *-* *totalNumberTxPortsPerBand* indicates the total number of Tx ports across all CCs within a band simultaneously. | Band | No | N/A | N/A |
| ***ssb-csirs-SINR-measurement-r16***  Indicates the limitations of the UE support of SSB/CSI-RS for L1-SINR measurement.  This capability signalling includes list of the following parameters:  Per slot limitations:  - *maxNumberSSB-CSIRS-OneTx-CMR-r16* indicates the maximum number of SSB/CSI-RS (1TX) for Channel Measurement Report  - *maxNumberCSI-IM-NZP-IMR-res-r16* indicates the maximum number of CSI-IM/NZP-IMR resources  - maxNumberCSIRS-2Tx-res-r16 indicates the maximum number of CSI-RS (2TX) resources for Channel Measurement Report  Memory limitations:  - *maxNumberSSB-CSIRS-res-r16* indicates the max number of SSB/CSI-RS resources as Channel Measurement Report  - *maxNumberCSI-IM-NZP-IMR-res-mem-r16* indicates the maximum number of CSI-IM/NZP-IMR resources  Other limitations:  - *supportedCSI-RS-Density-CMR-r16* indicates supported density of CSI-RS for Channel Measurement Report.  - *maxNumberAperiodicCSI-RS-Res-r16* indicates the maximum number of aperiodic CSI-RS resources across all CCs configured to measure L1-SINR (including CMR and IMR) shall not exceed MD\_1  - *supportedSINR-meas-r16* indicates the supported SINR measurements. It contains values {*ssbWithCSI-IM*, *ssbWithNZP-IMR*, *csirsWithNZP-IMR*, *csi-RSWithoutIMR*} representing {SSB as CMR with dedicated CSI-IM, SSB as CMR with dedicated NZP IMR, CSI-RS as CMR with dedicated NZP IMR configured, CSI-RS as CMR without dedicated IMR configured}. UE supporting this feature shall always support CSI-RS as CMR with dedicated IMR configured.  UE indicating support of this feature shall also support *periodicBeamReport* and *aperiodicBeamReport* or *sp-BeamReportPUCCH* and *sp-BeamReportPUSCH.* UE indicating support of *ssb-csirs-SINR-measurement-r16* shall support periodic and aperiodic L1-SINR report.  NOTE 1: The reference slot duration is the shortest slot duration defined for the frequency range where the reported band belongs.  NOTE 2: For *maxNumberSSB-CSIRS-res-r16* and *maxNumberCSI-IM-NZP-IMR-res-mem-r16* the configured CSI-RS resources for both active and inactive BWPs are counted.  NOTE 3: For *maxNumberSSB-CSIRS-OneTx-CMR-r16, maxNumberCSI-IM-NZP-IMR-res-r16* and *maxNumberCSIRS-2Tx-res-r16*, CSI-RS resources configured as CMR without dedicated IMR are counted both as CMR and IMR.  NOTE 4: For *maxNumberSSB-CSIRS-OneTx-CMR-r16*, *maxNumberCSI-IM-NZP-IMR-res-r16*, *maxNumberCSIRS-2Tx-res-r16*, *maxNumberAperiodicCSI-RS-Res-r16*, a SSB/CSI-RS resource is counted within the duration of a reference slot in which the corresponding reference signals are transmitted | Band | No | N/A | N/A |
| ***support64CandidateBeamRS-BFR-r16***  Indicates UE support of configuring maximum 64 candiate beam RSs per BWP per CC. | Band | No | N/A | N/A |
| ***supportCodeWordSoftCombining-r16***  Indicates whether UE supports codeword soft combining for FDMSchemeB. UE indicates support of this feature depends on whether the *supportFDM-SchemeB-r16* is also supported. | Band | No | N/A | N/A |
| ***supportFDM-SchemeA-r16***  Indicates whether UE supports single DCI based FDMSchemeA. | Band | No | N/A | N/A |
| ***supportInter-slotTDM-r16***  Indicates whether UE supports single-DCI based inter-slot TDM. This capability signalling includes the following:  - *supportRepNumPDSCH-TDRA-r16* indicates support of RepNumR16 in PDSCH-TimeDomainResourceAllocation and the maximum value of RepNumR16  - *maxTBS-Size-r16* indicates maximum TBS size. Absent of the value indicates 'no restriction'.  - *maxNumberTCI-states-r16* indicates the maximum number of TCI states. | Band | No | N/A | N/A |
| ***supportNewDMRS-Port-r16***  Indicates whether UE supports of new DMRS port entry {0,2,3}. UE supports this feature should indicate support *singleDCI-SDM-scheme-r16* for the band. | Band | No | N/A | N/A |
| ***supportTDM-SchemeA-r16***  Indicates whether UE supports single DCI based TDMSchemeA. The capability signalling includes the maximum TBS size. | Band | No | N/A | N/A |
| ***supportTwoPortDL-PTRS-r16***  Indicates whether UE supports 2-port DL PT-RS. UE supports this feature should indicate support *singleDCI-SDM-scheme-r16* for the band. | Band | No | N/A | n/A |
| ***tci-StatePDSCH***  Defines support of TCI-States for PDSCH. The capability signalling comprises the following parameters:  - *maxNumberConfiguredTCIstatesPerCC* indicates the maximum number of configured TCI-states per CC for PDSCH. For FR2, the UE is mandated to set the value to 64. For FR1, the UE is mandated to set these values to the maximum number of allowed SSBs in the supported band;  - *maxNumberActiveTCI-PerBWP* indicates the maximum number of activated TCI-states per BWP per CC, including control and data. If a UE reports X active TCI state(s), it is not expected that more than X active QCL type D assumption(s) for any PDSCH and any CORESETs for a given BWP of a serving cell become active for the UE. The UE shall include this field.  Note the UE is required to track only the active TCI states.  The UE is mandated to report *tci-StatePDSCH*. | Band | Yes | N/A | N/A |
| ***trs-AdditionalBandwidth-r16***  Indicates the UE supported TRS bandwidths, 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.  Value *trs-AddBW-Set1* indicates 28, 32, 36, 40, 44, 48 RBs.  Value *trs-AddBW-Set2* indicates 32, 36, 40, 44, 48 RBs. | Band | No | FDD only | FR1 only |
| ***twoPortsPTRS-UL***  Defines whether UE supports PT-RS with 2 antenna ports for UL transmission. | Band | No | N/A | N/A |
| ***ue-PowerClass, ue-PowerClass-v1610***  For FR1, if the UE supports the different UE power class than the default UE power class as defined in clause 6.2 of TS 38.101-1 [2], the UE shall report the supported UE power class in this field. For FR2, UE shall report the supported UE power class as defined in clause 6 and 7 of TS 38.101-2 [3] in this field. This capability is not applicable to IAB-MT. | Band | Yes | N/A | N/A |
| ***uplinkBeamManagement***  Defines support of beam management for UL. This capability signalling comprises the following parameters:  - *maxNumberSRS-ResourcePerSet-BM* indicates the maximum number of SRS resources per SRS resource set configurable for beam management, supported by the UE.  - *maxNumberSRS-ResourceSet* indicates the maximum number of SRS resource sets configurable for beam management, supported by the UE.  If the UE does not set *beamCorrespondenceWithoutUL-BeamSweeping* to *supported*, the UE shall report this capability. This feature is optional for the UE that supports beam correspondence without uplink beam sweeping as defined in clause 6.6, TS 38.101-2 [3].  NOTE: The network uses *maxNumberSRS-ResourceSet* to determine the maximum number of SRS resource sets that can be configured to the UE for periodic/semi-persistent/aperiodic configurations as below:   |  |  | | --- | --- | | Maximum number of SRS resource sets across all time domain behaviour (periodic/semi-persistent/aperiodic) reported in *maxNumberSRS-ResourceSet* | Additional constraint on the maximum number of SRS resource sets configured to the UE for each supported time domain behaviour (periodic/semi-persistent/aperiodic) | | 1 | 1 | | 2 | 1 | | 3 | 1 | | 4 | 2 | | 5 | 2 | | 6 | 2 | | 7 | 4 | | 8 | 4 | | Band | No | N/A | FR2 only |

*Next change*

#### 4.2.7.2a *SharedSpectrumChAccessParamsPerBand*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Definitions for parameters | Per | M | FDD-TDD DIFF | FR1-FR2 DIFF |
| ***ul-DynamicChAccess-r16***  Indicates whether the UE supports UL channel access for dynamic channel access mode.  Support of this feature is mandatory if UE supports any of the deployment scenarios A.2, B, C, D and E in Annex B.3 of TS 38.300 [28] with dynamic channel access mode. | Band | CY | N/A | N/A |
| ***ul-Semi-StaticChAccess-r16***  Indicates whether the UE supports UL channel access for semi-static channel access mode.  Support of this feature is mandatory if UE supports any of the deployment scenarios A.2, B, C, D and E in Annex B.3 of TS 38.300 [28] with semi-static channel access mode. | Band | CY | N/A | N/A |
| ***ssb-RRM-DynamicChAccess-r16***  Indicates whether the UE supports SSB-based RRM for dynamic channel access mode.  Support of this feature is mandatory if UE supports any of the deployment scenarios A.1, A.2, B, C, D and E in Annex B.3 of TS 38.300 [28] with dynamic channel access mode. | Band | CY | N/A | N/A |
| ***ssb-RRM-Semi-StaticChAccess-r16***  Indicates whether the UE supports SSB-based RRM for semi-static channel access mode, when SMTC window is no longer than the fixed frame period.  Support of this feature is mandatory if UE supports any of the deployment scenarios A.1, A.2, B, C, D and E in Annex B.3 of TS 38.300 [28] with semi-static channel access mode. | Band | CY | N/A | N/A |
| ***mib-Acquisition-r16***  Indicates whether the UE supports acquiring MIB on an unlicensed cell for SpCell.  Support of this feature is mandatory if UE supports any of the deployment scenarios B, C, D and E in Annex B.3 of TS 38.300 [28]. | Band | CY | N/A | N/A |
| ***ssb-RLM-DynamicChAccess-r16***  Indicates whether the UE supports SSB-based RLM for dynamic channel access mode.  Support of this feature is mandatory if UE supports any of the deployment scenarios B, C, D and E in Annex B.3 of TS 38.300 [28] with dynamic channel access mode. | Band | CY | N/A | N/A |
| ***ssb-RLM-Semi-StaticChAccess-r16***  Indicates whether the UE supports SSB-based RLM for semi-static channel access mode, when SMTC window is no longer than the fixed frame period.  Support of this feature is mandatory if UE supports any of the deployment scenarios B, C, D and E in Annex B.3 of TS 38.300 [28] with semi-static channel access mode. | Band | CY | N/A | N/A |
| ***sib1-Acquisition-r16***  Indicates whether the UE supports acquiring SIB1 on an unlicensed cell for PCell.  Support of this feature is mandatory if UE supports any of the deployment scenarios C and D in Annex B.3 of TS 38.300 [28]. | Band | CY | N/A | N/A |
| ***extRA-ResponseWindow-r16***  Indicates whether the UE supports the configuration of maximum length of RAR window with a value larger than 10ms and up to 40ms by decoding of the 2 LSBs of SFN in the DCI format 1\_0 for 4-step RA type. Support of this feature is mandatory if the UE supports any of the deployment scenarios B, C, D and E in Annex B.3 of TS 38.300 [28]. | Band | CY | N/A | N/A |
| ***ssb-BFD-CBD-dynamicChannelAccess-r16***  Indicates whether the UE supports SSB based Beam Failure Detection and Candidate Beam Detection with NSSBQCL for dynamic channel access mode. | Band | No | N/A | N/A |
| ***ssb-BFD-CBD-semi-staticChannelAccess-r16***  Indicates whether the UE supports SSB based Beam Failure Detection and Candidate Beam Detection with NSSBQCL for semi-static channel access mode. | Band | No | N/A | N/A |
| ***csi-RS-BFD-CBD-r16***  Indicates whether the UE supports CSI-RS based Beam Failure Detection and Candidate Beam Detection for shared spectrum operation. | Band | No | N/A | N/A |
| ***ul-ChannelBW-SCell-10mhz-r16***  Indicates whether the UE supports 10 MHz of LBT bandwidth for an SCell. A UE that supports this feature shall also support *ul-DynamicChAccess-r16* or *ul-Semi-StaticChAccess-r16*. | Band | No | N/A | N/A |
| ***rssi-ChannelOccupancyReporting-r16***  Indicates whether the UE supports RSSI measurements and channel occupancy reporting. | Band | No | N/A | N/A |
| ***srs-StartAnyOFDM-Symbol-r16***  Indicates whether the UE supports transmitting SRS starting in all symbols (0 to 13) of a slot. This capability is also applicable to frequency band that does not require shared spectrum access. | Band | No | N/A | N/A |
| ***searchSpaceFreqMonitorLocation-r16***  Indicates the maximum number of frequency domain locations supported by the UE, for a search space set configuration with *freqMonitorLocations-r16*. | Band | No | N/A | N/A |
| ***coreset-RB-Offset-r16***  Indicates whether the UE supports CORESET configuration with *rb-Offset-r16*. This capability is also applicable to frequency band that does not require shared spectrum access. | Band | No | N/A | N/A |
| ***cgi-Acquisition-r16***  Indicates whether the UE supports acquisition of CGI information from a neighbouring NR unlicensed cell in an unlicensed carrier by reading SIB1 of the neighbouring unlicensed cell and reporting the acquired information to the network. | Band | No | N/A | N/A |
| ***configuredUL-Tx-r16***  Indicates whether the UE supports configuration of enableConfiguredUL-r16 and enable transmission of higher-layer configured UL (SRS, PUCCH, CG-PUSCH, etc) when SFI field in DCI 2\_0 is configured but DCI 2\_0 is not detected. | Band | No | N/A | N/A |
| ***prach-Wideband-r16***  Indicates whether the UE supports enhanced PRACH design for operation with shared spectrum channel access by adopting a single long ZC sequence, with ZC sequence = 1151 for 15 kHz and ZC sequence = 571 for 30 kHz. | Band | No | N/A | N/A |
| ***dci-AvailableRB-Set-r16***  Indicates whether the UE supports monitoring DCI 2\_0 to read *availableRB-Sets-r16*. | Band | No | N/A | N/A |
| ***dci-ChOccupancyDuration-r16***  Indicates whether the UE supports monitoring DCI 2\_0 to read COT duration. | Band | No | N/A | N/A |
| ***typeB-PDSCH-length-r16***  Indicates whether the UE supports 1. Type B PDSCH length {3, 5, 6, 8, 9, 10, 11, 12, 13} without DMRS shift due to CRS collision. This capability is also applicable to frequency band that does not require shared spectrum access. | Band | No | N/A | N/A |
| ***searchSpaceSetGroupSwitchingwithDCI-r16***  Indicates whether the UE supports switching between two groups of search space sets with DCI 2\_0 monitoring that comprises of the following functional components:  - Monitor DCI 2\_0 with a search space set switching field;  - Support switching the search space set group with PDCCH decoding in group 1;  - Support a timer to switch back to original search space set group;  - Monitor DCI 2\_0 for channel occupancy time and use the end of channel occupancy time to switch back to the original search space set group.  The UE can switch search space set groups for different cells independently, unless the UE supports *jointSearchSpaceGroupSwitchingAcrossCells-r16*. The UE supports search space set group switching capability-1: P=25/25/25 symbols for µ=0/1/2, unless the UE supports *jointSearchSpaceGroupSwitchingAcrossCells-r16*. | Band | No | N/A | N/A |
| ***searchSpaceSetGroupSwitchingwithoutDCI-r16***  Indicates whether the UE supports switching between two groups of search space sets without DCI 2\_0 monitoring (i.e. implicit PDCCH decoding) that comprises of the following functional components:  - Support switching the search space set group with PDCCH decoding in group 1;  - Support a timer to switch back to original search space set group.  The UE can switch search space set groups for different cells independently, unless the UE supports *jointSearchSpaceGroupSwitchingAcrossCells-r16*. The UE supports search space set group switching capability-1: P=25/25/25 symbols for µ=0/1/2, unless the UE supports *jointSearchSpaceGroupSwitchingAcrossCells-r16*. | Band | No | N/A | N/A |
| ***searchSpaceSetGroupSwitchingcapability2-r16***  Indicates whether the UE supports search space set group switching Capability-2: P=10/12/22 symbols for µ = 0/1/2 SCS. If the UE supports this feature, the UE needs to report *searchSpaceSetGroupSwitchingwithDCI-r16* or *searchSpaceSetGroupSwitchingwithoutDCI-r16*. | Band | No | N/A | N/A |
| ***non-numericalPDSCH-HARQ-timing-r16***  Indicates whether the UE supports configuration of a value for dl-DataToUL-ACK indicating an inapplicable time to report HARQ ACK. | Band | No | N/A | N/A |
| ***enhancedDynamicHARQ-codebook-r16***  Indicates whether the UE supports enhanced dynamic HARQ codebook supporting grouping of HARQ ACK and triggering the retransmission of HARQ ACK in each groups. The enhanced dynamic HARQ codebook comprises of the following functional components:  - Support of bit fields signalling PDSCH HARQ group index and NFI in DCI 1\_1 (configuration of nfi-TotalDAI-Included);  - Support of bit field in DCI 0\_1 for other group total DAI if configured. (configuration of ul-TotalDAI-Included);  - Support the retransmission of HARQ ACK (pdsch-HARQ-ACK-Codebook = enhancedDynamic-r16).  This capability is also applicable to frequency band that does not require shared spectrum access. | Band | No | N/A | N/A |
| ***oneShotHARQ-feedback-r16***  Indicates whether the UE supports one shot HARQ ACK feedback comprised of the following functional components:  - Support feedback of type 3 HARQ-ACK codebook, triggered by a DCI 1\_1 scheduling a PDSCH;  - Support feedback of type 3 HARQ-ACK codebook, triggered by a DCI 1\_1 without scheduling a PDSCH using a reserved FDRA value.  This capability is also applicable to frequency band that does not require shared spectrum access. | Band | No | N/A | N/A |
| ***multiPUSCH-UL-grant-r16***  Indicates whether the UE supports scheduling up to 8 PUSCH with a single DCI 0\_1. | Band | No | N/A | N/A |
| ***csi-RS-RLM-r16***  Indicates whether the UE supports CSI-RS based RLM for NR-Unlicensed. | Band | No | N/A | N/A |
|  |  |  |  |  |
| ***csi-RSRP-AndRSRQ-MeasWithSSB-r16***  Indicates whether the UE can perform CSI-RSRP and CSI-RSRQ measurement as specified in TS 38.215 [13], where CSI-RS resource is configured with an associated SS/PBCH in shared spectrum channel access. If the UE supports this feature, the UE needs to report *maxNumberCSI-RS-RRM-RS-SINR*. | Band | No | N/A | N/A |
| ***csi-RSRP-AndRSRQ-MeasWithoutSSB-r16***  Indicates whether the UE can perform CSI-RSRP and CSI-RSRQ measurement as specified in TS 38.215 [13], where CSI-RS resource is configured for a cell that transmits SS/PBCH block and without an associated SS/PBCH block in shared spectrum channel access. If the UE supports this feature, the UE needs to report *maxNumberCSI-RS-RRM-RS-SINR*. | Band | No | N/A | N/A |
| ***csi-SINR-Meas-r16***  Indicates whether the UE can perform CSI-SINR measurements based on configured CSI-RS resources as specified in TS 38.215 [13] in shared spectrum channel access. If the UE supports this feature, the UE needs to report *maxNumberCSI-RS-RRM-RS-SINR*. UE indicating support of this feature shall indicate support of *csi-RSRP-AndRSRQ-MeasWithSSB-r16.* | Band | No | N/A | N/A |
| ***ssb-AndCSI-RS-RLM-r16***  Indicates whether the UE can perform radio link monitoring procedure based on measurement of SS/PBCH block and CSI-RS as specified in TS 37.213 [xx] and TS 38.133 [5]. If the UE supports this feature, the UE needs to report *maxNumberResource-CSI-RS-RLM*.  UE indicating support of this feature shall indicate support of*csi-RS-RLM-r16* and either *csi-RSRP-AndRSRQ-MeasWithoutSSB-r16* or *csi-SINR-Meas-r16*. | Band | No | N/A | N/A |
| ***csi-RS-CFRA-ForHO-r16***  Indicates whether the UE can perform reconfiguration with sync using a contention free random access with 4-step RA type on PRACH resources that are associated with CSI-RS resources of the target cell in shared spectrum channel access.  UE indicating support of this feature shall indicate support of either *csi-RSRP-AndRSRQ-MeasWithSSB-r16* or *csi-RSRP-AndRSRQ-MeasWithoutSSB-r16.* | Band | No | N/A | N/A |
| ***periodicAndSemi-PersistentCSI-RS-r16***  indicates whether the UE supports validating P/SP-CSI-RS reception when receiving a DCI granting a PDSCH over the same set of symbols, and when receiving a DCI triggering an A-CSI-RS over the same set of symbols. | Band | No | N/A | N/A |
| ***pusch-PRB-interlace-r16***  Indicates whether the UE supports PRB interlace frequency domain resource allocation for PUSCH. | Band | No | N/A | N/A |
| ***pucch-F0-F1-PRB-Interlace-r16***  Indicates whether the UE supports PRB interlace frequency domain resource allocation for PUCCH format 0, 1, 2 and 3. | Band | No | N/A | N/A |
| ***occ-PRB-PF2-PF3-r16***  Indicates whether the UE supports OCC for PRB interface mapping for PUCCH format 2 and 3. If the UE supports this feature, the UE needs to report *pucch-F0-F1-PRB-Interlace-r16*. | Band | No | N/A | N/A |
| ***extCP-rangeCG-PUSCH-r16***  Indicates whether the UE supports generating a CP extension of length longer than 1 symbol for Configured Grant PUSCH transmission. If the UE supports this feature, the UE needs to report *configuredUL-GrantType1* and/or *configuredUL-GrantType2*. | Band | No | N/A | N/A |
| ***configuredGrantWithReTx-r16***  Indicates whether the UE supports configured grant with retransmission in configured grant resource, comprised of retransmission timer, DFI monitoring and CG-UCI in CG-PUSCH. If the UE supports this feature, the UE needs to report *configuredUL-GrantType1* and/or *configuredUL-GrantType2*. | Band | No | N/A | N/A |
| ***ed-Threshold-r16***  Indicates whether the UE supports using ED threshold given by gNB for UL to DL COT sharing. A UE that supports this feature shall also support *ul-DynamicChAccess-r16*. | Band | No | N/A | N/A |
| ***ul-DL-COT-Sharing-r16***  Indicates whether the UE supports UL to DL COT sharing. A UE that supports this feature shall also support *ul-DynamicChAccess-r16*. | Band | No | N/A | N/A |
| ***mux-CG-UCI-HARQ-ACK-r16***  Indicates whether the UE supports multiplexing CG-UCI with HARQ ACK. If the UE supports this feature, the UE needs to report *configuredGrantWithReTx-r16*. | Band | No | N/A | N/A |
| ***cg-resourceConfig-r16***  Indicates whether the UE supports configuration of resources with *cg-nrofSlots-r16* and *cg-nrofPUSCH-InSlot-r16*. If the UE supports this feature, the UE needs to report *configuredUL-GrantType1* and/or *configuredUL-GrantType2*. | Band | No | N/A | N/A |
| ***dl-ReceptionLBT-subsetRB-r16***  Indicates whether the UE supports reception in a wideband carrier when LBT is successful in a subset of the configured RB sets, which are either contiguous or non-contiguous, of the carrier. | Band | No | N/A | N/A |
| ***dl-ReceptionIntraCellGuardband-r16***  Indicates whether the UE supports reception in the non-zero intra-cell guardband between contiguous RB sets in DL wideband carrier operation wider than 20MHz when LBT is successful only in a subset of RB sets. The UE indicates support of this capability shall also indicates support of*dl-ReceptionLBT-subsetRB-r16****.*** | Band | No | N/A | N/A |

*Next change*

#### 4.2.7.4 *CA-ParametersNR*

| Definitions for parameters | Per | M | FDD-TDD  DIFF | FR1-FR2  DIFF |
| --- | --- | --- | --- | --- |
| ***beamManagementType-r16***  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).  In this release of the specification, the UE shall only report value of '*ibm*'. | 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 |
| ***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 |
| ***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 |
| ***crossCarrierA-CSI-trigDiffSCS-r16***  Indicates the UE support of handling cross-carrier A-CSI trigger with different SCS. Value *higherA-CSI-SCS* indicates the UE support of PDCCH cell of lower SCS and A-CSI RS cell of higher SCS and value *lowerA-CSI-SCS* indicates the UE support of PDCCH cell of higher SCS and A-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 cell and scheduled cell are different.  Value *low-to-high* indicates UE supports scheduling cell of lower SCS to scheduled cell of higher SCS;  Value *high-to-low* indicates UE supports scheduling cell of higher SCS to scheduled cell of lower SCS;  Value *both* indicates UE supports both scheduling cell of lower SCS to scheduled cell of higher SCS and scheduling cell of higher SCS to scheduled cell of lower SCS. | BC | No | N/A | N/A |
| ***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 cell and scheduled cell are different.  Value *low-to-high* indicates UE supports scheduling cell of lower SCS to scheduled cell of higher SCS;  Value *high-to-low* indicates UE supports scheduling cell of higher SCS to scheduled cell of lower SCS;  Value *both* indicates UE supports both scheduling cell of lower SCS to scheduled cell of higher SCS and scheduling cell of higher SCS to scheduled cell of lower SCS. | 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 in active BWPs across all CCs, and across MCG and SCG in case of NR-DC. This parameter limits the total number of NZP-CSI-RS resources that the NW may configure across all CCs, and across MCG and SCG in case of NR-DC (irrespective of the associated codebook type). 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 in active BWPs across all CCs, and across MCG and SCG in case of NR-DC. This parameter limits the total number of ports that the NW may configure across all NZP-CSI-RS resources across all CCs, and across MCG and SCG in case of NR-DC (irrespective of the associated codebook type). 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 |
| ***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 |
| ***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-CarrierTypes-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-CarrierTypes-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-CarrierTypes-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 |
| ***dualPA-Architecture***  For band combinations with single-band with UL CA, this field indicates the support of dual PA. If absent in such band combinations, the UE supports single PA for all the ULs. For other band combinations, this field is not applicable. | 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, only if *simultaneousRxTxInterBandCA* is not present. | BC | No | TDD only | N/A |
| ***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 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 |
| ***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 as follow:  - class I: Non-contiguous CA separation class ≤ 100MHz  - class II: 100MHz < Non-contiguous CA separation class≤ 200MHz  - class III: 200MHz < Non-contiguous CA separation class <600MHz | BC | No | N/A | FR1 only |
| ***jointSearchSpaceGroupSwitchingAcrossCells-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 *searchSpaceSetGroupSwitchingwithDCI-r16* or *searchSpaceSetGroupSwitchingwithoutDCI-r16*. | BC | No | N/A | N/A |
| ***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-NonSharedTDD-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, 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-NonSharedTDD-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, the SUL in the same cell as in the NUL can also be configured for PUCCH transmission. | 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 |
| ***parallelTxMsgA-SRS-PUCCH-PUSCH-r16***  Indicates whether the UE supports parallel transmission of MsgA and SRS/ PUCCH/ PUSCH across CCs in an inter-band CA band combination. A UE supporting this feature shall also indicate support of *parallelTxPRACH-SRS-PUCCH-PUSCH*. | 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. | 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. | BC | No | N/A | N/A |
| ***pdcch-BlindDetectionCA-Mixed-r16***  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***. | BC | No | N/A | N/A |
| ***pdcch-BlindDetectionCA-Mixed-NonAlignedSpan-r16***  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 | 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.  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. | BC | No | N/A | N/A |
| ***pdcch-BlindDetectionMCG-UE-Mixed-r16, pdcch-BlindDetectionSCG-UE-Mixed-r16***  This field indicates mixed opration of two variants of the number of blind detections supported for MCG and SCG, respectively.  If a UE supports *pdcch-BlindDetectionCA-Mixed-r16*or *pdcch-BlindDetectionCA-Mixed-NonAlignedSpan-r16*, then the capability defined by *pdcch-BlindDetectionCA-Mixed-r16*or *pdcch-BlindDetectionCA-Mixed-NonAlignedSpan-r16* is applied to the 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. A UE that supports this feature shall also support *pdcch-Monitoring-r16*. UE indicating support of this feature shall also indicate support of ***pdcch-Monitoring-r16.*** | BC | No | N/A | N/A |
| ***pdcch-MonitoringCA-NonAlighedSpan-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***. | 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 |
| ***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 |
| ***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* Indicates whether the UE support simultaneous transmission of SRS for antenna switching on different CCs in overlapped symbol(s) for inter-band UL CA. | 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. 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]. | 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 |
| ***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 |
| ***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 |
| ***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. | BC | CY | N/A | N/A |
| ***twoPUCCH-Grp-CarrierTypes-r16***  Indicates carrier type(s) that can be mapped to a PUCCH group and also the carrier type 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 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 transmission.   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 licensed FDD’ 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. | BC | No | N/A | N/A |

*Next change*

#### 4.2.7.7 *FeatureSetUplink* parameters

| Definitions for parameters | Per | M | FDD-TDD  DIFF | FR1-FR2  DIFF |
| --- | --- | --- | --- | --- |
| ***scalingFactor***  Indicates the scaling factor to be applied to the band in the max data rate calculation as defined in 4.1.2. Value f0p4 indicates the scaling factor 0.4, f0p75 indicates 0.75, and so on. If absent, the scaling factor 1 is applied to the band in the max data rate calculation. | FS | No | N/A | N/A |
| ***cbgPUSCH-ProcessingType1-DifferentTB-PerSlot-r16***  Defines whether the UE capable of processing time capability 1 supports CBG based transmission with one or with up to two or with up to four or with up to seven unicast PUSCHs per slot per CC. | FS | No | N/A | N/A |
| ***cbgPUSCH-ProcessingType2-DifferentTB-PerSlot-r16***  Defines whether the UE capable of processing time capability 2 supports CBG based transmission with one or with up to two or with up to four or with up to seven unicast PUSCHs per slot per CC. | FS | No | N/A | N/A |
| ***crossCarrierSchedulingProcessing-DiffSCS-r16***  Indicates the UE cross carrier scheduling processing capability for UL carrier aggregation processing up to X unicast DCI scheduling for UL per scheduled CC. X is based on pair of (scheduling CC SCS, scheduled CC SCS) where a pair of (15,120), (15,60), (30,120) kHz SCS can have X = {1,2,4} while a pair of (15,30), (30,60), (60,120) kHz SCS can have X = {2}, and X applies per span in a slot of scheduling CC. | FS | No | N/A | N/A |
| ***dynamicSwitchSUL***  Indicates whether the UE supports supplemental uplink with dynamic switch (DCI based selection of PUSCH carrier). The UE supports this among a carrier on a band X and a band Y if it sets this capability parameter for both band X and band Y. | FS | No | N/A | N/A |
| ***featureSetListPerUplinkCC***  Indicates which features the UE supports on the individual UL carriers of the feature set (and hence of a band entry that refer to the feature set) by *FeatureSetUplinkPerCC-Id*. The order of the elements in this list is not relevant, i.e., the network may configure any of the carriers in accordance with any of the *FeatureSetUplinkPerCC-Id* in this list. A fallback per CC feature set resulting from the reported feature set per UL CC is not signalled but the UE shall support it. | FS | N/A | N/A | N/A |
| ***intraBandFreqSeparationUL, intraBandFreqSeparationUL-v1620***  Indicates UL frequency separation class the UE supports, which indicates a maximum frequency separation between lower edge of lowest CC and upper edge of highest CC in a frequency band, for intra-band non-contiguous CA. The UE sets the same value in the FeatureSetUplink of each band entry within a band. The values mhzX corresponds to the values XMHz defined in TS 38.101-2 [3]. It is mandatory to report for UE which supports UL non-contiguous CA in FR2.  If the UE sets the field *intraBandFreqSeparationUL-v1620* it shall set *intraBandFreqSeparationUL* (without suffix) to the nearest smaller value. | FS | CY | N/A | FR2 only |
| ***intraFreqDAPS-UL-r16***  Indicates whether UE supports enhanced uplink capabilities for intra-frequency DAPS handover. The UE only includes this capability signalling if *intraFreqDAPS-r16* is included in the *FeatureSetDownlink* for the same *FeatureSet*. The capability signalling comprises of the following parameters:  - *intraFreqMultiUL-TransmissionDAPS-r16* indicates whether the UE supports simultaneous UL transmission in source PCell and target PCell during a DAPS handover. The UE only includes this field if any of *intraFreqSemiStaticPowerSharingDAPS-Mode1-r16*, *intraFreqSemiStaticPowerSharingDAPS-Mode2-r16* or *intraFreqDynamicPowersSharingDAPS-r16* are included. Otherwise, the UE does not include this field.  - *intraFreqTwoTAGs-DAPS-r16* indicates whether the UE supports different timing advance groups in source PCell and intra-frequency target PCell. It is mandatory with capability signalling. | FS | No | N/A | N/A |
| ***multiPUCCH-r16***  Indicates whether the UE supports more than one PUCCH for HARQ-ACK transmission within a slot. This field includes the following parameters:  - *sub-SlotConfig-NCP-r16* indicates the sub-slot configuration for NCP;  - *sub-SlotConfig-ECP-r16* indicates the sub-slot configuration for ECP.  For NCP, the value *set1* denotes 7-symbol\*2, and *set2* denotes 2-symbol\*7 and 7-symbol\*2.  For ECP, the value *set1* denotes 6-symbol\*2, and *set2* denotes 2-symbol\*6 and 6-symbol\*2. | FS | No | N/A | N/A |
| ***mux-SR-HARQ-ACK-r16***  Indicates whether the UE supports SR/HARQ-ACK multiplexing once per subslot using a PUCCH (or HARQ-ACK piggybacked on a PUSCH) when SR/HARQ-ACK are supposed to be sent with different starting symbols in a subslot. | FS | No | N/A | N/A |
| ***offsetSRS-CB-PUSCH-Ant-Switch-fr1-r16***  Indicates whether UE requires minimum of 19 symbols offset between aperiodic SRS triggering and transmission for SRS for codebook based PUSCH and antenna switching.  UE indicating support of this shall indicate support of *supportedSRS-Resources.* | FS | No | N/A | FR1 only |
| ***offsetSRS-CB-PUSCH-PDCCH-MonitorSingleOcc-fr1-r16***  Indicates whether UE requires minimum of 19 symbols offset between aperiodic SRS triggering and transmission for SRS for codebook based PUSCH and antenna switching for the case of PDCCH monitoring on any span of up to 3 consecutive OFDM symbols of a slot.  UE indicating support of this shall indicate support of *supportedSRS-Resources.* | FS | No | N/A | FR1 only |
| ***offsetSRS-CB-PUSCH-PDCCH-MonitorAnyOccWithoutGap-fr1-r16***  Indicates whether UE requires minimum of 19 symbols offset between aperiodic SRS triggering and transmission for the case of PDCCH search space monitoring occasions in any symbol of the slot for Type 1-PDCCH common search space configured by dedicated RRC signaling, for a Type 3-PDCCH common search space, or for a UE-specific search space with the capability of supporting at least 44, 36, 22, and 20 blind decodes in a slot for 15 kHz, 30 kHz, 60kHz, and 120 kHz subcarrier spacing values respectively.  UE indicating support of this shall indicate support of *supportedSRS-Resources.* | FS | No | N/A | FR1 only |
| ***offsetSRS-CB-PUSCH-PDCCH-MonitorAnyOccWithGap-fr1-r16***  Indicates whether UE requires minimum of 19 symbols offset between aperiodic SRS triggering and transmission for SRS for codebook based PUSCH and antenna switching for the case of PDCCH search space monitoring occasions in any symbol of the slot with minimum time separation of two OFDM symbols for 15 kHz, four OFDM symbols for 30 kHz, seven OFDM symbols for 60 kHz with NCP, and 14OFDM symbols for 120kHz between two consecutive transmissions of PDCCH scrambled with C-RNTI, MCS-C-RNTI, or CS-RNTI for Type 1-PDCCH common search space configured by dedicated RRC signaling, for a Type 3-PDCCH common search space, or for a UE-specific search space, with the capability of supporting at least 44, 36, 22, and 20 blind decodes in a slot for 15 kHz, 30 kHz, 60kHz, and 120 kHz subcarrier spacing values respectively.  UE indicating support of this shall indicate support of *supportedSRS-Resources.* | FS | No | N/A | FR1 only |
| ***offsetSRS-CB-PUSCH-PDCCH-MonitorAnyOccWithSpanGap-fr1-r16***  Indicates whether UE requires minimum of 19 symbols offset between aperiodic SRS triggering and transmission for the case of PDCCH search space monitoring occasions in any symbol of the slot with minimum time separation between two consecutive transmissions of PDCCH with span up to two OFDM symbols for two OFDM symbols or span up to three OFDM symbols for four and seven OFDM symbols. Value set1 indicates the supported value set (X,Y) is (7,3), value set2 indicates the supported value set (X,Y) is (4,3) and (7,3) and value set 3 indicates the supported value set (X,Y) is (2,2), (4,3) and (7,3).  UE indicating support of this shall indicate support of *supportedSRS-Resources*. | FS | No | N/A | FR1 only |
| ***pa-PhaseDiscontinuityImpacts***  Indicates incapability motivated by impacts of PA phase discontinuity with overlapping transmissions with non-aligned starting or ending times or hop boundaries across carriers for intra-band (NG)EN-DC/NE-DC, intra-band CA and FDM based ULSUP. | FS | No | N/A | N/A |
| ***partialCancellationPUCCH-PUSCH-PRACH-TX-r16***  Indicates whether UE supports the partial cancellation of the configured PUCCH or PUSCH or PRACH transmission in set of symbols of a slot due to:  - Detection of a DCI format 2\_0 with a slot format value other than 255 that indicates a slot format with a subset of symbols from the set of symbols as downlink or flexible, and  - Detection of a DCI format 1\_0, DCI format 1\_1, DCI format 1\_2 or DCI format 0\_1 and DCI format 0\_2 indicating to the UE to receive CSI-RS or PDSCH in a subset of symbols from the set of symbols. | FS | No | N/A | N/A |
| ***pusch-ProcessingType1-DifferentTB-PerSlot***  Indicates whether the UE capable of processing time capability 1 supports transmission of up to two, four or seven unicast PUSCHs for several transport blocks in one serving cell within the same slot per CC that are multiplexed in time domain only. | FS | No | N/A | N/A |
| ***pusch-ProcessingType2***  Indicates whether the UE supports PUSCH processing capability 2. The UE supports it only if all serving cells are self-scheduled and if all serving cells in one band on which the network configured processingType2 use the same subcarrier spacing. This capability signalling comprises the following parameters for each sub-carrier spacing supported by the UE.  - *fallback* indicates whether the UE supports PUSCH processing capability 2 when the number of configured carriers is larger than *numberOfCarriers* for a reported value of *differentTB-PerSlot*. If *fallback* = 'sc', UE supports capability 2 processing time on lowest cell index among the configured carriers in the band where the value is reported, if *fallback* = 'cap1-only', UE supports only capability 1, in the band where the value is reported;  - *differentTB-PerSlot* indicates whether the UE supports processing type 2 for 1, 2, 4 and/or 7 unicast PUSCHs for different transport blocks per slot per CC; and if so, it indicates up to which number of CA serving cells the UE supports that number of unicast PUSCHs for different TBs. The UE shall include at least one of *numberOfCarriers* for 1, 2, 4 or 7 transport blocks per slot in this field if *pusch-ProcessingType2* is indicated. | FS | No | N/A | FR1 only |
| ***pusch-RepetitionTypeB-r16***  Indicates whether the UE supports PUSCH repetition type B, as specified in 6.1.2 of TS 38.214. | FS | No | N/A | N/A |
| ***pusch-SeparationWithGap***  Indicates whether the UE supports separation of two unicast PUSCHs with a gap, applicable to Sub-carrier spacings of 15 kHz, 30 kHz and 60 kHz only. For any two consecutive slots n and n+1, if there are more than 1 unicast PUSCH in either slot, the minimum time separation between starting time of any two unicast PUSCHs within the duration of these slots is 2 OFDM symbols for 15kHz, 4 OFDM symbols for 30kHz and 7 OFDM symbols for 60kHz. | FS | No | N/A | N/A |
| ***searchSpaceSharingCA-UL***  Defines whether the UE supports UL PDCCH search space sharing for carrier aggregation operation. | FS | No | N/A | N/A |
| ***simultaneousTxSUL-NonSUL***  Indicates whether the UE supports simultaneous transmission of SRS on an SUL/non-SUL carrier and PUSCH/PUCCH/SRS on the other UL carrier in the same cell. The UE supports simultaneous transmission on an SUL band X and a Non-SUL band Y if it sets this capability parameter for both band X and band Y. | FS | No | N/A | N/A |
| ***srs-PosResources-r16***  Indicates support of SRS for positioning. UE supporting this feature should also support open loop power control for positioning SRS based on SSB from the serving cell.  - *maxNumberSRS-PosResourceSetPerBWP-r16* Indicates the max number of SRS Resource Sets for positioning supported by UE per BWP*.*  - *maxNumberSRS-PosResourcePerBWP-r16* indicates the max number of SRS resources for positioning supported by UE per BWP, including periodic, semi-persistent, and aperiodic SRS;  - *maxNumberSRS-ResourcePerBWP-PerSlot-r16* indicates the max number of SRS resources configured by *SRS-Resource* and *SRS-PosResource-r16* supported by UE per BWP, including periodic, semi-persistent, and aperiodic SRS;  - *maxNumberPeriodicSRS-PosResourcPerBWP-r16* indicates the max number of periodic SRS resources for positioning supported by UE per BWP;  - *maxNumberPeriodicSRS-PosResourcePerBWP-PerSlot-r16* indicates the max number of periodic SRS resources for positioning supported by UE per BWP per slot | FS | No | N/A | N/A |
| ***srs-PosResourceAP-r16***  Indicates support of aperiodic SRS for positioning. The UE can include this field only if the UE supports *srs-PosResources-r16*. Otherwise, the UE does not include this field;  - *maxNumberAP-SRS-PosResourcPerBWP-r16* indicates the max number of aperiodic SRS resources for positioning supported by UE per BWP;  - *maxNumberAP-SRS-PosResourcePerBWP-PerSlot-r16* indicates the max number of aperiodic SRS resources for positioning supported by UE per BWP per slot. | FS | No | N/A | N/A |
| ***srs-PosResourceSP-r16***Indicates support of semi-persistent SRS for positioning. The UE can include this field only if the UE supports *srs-PosResources-r16*. Otherwise, the UE does not include this field;  - *maxNumberSP-SRS-PosResourcPerBWP-r16* indicates the max number of semi-persistent SRS resources for positioning supported by UE per BWP;  - *maxNumberSP-SRS-PosResourcePerBWP-PerSlot-r16* indicates the max number of semi-persistent SRS resources for positioning supported by UE per BWP per slot | FS | No | N/A | N/A |
| ***supportedSRS-Resources***  Defines support of SRS resources. The capability signalling comprising indication of:  - *maxNumberAperiodicSRS-PerBWP* indicates supported maximum number of aperiodic SRS resources that can be configured for the UE per each BWP  - *maxNumberAperiodicSRS-PerBWP-PerSlot* indicates supported maximum number of aperiodic SRS resources per slot in the BWP  - *maxNumberPeriodicSRS-PerBWP* indicates supported maximum number of periodic SRS resources per BWP  - *maxNumberPeriodicSRS-PerBWP-PerSlot* indicates supported maximum number of periodic SRS resources per slot in the BWP  - *maxNumberSemiPersistentSRS-PerBWP* indicate supported maximum number of semi-persistent SRS resources that can be configured for the UE per each BWP  - *maxNumberSemiPersistentSRS-PerBWP-PerSlot* indicates supported maximum number of semi-persistent SRS resources per slot in the BWP  - *maxNumberSRS-Ports-PerResource* indicates supported maximum number of SRS antenna port per each SRS resource.  If this field is not included, the UE supports one periodic, one aperiodic, no semi-persistent SRS resources per BWP and one periodic, one aperiodic, no semi-persistent SRS resources per BWP per slot and one SRS antenna port per SRS resource. | FS | FD | N/A | N/A |
| ***twoHARQ-ACK-Codebook-type1-r16***  Indicates whether the UE supports two HARQ-ACK codebooks with up to one subslot based HARQ-ACK codebook (i.e. slot-based + slot-based, or slot-based + subslot based) simultaneously constructed for supporting HARQ-ACK codebooks with different priorities at a UE. | FS | No | N/A | N/A |
| ***twoHARQ-ACK-Codebook-type2-r16***  Indicates whether the UE supports two subslot based HARQ-ACK codebooks simultaneously constructed for supporting HARQ-ACK codebooks with different priorities at a UE. | FS | No | N/A | N/A |
| ***twoPUCCH-Group***  Indicates whether two PUCCH group in CA with a same numerology across CCs for data and control channel [at a given time] is supported by the UE. For NR CA, two PUCCH group is supported with the same numerology across NR carriers for data and control channel at a given time. For (NG)EN-DC/NE-DC, two PUCCH group is supported with the same numerology across NR carriers for data and control channel at a given time, wherein an NR PUCCH group is configured in FR1 and another NR PUCCH group is configured in FR2. The UE supports two PUCCH groups with PUCCH on a band X and a band Y if it sets this capability parameter for both band X and band Y. | FS | No | N/A | N/A |
| ***twoPUCCH-Type1-r16***  Indicates whether the UE supports two PUCCH of format 0 or 2 for a single 7\*2-symbol subslot based HARQ-ACK codebook. | FS | No | N/A | N/A |
| ***twoPUCCH-Type2-r16***  Indicates whether the UE supports two PUCCH of format 0 or 2 for a single 2\*7-symbol subslot based HARQ-ACK codebook. | FS | No | N/A | N/A |
| ***twoPUCCH-Type3-r16***  Indicates whether the UE supports one PUCCH format 0 or 2 and one PUCCH format 1, 3 or 4 in the same subslot for a single 2\*7-symbol HARQ-ACK codebooks. | FS | No | N/A | N/A |
| ***twoPUCCH-Type4-r16***  Indicates whether the UE supports two PUCCH transmissions in the same subslot for a single 2\*7-symbol HARQ-ACK codebooks which are not covered by *twoPUCCH-Type2-r16* and *twoPUCCH-Type3-r16*. | FS | No | N/A | N/A |
| ***twoPUCCH-Type5-r16***  Indicates whether the UE supports two PUCCH of format 0 or 2 for two HARQ-ACK codebooks with one 7\*2-symbol subslot based HARQ-ACK codebook. When simultaneously configured with two slot-based HARQ-ACK codebooks, the capability for each HARQ-ACK codebook is subjected to the capability reported by *twoPUCCH-F0-2-ConsecSymbols.* | FS | No | N/A | N/A |
| ***twoPUCCH-Type6-r16***  Indicates whether the UE supports two PUCCH of format 0 or 2 in consecutive symbols for two HARQ-ACK codebooks with one 2\*7-symbol subslot based HARQ-ACK codebook. When simultaneously configured with two slot-based HARQ-ACK codebooks, the capability for each HARQ-ACK codebook is subjected to the capability reported by *twoPUCCH-F0-2-ConsecSymbols.* | FS | No | N/A | N/A |
| ***twoPUCCH-Type7-r16***  Indicates whether the UE supports two PUCCH of format 0 or 2 for two subslot based HARQ-ACK codebooks. | FS | No | N/A | N/A |
| ***twoPUCCH-Type8-r16***  Indicates whether the UE supports one PUCCH format 0 or 2 and one PUCCH format 1, 3 or 4 in the same subslot for HARQ-ACK codebooks with one 2\*7-symbol subslot based HARQ-ACK codebook. When simultaneously configured with two slot-based HARQ-ACK codebooks, the capability for each HARQ-ACK codebook is subjected to the capability reported by *onePUCCH-LongAndShortFormat*. | FS | No | N/A | N/A |
| ***twoPUCCH-Type9-r16***  Indicates whether the UE supports one PUCCH format 0 or 2 and one PUCCH format 1, 3 or 4 in the same subslot for two subslot based HARQ-ACK codebooks. | FS | No | N/A | N/A |
| ***twoPUCCH-Type10-r16***  Indicates whether the UE supports two PUCCH transmissions in the same subslot for two HARQ-ACK codebooks with one 2\*7-symbol subslot which are not covered by *twoPUCCH-Type5-r16* and *twoPUCCH-Type7-r16*. When simultaneously configured with two slot-based HARQ-ACK codebooks, the capability for each HARQ-ACK codebook is subjected to the capability reported by *twoPUCCH-AnyOthersInSlot.* | FS | No | N/A | N/A |
| ***twoPUCCH-Type11-r16***  Indicates whether the UE supports two PUCCH transmissions in the same subslot for two subslot based HARQ-ACK codebooks which are not covered by *twoPUCCH-Type6-r16* and *twoPUCCH-Type8-r16*. | FS | No | N/A | N/A |
| ***ul-CancellationCrossCarrier-r16***  Indicates whether the UE supports UL cancellation scheme for cross-carrier comprised of the following functional components:  - Supports group common DCI (i.e. DCI format 2\_4) for cancellation indication on a different DL CC than that scheduling PUSCH or SRS;  - UL cancellation for PUSCH. Cancellation is applied to each PUSCH repetition individually in case of PUSCH repetitions;  - UL cancellation for SRS symbols that overlap with the cancelled symbols. | FS | No | N/A | N/A |
| ***ul-CancellationSelfCarrier-r16***  Indicates whether the UE supports UL cancellation scheme for self-carrier comprised of the following functional components:  - Supports group common DCI (i.e. DCI format 2\_4) for cancellation indication on the same DL CC as that scheduling PUSCH or SRS;  - UL cancellation for PUSCH. Cancellation is applied to each PUSCH repetition individually in case of PUSCH repetitions;  - UL cancellation for SRS symbols that overlap with the cancelled symbols. | FS | No | N/A | N/A |
| ***ul-FullPwrMode-r16***  Indicates the UE support of UL full power transmission mode of *fullpower as specified in clause 6.1.1.1 of TS.38.214 [12]*. If the UE indicates this capability the UE also indicates the support of codebook based PUSCH MIMO transmission using *mimo-CB-PUSCH* and the support of PUSCH codebook coherency subset using *pusch-TransCoherence.* | FS | No | N/A | N/A |
| ***ul-FullPwrMode1-r16***  Indicates the UE support of UL full power transmission mode of *fullpowerMode1*. If the UE indicates this capability the UE also indicates the support of codebook based PUSCH MIMO transmission using *mimo-CB-PUSCH* and the support of PUSCH codebook coherency subset using *pusch-TransCoherence.* | FS | No | N/A | N/A |
| ***ul-FullPwrMode2-MaxSRS-ResInSet-r16***  Indicates the UE support of the maximum number of SRS resources in one SRS resource set with usage set to 'codebook' for uplink full power Mode 2 operation. If the UE indicates this capability the UE also indicates the support of codebook based PUSCH MIMO transmission using *mimo-CB-PUSCH* and the support of PUSCH codebook coherency subset using *pusch-TransCoherence.* A UE supports this feature shall support at least full power operation with single port. | FS | No | N/A | N/A |
| ***ul-FullPwrMode2-SRSConfig-diffNumSRSPorts-r16***  Indicates the UE supported SRS configuration with different number of antenna ports per SRS resource for uplink full power Mode 2 operation. The possible different number of antenna ports that can be configured for a SRS resource are as follow:  - value *p1-2* means that each SRS resource can be configured with 1 port or 2 ports  - value *p1-4* means that each SRS resource can be configured with 1 port or 4 ports  - value *p1-2-4* means that each SRS resource can be configured with 1 port or 2 ports or 4 ports  UE indicates support of this feature shall also indicate support of *ul-FullPwrMode2-MaxSRS-ResInSet.*  NOTE: The values *p1-2*, *p1-4* or *p1-2-4* can be used if *ul-FullPwrMode2-MaxSRS-ResInSet* is reported as *n2* or *n4*. | FS | No | N/A | N/A |
| ***ul-FullPwrMode2-TPMIGroup-r16***  Indicates the UE supported TPMI group(s) which delivers full power. The capability signalling comprises the following values:  - *twoPorts-r16* indicates a 2-bit bitmap  - *fourPortsNonCoherent-r16* indicates the TPMI groups {G0-3}  - *fourPortsPartialCoherent-r16* indicates the TPMI groups (G0-6)  UE indicates support of this feature shall also indicate support of *ul-FullPwrMode2-MaxSRS-ResInSet.*  NOTE 1: When a full coherent UE operates in mode 2, it reports TPMIs the same as a partial-coherent UE.  NOTE 2: For 4 port partial-coherent or full-coherent UE, UE can report: 2-port {2-bit bitmap} and one of 4-port non-coherent {G0~G3} and one of 4-port partial-coherent {G0~G6}  For 4 port non-coherent UE, UE can report: 2-port {2-bit bitmap} and one of 4-port non-coherent {G0~G3}  For 2 port UE, UE can report: 2-port {2-bit bitmap}  NOTE 3: A UE that supports this feature must report at least one of the values. | FS | No | N/A | N/A |
| ***ul-IntraUE-Mux-r16***  Indicates whether the UE supports intra-UE multiplexing/prioritization of overlapping PUCCH/PUCCH and PUCCH/PUSCH with two priority levels in the physical layer. This field includes the following parameters:  - *pusch-PreparationLowPriority-r16* indicates the additional number of symbols needed beyond the PUSCH preparation time for cancelling a low priority UL transmission;  - *pusch-PreparationHighPriority-r16* indicates the additional number of the preparation time needed for the high priority UL transmission that cancels a low priority UL transmission.  The value *sym0* denotes 0 symbol, *sym1* denotes one symbol, and so on. | FS | No | N/A | N/A |
| ***ul-MCS-TableAlt-DynamicIndication***  Indicates whether the UE supports dynamic indication of MCS table using MCS-C-RNTI for PUSCH. | FS | No | N/A | N/A |
| ***zeroSlotOffsetAperiodicSRS***  Indicates whether the UE supports 0 slot offset between aperiodic SRS triggering and transmission, for SRS for CB PUSCH and antenna switching on FR1. | FS | No | N/A | N/A |

*Next change*

#### 4.2.7.10 *Phy-Parameters*

| Definitions for parameters | Per | M | FDD-TDD  DIFF | FR1-FR2  DIFF |
| --- | --- | --- | --- | --- |
| ***absoluteTPC-Command***  Indicates whether the UE supports absolute TPC command mode. | UE | No | No | Yes |
| ***aggregationFactorSPS-DL-r16***  Indicates whether the UE supports configurable PDSCH aggregation factor ({1, 2, 4, 8}) per DL SPS configuration. The UE can include this feature only if the UE indicates supports of *downlinkSPS*. | UE | No | No | Yes |
| ***almostContiguousCP-OFDM-UL***  Indicates whether the UE supports almost contiguous UL CP-OFDM transmissions as defined in clause 6.2 of TS 38.101-1 [2]. | UE | No | No | Yes |
| ***bwp-SwitchingDelay***  Defines whether the UE supports DCI and timer based active BWP switching delay type1 or type2 specified in clause 8.6.2 of TS 38.133 [5]. It is mandatory to report type 1 or type 2. This capability is not applicable to IAB-MT. | UE | Yes | No | No |
| ***bwp-SwitchingMultiCCs-r16***  Indicates whether the UE supports incremental delay for DCI and timer based active BWP switching on multiple CCs simultaneously as specified in TS 38.133 [5]. The capability signalling comprises of the following:  - *type1-r16* indicates the delay value for type 1 BWP switching delay for type1 and has values of {100us, 200us}  - *type2-r16* indicates the delay value for type 2 BWP switching delay and has values of {200us, 400us, 800us, 1000us}  UE indicates support of this feature indicates support of *bwp-SwitchingDelay*, *bwp-SameNumerology* and *bwp-DiffNumerology*. | UE | No | No | No |
| ***cbg-FlushIndication-DL***  Indicates whether the UE supports CBG-based (re)transmission for DL using CBG flushing out information (CBGFI) as specified in TS 38.214 [12]. | UE | No | No | No |
| ***cbg-TransIndication-DL***  Indicates whether the UE supports CBG-based (re)transmission for DL using CBG transmission information (CBGTI) as specified in TS 38.214 [12]. | UE | No | No | No |
| ***cbg-TransIndication-UL***  Indicates whether the UE supports both in-order and out-of-order CBG-based (re)transmission for UL using CBG transmission information (CBGTI) as specified in TS 38.214 [12]. | UE | No | No | No |
| ***cbg-TransInOrderPUSCH-UL-r16***  Indicates whether the UE supports CBG-based re-transmission(s) of a TB using CBG transmission information (CBGTI) as specified in TS 38.214 [12] in the following two cases (both are considered as in-order CBG-based retransmission(s)):  1. if the initial PUSCH transmission was not cancelled due to gNB scheduling/indication/configuration; and  2. if the initial PUSCH transmission was cancelled due to gNB scheduling/indication/configuration and the following condition is satisfied: the UE is scheduled for a re-transmission of a CBG #N in a given TB when CBG #N-1 has been transmitted before or is scheduled in the same UL grant that includes CBG#N. | UE | No | No | No |
| ***cli-RSSI-FDM-DL-r16***  Indicates whether serving cell DL signal/channel (e.g. PDSCH/PDCCH) and CLI-RSSI FDMed reception is supported as specified in TS 38.215 [13]. | UE | No | TDD only | Yes |
| ***cli-SRS-RSRP-FDM-DL-r16***  Indicates whether serving cell DL signal/channel (e.g. PDSCH/PDCCH) and SRS-RSRP FDMed reception is supported as specified in TS 38.215 [13]. | UE | No | TDD only | Yes |
| ***codebookVariantsList-r16***  Indicates the list of *SupportedCSI-RS-Resource* applicable to the codebook types supported by the UE. | UE | No | No | No |
| ***configuredUL-GrantType1***  Indicates whether the UE supports Type 1 PUSCH transmissions with configured grant as specified in TS 38.214 [12] with UL-TWG-repK value of one. This applies only to non-shared spectrum channel access. For shared spectrum channel access, *configuredUL-GrantType1-r16* applies. | UE | No | No | No |
| ***configuredUL-GrantType2***  Indicates whether the UE supports Type 2 PUSCH transmissions with configured grant as specified in TS 38.214 [12] with UL-TWG-repK value of one. This applies only to non-shared spectrum channel access. For shared spectrum channel access, *configuredUL-GrantType2-r16* applies. | UE | No | No | No |
| ***cqi-TableAlt***  Indicates whether UE supports the CQI table with target BLER of 10^-5. | UE | No | No | Yes |
| ***crossSlotScheduling-r16***  Indicates whether UE supports dynamic indication of applicable minimum scheduling restriction by DCI format 0\_1 and 1\_1, and the minimum scheduling offset for PDSCH and aperiodic CSI-RS triggering offset (K0), and PUSCH (K2), and the extended value range for aperiodic CSI-RS triggering offset. Support of this feature is reported for licensed and unlicensed bands, respectively. When this field is reported, either of *non-SharedSpectrumChAccess-r16* or *sharedSpectrumChAccess-r16* shall be reported, at least. | UE | No | No | No |
| ***csi-ReportFramework***  See *csi-ReportFramework* in 4.2.7.2. For a band combination comprised of FR1 and FR2 bands, this parameter, if present, limits the corresponding parameter in *MIMO-ParametersPerBand*. | UE | Yes | No | N/A |
| ***csi-ReportFrameworkExt-r16***  See *csi-ReportFramework* in 4.2.7.2. For a band combination comprised of FR1 and FR2 bands, this parameter, if present, limits the corresponding parameter in *MIMO-ParametersPerBand*. | UE | No | No | N/A |
| ***csi-ReportWithoutCQI***  Indicates whether UE supports CSI reporting with report quantity set to 'CRI/RI/i1' as defined in clause 5.2.1.4 of TS 38.214 [12]. | UE | No | No | Yes |
| ***csi-ReportWithoutPMI***  Indicates whether UE supports CSI reporting with report quantity set to 'CRI/RI/CQI' as defined in clause 5.2.1.4 of TS 38.214 [12]. | UE | No | No | Yes |
| ***csi-RS-CFRA-ForHO***  Indicates whether the UE can perform reconfiguration with sync using a contention free random access with 4-step RA type on PRACH resources that are associated with CSI-RS resources of the target cell. This applies only to non-shared spectrum channel access. For shared spectrum channel access, *csi-RS-CFRA-ForHO-r16* applies. | UE | No | No | No |
| ***csi-RS-IM-ReceptionForFeedback***  See *csi-RS-IM-ReceptionForFeedback* in 4.2.7.2. For a band combination comprised of FR1 and FR2 bands, this parameter, if present, limits the corresponding parameter in *MIMO-ParametersPerBand*. | UE | Yes | No | N/A |
| ***csi-RS-ProcFrameworkForSRS***  See *csi-RS-ProcFrameworkForSRS* in 4.2.7.2. For a band combination comprised of FR1 and FR2 bands, this parameter, if present, limits the corresponding parameter in *MIMO-ParametersPerBand*. | UE | No | No | N/A |
| ***csi-TriggerStateNon-ActiveBWP-r16***  Indicates whether the UE supports CSI trigger states containing non-active BWP. | UE | No | No | No |
| ***dci-DL-PriorityIndicator-r16***  Indicates whether the UE supports the priority indicator field configured in DCI formats 1\_1 and 1\_2 in a BWP when configured to monitor both DCI formats 1\_1 and 1\_2 in the BWP. | UE | No | No | No |
| ***dci-Format1-2And0-2-r16***  Indicates whether the UE supports monitoring DCI format 1\_2 for DL scheduling and monitoring DCI format 0\_2 for UL scheduling. | UE | No | No | No |
| ***dci-UL-PriorityIndicator-r16***  Indicates whether the UE supports the priority indicator field configured in DCI formats 0\_1 and 0\_2 in a BWP when configured to monitor both DCI formats 0\_1 and 0\_2 in the BWP. A UE supporting this feature shall also support *ul-IntraUE-Mux-r16* and *dci-Format1-2And0-2-r16*. | UE | No | No | No |
| ***defaultSpatialRelationPathlossRS-r16***  Indicates the UE support of default spatial relation and pathloss reference RS for dedicated PUCCH/SRS and PUSCH. The UE indicating support of this also indicates the capabilities of supported SRS resources and maximum supported spatial relations for the supported FR2 bands using *supportedSRS-Resources* and *maxNumberConfiguredSpatialRelations.* | UE | No | No | FR2 only |
| ***dl-64QAM-MCS-TableAlt***  Indicates whether the UE supports the alternative 64QAM MCS table for PDSCH. | UE | No | No | Yes |
| ***dl-SchedulingOffset-PDSCH-TypeA***  Indicates whether the UE supports DL scheduling slot offset (K0) greater than 0 for PDSCH mapping type A. | UE | Yes | Yes | Yes |
| ***dl-SchedulingOffset-PDSCH-TypeB***  Indicates whether the UE supports DL scheduling slot offset (K0) greater than 0 for PDSCH mapping type B. | UE | Yes | Yes | Yes |
| ***downlinkSPS***  Indicates whether the UE supports PDSCH reception based on semi-persistent scheduling. One SPS configuration is supported per cell group. This applies only to non-shared spectrum channel access. For shared spectrum channel access, *downlinkSPS-r16* applies. | UE | No | No | No |
| ***dynamicBetaOffsetInd-HARQ-ACK-CSI***  Indicates whether the UE supports indicating beta-offset (UCI repetition factor onto PUSCH) for HARQ-ACK and/or CSI via DCI among the RRC configured beta-offsets. | UE | No | No | No |
| ***dynamicHARQ-ACK-Codebook***  Indicates whether the UE supports HARQ-ACK codebook dynamically constructed by DCI(s). This field shall be set to *supported*. | UE | Yes | No | No |
| ***dynamicHARQ-ACK-CodeB-CBG-Retx-DL***  Indicates whether the UE supports HARQ-ACK codebook size for CBG-based (re)transmission based on the DAI-based solution as specified in TS 38.213 [11]. | UE | No | No | No |
| ***dynamicPRB-BundlingDL***  Indicates whether UE supports DCI-based indication of the PRG size for PDSCH reception. | UE | No | No | No |
| ***dynamicSFI***  Indicates whether the UE supports monitoring for DCI format 2\_0 and determination of slot formats via DCI format 2\_0. This applies only to non-shared spectrum channel access. For shared spectrum channel access, *dynamicSFI-r16* applies. | UE | No | Yes | Yes |
| ***dynamicSwitchRA-Type0-1-PDSCH***  Indicates whether the UE supports dynamic switching between resource allocation Types 0 and 1 for PDSCH as specified in TS 38.212 [10]. | UE | No | No | No |
| ***dynamicSwitchRA-Type0-1-PUSCH***  Indicates whether the UE supports dynamic switching between resource allocation Types 0 and 1 for PUSCH as specified in TS 38.212 [10]. | UE | No | No | No |
| ***enhancedPowerControl-r16***  For DG-PUSCH, one bit (separately from SRI) in UL grant is used to indicate the P0 value if SRI is present in the UL grant, and 1 or 2 bits is used to indicate the P0 value if SRI is not present in the UL grant. | UE | No | No | Yes |
| ***extendedCG-Periodicities-r16***  Indicates that the UE supports extended periodicities for CG Type 1 (if the UE indicates *configuredUL-GrantType1* capability) or CG Type 2 (if the UE indicates *configuredUL-GrantType2* capability) as specified by *periodicityExt-r16* field of IE *ConfiguredGrantConfig* in TS 38.331 [9]. | UE | No | No | No |
| ***extendedSPS-Periodicities-r16***  Indicates that the UE supports extended periodicities for downlink SPS as specified by *periodicityExt-r16* field of IE *SPS-Config* in TS 38.331 [9]. | UE | No | No | No |
| ***fdd-PCellUL-TX-AllUL-Subframe-r16***  Indicates whether the UE configured with *tdm-patternConfig-r16* can be semi-statically configured with LTE UL transmissions in all UL subframes not limited to the reference tdm-pattern (only for type 1 UE) in case of LTE FDD PCell. UE indicating support can configure its LTE FDD PCell with this feature on the band combination which indicates support of either *tdm-restrictionFDD-endc-r16*  or *tdm-restrictionDualTX-FDD-endc-r16*. | UE | No | FDD only | FR1 only |
| ***harqACK-CB-SpatialBundlingPUCCH-Group-r16***  Indicates whether the UE supports HARQ-ACK codebook type and HARQ-ACK spatial bundling configuration per PUCCH group as specified in TS 38.213 [11]. If the UE indicates support of this, it also supports two NR PUCCH groups with same numerology by setting *twoPUCCH-Group* to *supported.* | UE | No | No | No |
| ***harqACK-separateMultiDCI-MultiTRP-r16***  Indicates whether the UE support of separate HARQ-ACK. The capability signalling of this feature includes the following:  - *maxNumberLongPUCCHs-r16* indicates maximum number of long PUCCHs within a slot for separate HARQ-Ack  The UE that indicates support of this feature shall support *multiDCI-MultiTRP-r16.* | UE | No | No | No |
| ***harqACK-jointMultiDCI-MultiTRP-r16***  Indicates whether the UE support of joint HARQ-ACK. The UE that indicates support of this feature shall support *multiDCI-MultiTRP-r16.* | UE | No | No | No |
| ***pucch-F0-2WithoutFH***  Indicates whether the UE supports transmission of a PUCCH format 0 or 2 without frequency hopping. When included, the UE does not support PUCCH formats 0 and 2 without frequency hopping. When not included, the UE supports the PUCCH formats 0 and 2 without frequency hopping. | UE | Yes | No | Yes |
| ***pucch-F1-3-4WithoutFH***  Indicates whether the UE supports transmission of a PUCCH format 1, 3 or 4 without frequency hopping. When included, the UE does not support PUCCH formats 1, 3 and 4 without frequency hopping. When not included, the UE supports the PUCCH formats 1, 3 and 4 without frequency hopping. | UE | Yes | No | Yes |
| ***interleavingVRB-ToPRB-PDSCH***  Indicates whether the UE supports receiving PDSCH with interleaved VRB-to-PRB mapping as specified in TS 38.211 [6]. | UE | Yes | No | No |
| ***interSlotFreqHopping-PUSCH***  Indicates whether the UE supports inter-slot frequency hopping for PUSCH transmissions. | UE | No | No | No |
| ***intraSlotFreqHopping-PUSCH***  Indicates whether the UE supports intra-slot frequency hopping for PUSCH transmission, except for PUSCH scheduled by PDCCH in the Type1-PDCCH common search space before RRC connection establishment. | UE | Yes | No | Yes |
| ***maxLayersMIMO-Adaptation-r16***  Indicates whether the UE supports the network configuration of *maxMIMO-Layers* per DL BWP. If the UE supports this feature, the UE needs to report *maxLayersMIMO-Indication*. | UE | No | No | Yes |
| ***maxLayersMIMO-Indication***  Indicates whether the UE supports the network configuration of *maxMIMO-Layers* as specified in TS 38.331 [9]. | UE | Yes | No | No |
| ***maxNumberPathlossRS-update-r16***  Indicates the maximum number of configured pathloss reference RSs for PUSCH/PUCCH/SRS by RRC that the UE can support for MAC-CE based pathloss reference RS update. | UE | No | No | No |
| ***maxNumberSearchSpaces***  Indicates whether the UE supports up to 10 search spaces in an SCell per BWP. | UE | No | No | No |
| ***maxNumberSRS-PosPathLossEstimateAllServingCells-r16***  Indicates the maximum number of pathloss estimates that the UE can simultaneously maintain for all the SRS resource sets for positioning across all cells in addition to the up to four pathloss estimates that the UE maintains per serving cell for the PUSCH/PUCCH/SRS transmissions. The UE shall include this field if the UE supports any of *olpc-SRS-PosBasedOnPRS-Serving-r16, olpc-SRS-PosBasedOnSSB-Neigh-r16* and *olpc-SRS-PosBasedOnPRS-Neigh-r16.* Otherwise, the UE does not include this field; | UE | No | No | No |
| ***maxNumberSRS-PosSpatialRelationsAllServingCells-r16***  Indicates the maximum number of maintained spatial relations for all the SRS resource sets for positioning across all serving cells in addition to the spatial relations maintained spatial relations per serving cell for the PUSCH/PUCCH/SRS transmissions. It is only applied for FR2. The UE can include this field only if the UE supports any of *spatialRelation-SRS-PosBasedOnSSB-Serving-r16*, *spatialRelation-SRS-PosBasedOnCSI-RS-Serving-r16*, *spatialRelation-SRS-PosBasedOnPRS-Serving-r16*, *spatialRelation-SRS-PosBasedOnSSB-Neigh-r16* or *spatialRelation-SRS-PosBasedOnPRS-Neigh-r16*. Otherwise, the UE does not include this field; | UE | No | No | FR2 only |
| ***maxTotalResourcesForAcrossFreqRanges-r16***  Indicates the maximum total number of SSB/CSI-RS/CSI-IM resources for beam management, pathloss measurement, BFD, RLM and new beam identification across frequency ranges (both FR1 and FR2) that the UE supports.  The capability signalling includes the following:  - *maxNumberResWithinSlotAcrossCC-AcrossFR-r16* indicates maximum total number of SSB/CSI-RS/CSI-IM resources configured to measure within a slot across all CCs across all frequency ranges for any of L1-RSRP measurement, L1-SINR measurement, pathloss measurement, BFD, RLM and new beam identification.  - *maxNumberResAcrossCC-AcrossFR-r16* indicates maximum total number of SSB/CSI-RS/CSI-IM resources configured across all CCs across all frequency ranges for any of L1-RSRP measurement, L1-SINR measurement, pathloss measurement, BFD, RLM and new beam identification.  gNB takes into conjunction of this feature and the features *maxTotalResourcesForOneFreqRange-r16****,*** *beamManagementSSB-CSI-RS, maxNumberCSI-RS-BFD, maxNumberSSB-BFD* and *maxNumberCSI-RS-SSB-CBD* when configuring SSB/CSI-RS/CSI-IM resources for beam management, pathloss measurement, BFD, RLM and new beam identification across frequency ranges. The signalled values apply to the shortest slot duration defined in any FR(s) that are supported by the UE. The “configured to measure” RS is counted within the duration of a reference slot in which the corresponding reference signals are transmitted | UE | No | No | No |
| ***maxTotalResourcesForOneFreqRange-r16***  Indicates the maximum total number of SSB/CSI-RS/CSI-IM resources for beam management, pathloss measurement, BFD, RLM and new beam identification for one frequency range that the UE supports.  The capability signalling includes the following:  *- maxNumberResWithinSlotAcrossCC-OneFR-r16* indicates maximum total number of SSB/CSI-RS/CSI-IM resources configured to measure within a slot across all CCs in one frequency range for any of L1-RSRP measurement, L1-SINR measurement, pathloss measurement, BFD, RLM and new beam identification  *- maxNumberResAcrossCC-OneFR-r16* indicates maximum total number of SSB/CSI-RS/CSI-IM resources configured across all CCs in one frequency range for any of L1-RSRP measurement, L1-SINR measurement, pathloss measurement, BFD, RLM and new beam identification.  gNB takes into conjunction of this feature and the features *beamManagementSSB-CSI-RS, maxNumberCSI-RS-BFD, maxNumberSSB-BFD* and *maxNumberCSI-RS-SSB-CBD* when configuring SSB/CSI-RS/CSI-IM resources for beam management, pathloss measurement, BFD, RLM and new beam identification across one frequency range.  NOTE 1: The reference slot duration is the shortest slot duration defined for the reported FR supported by the UE.  NOTE 2: For RS configured for new beam identification, they are always counted regardless of beam failure event.  NOTE 3: The *maxNumberResWithinSlotAcrossCC-AcrossFR-r16* only counts those in active BWP but the *maxNumberResAcrossCC-AcrossFR-r16* counts all configured including both active and inactive BWP.  NOTE 4: The “configured to measure” RS is counted within the duration of a reference slot in which the corresponding reference signals are transmitted | UE | No | No | Yes |
| ***monitoringDCI-SameSearchSpace-r16***  Indicates whether the UE supports monitoring both DCI format 0\_1/1\_1 and DCI format 0\_2/1\_2 in the same search space. If the UE supports this feature, the UE needs to report *dci-Format1-2And0-2-r16*. | UE | No | No | No |
| ***multipleCORESET***  Indicates whether the UE supports configuration of up to two PDCCH CORESETs per BWP in addition to the CORESET with CORESET-ID 0 in the BWP. If this is not supported, the UE supports one PDCCH CORESET per BWP in addition to the CORESET with CORESET-ID 0 in the BWP. It is mandatory with capability signaling for FR2 and optional for FR1. | UE | CY | No | Yes |
| ***mux-HARQ-ACK-PUSCH-DiffSymbol***  Indicates whether the UE supports HARQ-ACK piggyback on a PUSCH with/without aperiodic CSI once per slot when the starting OFDM symbol of the PUSCH is different from the starting OFDM symbols of the PUCCH resource that HARQ-ACK would have been transmitted on. This applies only to non-shared spectrum channel access. For shared spectrum channel access, *mux-HARQ-ACK-PUSCH-DiffSymbol-r16* applies. | UE | Yes | No | Yes |
| ***mux-MultipleGroupCtrlCH-Overlap***  Indicates whether the UE supports more than one group of overlapping PUCCHs and PUSCHs per slot per PUCCH cell group for control multiplexing. | UE | No | No | Yes |
| ***mux-SR-HARQ-ACK-CSI-PUCCH-MultiPerSlot***  Indicates whether the UE supports multiplexing SR, HARQ-ACK and CSI on a PUCCH or piggybacking on a PUSCH more than once per slot when SR, HARQ-ACK and CSI are supposed to be sent with the same or different starting symbol in a slot. This applies only to non-shared spectrum channel access. For shared spectrum channel access, *mux-SR-HARQ-ACK-CSI-PUCCH-MultiPerSlot-r16* applies. | UE | No | No | Yes |
| ***mux-SR-HARQ-ACK-CSI-PUCCH-OncePerSlot***  *sameSymbol* indicates the UE supports multiplexing SR, HARQ-ACK and CSI on a PUCCH or piggybacking on a PUSCH once per slot, when SR, HARQ-ACK and CSI are supposed to be sent with the same starting symbols on the PUCCH resources in a slot. *diffSymbol* indicates the UE supports multiplexing SR, HARQ-ACK and CSI on a PUCCH or piggybacking on a PUSCH once per slot, when SR, HARQ-ACK and CSI are supposed to be sent with the different starting symbols in a slot. The UE is mandated to support the multiplexing and piggybacking features indicated by *sameSymbol* while the UE is optional to support the multiplexing and piggybacking features indicated by *diffSymbol*.  If the UE indicates *sameSymbol* in this field and does not support *mux-HARQ-ACK-PUSCH-DiffSymbol*, the UE supports HARQ-ACK/CSI piggyback on PUSCH once per slot, when the starting OFDM symbol of the PUSCH is the same as the starting OFDM symbols of the PUCCH resource(s) that would have been transmitted on.  If the UE indicates *sameSymbol* in this field and supports *mux-HARQ-ACK-PUSCH-DiffSymbol*, the UE supports HARQ-ACK/CSI piggyback on PUSCH once per slot for which case the starting OFDM symbol of the PUSCH is the different from the starting OFDM symbols of the PUCCH resource(s) that would have been transmitted on. This applies only to non-shared spectrum channel access. For shared spectrum channel access, *mux-SR-HARQ-ACK-CSI-PUCCH-OncePerSlot-r16* applies. | UE | FD | No | Yes |
| ***mux-SR-HARQ-ACK-PUCCH***  Indicates whether the UE supports multiplexing SR and HARQ-ACK on a PUCCH or piggybacking on a PUSCH once per slot, when SR and HARQ-ACK are supposed to be sent with the different starting symbols in a slot. This applies only to non-shared spectrum channel access. For shared spectrum channel access, *mux-SR-HARQ-ACK-PUCCH-r16* applies. | UE | No | No | Yes |
| ***nzp-CSI-RS-IntefMgmt***  Indicates whether the UE supports interference measurements using NZP CSI-RS. | UE | No | No | No |
| ***oneFL-DMRS-ThreeAdditionalDMRS-UL***  Defines whether the UE supports DM-RS pattern for UL transmission with 1 symbol front-loaded DM-RS with three additional DM-RS symbols. | UE | No | No | Yes |
| ***oneFL-DMRS-TwoAdditionalDMRS-UL***  Defines support of DM-RS pattern for UL transmission with 1 symbol front-loaded DM-RS with 2 additional DM-RS symbols and more than 1 antenna ports. | UE | Yes | No | Yes |
| ***onePortsPTRS***  Defines whether UE supports PT-RS with 1 antenna port in DL reception and/or UL transmission. It is mandatory with UE capability signalling for FR2 and optional for FR1. The left most in the bitmap corresponds to DL reception and the right most bit in the bitmap corresponds to UL transmission. | UE | CY | No | Yes |
| ***onePUCCH-LongAndShortFormat***  Indicates whether the UE supports transmission of one long PUCCH format and one short PUCCH format in TDM in the same slot. | UE | No | No | Yes |
| ***pCell-FR2***  Indicates whether the UE supports PCell operation on FR2. | UE | Yes | No | FR2 only |
| ***pdcch-MonitoringSingleOccasion***  Indicates whether the UE supports receiving PDCCH in a search space configured to be monitored within a single span of any three contiguous OFDM symbols in a slot with the capability of supporting at least 44 blind decodes in a slot for 15 kHz subcarrier spacing. | UE | No | No | FR1 only |
| ***pdcch-BlindDetectionCA***  Indicates PDCCH blind decoding capabilities supported by the UE for CA with more than 4 CCs as specified in TS 38.213 [11]. The field value is from 4 to 16.  NOTE: FR1-FR2 differentiation is not allowed in this release, although the capability signalling is supported for FR1-FR2 differentiation. | UE | No | No | No |
| ***pdcch-BlindDetectionMCG-UE***  Indicates PDCCH blind decoding capabilities supported for MCG when in NR DC. The field value is from 1 to 15. The UE sets the value in accordance with the constraints specified in TS 38.213 [11].  Additionally, if the UE does not report *pdcch-BlindDetectionCA*, and if X is the maximum number of CCs supported by the UE across all NR-DC band combinations then there is at least one parameter pair (X1, X2) such that X1 + X2 = X and the UE supports at least one NR-DC band combination with X1 CCs in MCG and X2 CCs in SCG and for which X1 <= *pdcch-BlindDetectionMCG-UE* and X2 <= *pdcch-BlindDetectionSCG-UE*. | UE | No | No | Yes |
| ***pdcch-BlindDetectionSCG-UE***  Indicates PDCCH blind decoding capabilities supported for SCG when in NR DC. The field value is from 1 to 15. The UE sets the value in accordance with the constraints specified in TS 38.213 [11].  Additionally, if the UE does not report *pdcch-BlindDetectionCA*, and if X is the maximum number of CCs supported by the UE across all NR-DC band combinations then there is at least one parameter pair (X1, X2) such that X1 + X2 = X and the UE supports at least one NR-DC band combination with X1 CCs in MCG and X2 CCs in SCG and for which X1 <= *pdcch-BlindDetectionMCG-UE* and X2 <= *pdcch-BlindDetectionSCG-UE*. | UE | No | No | Yes |
| ***pdcch-MonitoringAnyOccasionsWithSpanGapCrossCarrierSch-r16***  Indicates how the UE support of *pdcch-MonitoringAnyOccasionsWithSpanGap* in case of cross-carrier scheduling with different SCSs in the scheduling cell and the scheduled cell.  Value ‘Interpretation2’ indicates *pdcch-MonitoringAnyOccasionsWithSpanGap* is supported for the band of the scheduling/triggering/indicating cell.  Value ‘Interpretation3’ indicates *pdcch-MonitoringAnyOccasionsWithSpanGap* is supported in both the band of the scheduled/triggered/indicated cell and the band of the scheduling/triggering/indicating cell.  UE indicating support of these feature indicates support of *pdcch-MonitoringAnyOccasionsWithSpanGap* and *crossCarrierSchedulingDL-DiffSCS-r16*. | UE | No | No | No |
| ***pdsch-256QAM-FR1***  Indicates whether the UE supports 256QAM modulation scheme for PDSCH for FR1 as defined in 7.3.1.2 of TS 38.211 [6]. | UE | Yes | No | FR1 only |
| ***pdsch-MappingTypeA***  Indicates whether the UE supports receiving PDSCH using PDSCH mapping type A with less than seven symbols. This field shall be set to *supported*. | UE | Yes | No | No |
| ***pdsch-MappingTypeB***  Indicates whether the UE supports receiving PDSCH using PDSCH mapping type B. | UE | Yes | No | No |
| ***pdsch-RepetitionMultiSlots***  Indicates whether the UE supports receiving PDSCH scheduled by DCI format 1\_1 when configured with higher layer parameter *pdsch-AggregationFactor* > 1, as defined in 5.1.2.1 of TS 38.214 [12]. This applies only to non-shared spectrum channel access. For shared spectrum channel access, *pdsch-RepetitionMultiSlots-r16* applies. | UE | No | No | No |
| ***pdsch-RE-MappingFR1-PerSymbol/pdsch-RE-MappingFR1-PerSlot***  Indicates the maximum number of supported PDSCH Resource Element (RE) mapping patterns for FR1, each described as a resource (including NZP/ZP CSI-RS, CRS, CORESET and SSB) or bitmap. The number of patterns coinciding in a symbol in a CC and in a slot in a CC are limited by the respective capability parameters. Value n10 means 10 RE mapping patterns and n16 means 16 RE mapping patterns, and so on. The UE shall set the fields *pdsch-RE-MappingFR1-PerSymbol* and *pdsch-RE-MappingFR1-PerSlo*t to at least n10 and n16, respectively. In the exceptional case that the UE does not include the fields, the network may anyway assume that the UE supports the required minimum values. | UE | Yes | No | FR1 only |
| ***pdsch-RE-MappingFR2-PerSymbol/pdsch-RE-MappingFR2-PerSlot***  Indicates the maximum number of supported PDSCH Resource Element (RE) mapping patterns for FR2, each described as a resource (including NZP/ZP CSI-RS, CORESET and SSB) or bitmap. The number of patterns coinciding in a symbol in a CC and in a slot in a CC are limited by the respective capability parameters. Value n6 means 6 RE mapping patterns and n16 means 16 RE mapping patterns, and so on. The UE shall set the fields *pdsch-RE-MappingFR2-PerSymbol* and *pdsch-RE-MappingFR2-PerSlo*t to at least n6 and n16, respectively. In the exceptional case that the UE does not include the fields, the network may anyway assume that the UE supports the required minimum values. | UE | Yes | No | FR2 only |
| ***precoderGranularityCORESET***  Indicates whether the UE supports receiving PDCCH in CORESETs configured with CORESET-precoder-granularity equal to the size of the CORESET in the frequency domain as specified in TS 38.211 [6]. | UE | No | No | No |
| ***pre-EmptIndication-DL***  Indicates whether the UE supports interrupted transmission indication for PDSCH reception based on reception of DCI format 2\_1 as defined in TS 38.213 [11]. This applies only to non-shared spectrum channel access. For shared spectrum channel access, *pre-EmptIndication-DL-r16* applies. | UE | No | No | No |
| ***pucch-F2-WithFH***  Indicates whether the UE supports transmission of a PUCCH format 2 (2 OFDM symbols in total) with frequency hopping in a slot. This field shall be set to *supported*. | UE | Yes | No | Yes |
| ***pucch-F3-WithFH***  Indicates whether the UE supports transmission of a PUCCH format 3 (4~14 OFDM symbols in total) with frequency hopping in a slot. This field shall be set to *supported*. | UE | Yes | No | Yes |
| ***pucch-F3-4-HalfPi-BPSK***  Indicates whether the UE supports pi/2-BPSK for PUCCH format 3/4 as defined in 6.3.2.6 of TS 38.211 [6]. It is optional for FR1 and mandatory with capability signalling for FR2. This capability is not applicable to IAB-MT. | UE | CY | No | Yes |
| ***pucch-F4-WithFH***  Indicates whether the UE supports transmission of a PUCCH format 4 (4~14 OFDM symbols in total) with frequency hopping in a slot. | UE | Yes | No | Yes |
| ***pusch-RepetitionMultiSlots***  Indicates whether the UE supports transmitting PUSCH scheduled by DCI format 0\_1 when configured with higher layer parameter *pusch-AggregationFactor* > 1, as defined in clause 6.1.2.1 of TS 38.214 [12]. This applies only to non-shared spectrum channel access. For shared spectrum channel access, *pusch-RepetitionMultiSlots-r16* applies. | UE | Yes | No | No |
| ***pucch-Repetition-F1-3-4***  Indicates whether the UE supports transmission of a PUCCH format 1 or 3 or 4 over multiple slots with the repetition factor 2, 4 or 8. This applies only to non-shared spectrum channel access. For shared spectrum channel access, *pucch-Repetition-F1-3-4-r16* applies. | UE | Yes | No | No |
| ***pusch-HalfPi-BPSK***  Indicates whether the UE supports pi/2-BPSK modulation scheme for PUSCH as defined in 6.3.1.2 of TS 38.211 [6]. It is optional for FR1 and mandatory with capability signalling for FR2. This capability is not applicable to IAB-MT. | UE | CY | No | Yes |
| ***pusch-LBRM***  Indicates whether the UE supports limited buffer rate matching in UL as specified in TS 38.212 [10]. | UE | No | No | Yes |
| ***pusch-RepetitionTypeA-r16***  Indicates whether the UE supports PUSCH transmission with or without slot aggregation. Support of this field is reported for shared spectrum channel access and non-shared spectrum channel access, respectively. | UE | No | No | No |
| ***ra-Type0-PUSCH***  Indicates whether the UE supports resource allocation Type 0 for PUSCH as specified in TS 38.214 [12]. | UE | No | No | No |
| ***rateMatchingCtrlResrcSetDynamic***  Indicates whether the UE supports dynamic rate matching for DL control resource set. | UE | Yes | No | No |
| ***rateMatchingResrcSetDynamic***  Indicates whether the UE supports receiving PDSCH with resource mapping that excludes the REs corresponding to resource sets configured with RB-symbol level granularity indicated by *bitmaps* (see *patternType* in *RateMatchPattern* in TS 38.331[9]) based on dynamic indication in the scheduling DCI as specified in TS 38.214 [12]. | UE | No | No | No |
| ***rateMatchingResrcSetSemi-Static***  Indicates whether the UE supports receiving PDSCH with resource mapping that excludes the REs corresponding to resource sets configured with RB-symbol level granularity indicated by *bitmaps* and *controlResourceSet* (see *patternType* in *RateMatchPattern* in TS 38.331[9]) following the semi-static configuration as specified in TS 38.214 [12]. | UE | Yes | No | No |
| ***scs-60kHz***  Indicates whether the UE supports 60kHz subcarrier spacing for data channel in FR1 as defined in clause 4.2-1 of TS 38.211 [6]. | UE | No | No | FR1 only |
| ***semiOpenLoopCSI***  Indicates whether UE supports CSI reporting with report quantity set to 'CRI/RI/i1/CQI ' as defined in clause 5.2.1.4 of TS 38.214 [12]. | UE | No | No | Yes |
| ***semiStaticHARQ-ACK-Codebook***  Indicates whether the UE supports HARQ-ACK codebook constructed by semi-static configuration. | UE | Yes | No | No |
| ***simultaneousTCI-ActMultipleCC-r16***  Indicates the UE support of simultaneous TCI state activation across multiple CCs. If the UE indicates support of this for a FR, the UE shall support this on the supported bands of the indicated FR where the UE reports the support of TCI-states for PDSCH using *tci-StatePDSCH.* | UE | No | No | Yes |
| ***simultaneousSpatialRelationMultipleCC-r16***  Indicates the UE support of simultaneous spatial relation across multiple CCs for aperiodic and semi-persistent SRS. The UE indicating support of this also indicates the capabilities of maximum and active supported spatial relations for the supported FR2 bands using *maxNumberConfiguredSpatialRelations* and *maxNumberActiveSpatialRelations.* | UE | No | No | FR2 only |
| ***spatialBundlingHARQ-ACK***  Indicates whether the UE supports spatial bundling of HARQ-ACK bits carried on PUCCH or PUSCH per PUCCH group. With spatial bundling, two HARQ-ACK bits for a DL MIMO data is bundled into a single bit by logical "AND" operation. | UE | Yes | No | No |
| ***spatialRelationUpdateAP-SRS-r16***  Indicates the UE support of spatial relation update for AP-SRS using MAC CE. The UE indicating support of this also indicates the capabilities of supported SRS resources and maximum supported spatial relations for the supported FR2 bands using *supportedSRS-Resources* and *maxNumberConfiguredSpatialRelations.* | UE | No | No | FR2 only |
| ***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 NR SA and NR-DC (both MCG and SCG), 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 | No | No |
| ***sp-CSI-IM***  Indicates whether the UE supports semi-persistent CSI-IM. | UE | No | No | Yes |
| ***sp-CSI-ReportPUCCH***  Indicates whether UE supports semi-persistent CSI reporting using PUCCH formats 2, 3 and 4. This applies only to non-shared spectrum channel access. For shared spectrum channel access, *sp-CSI-ReportPUCCH-r16* applies. | UE | No | No | No |
| ***sp-CSI-ReportPUSCH***  Indicates whether UE supports semi-persistent CSI reporting using PUSCH. This applies only to non-shared spectrum channel access. For shared spectrum channel access, *sp-CSI-ReportPUSCH-r16* applies. | UE | No | No | No |
| ***sp-CSI-RS***  Indicates whether the UE supports semi-persistent CSI-RS. | UE | Yes | No | Yes |
| ***sps-ReleaseDCI-1-1-r16***  Indicates whether the UE supports SPS release by DCI format 1\_1. If the UE supports this feature, the UE needs to report *downlinkSPS*. | UE | No | No | No |
| ***sps-ReleaseDCI-1-2-r16***  Indicates whether the UE supports SPS release by DCI format 1\_2. If the UE supports this feature, the UE needs to report *downlinkSPS* and *dci-Format1-2And0-2-r16*. | UE | No | No | No |
| ***supportedDMRS-TypeDL***  Defines supported DM-RS configuration types at the UE for DL reception. Type 1 is mandatory with capability signaling. Type 2 is optional. If this field is not included, Type 1 is supported. | UE | FD | No | Yes |
| ***supportedDMRS-TypeUL***  Defines supported DM-RS configuration types at the UE for UL transmission. Support of both type 1 and type 2 is mandatory with capability signalling. If this field is not included, Type 1 is supported. | UE | FD | No | Yes |
| ***supportRepetitionZeroOffsetRV-r16***  Indicates whether UE supports the value 0 for the parameter *sequenceOffsetforRV*.  The UE indicating support of this capability shall also indicate support of *supportInter-slotTDM-r16* with *maxNumberTCI-states-r16* set to 2 for at least one band. | UE | No | No | No |
| ***supportRetx-Diff-CoresetPool-Multi-DCI-TRP-r16***  Indicates the UE support of retransmission scheduled by a different *CORESETPoolIndex* compared to the *CORESETPoolIndex* of the initial transmission, i.e., the UE is not expected to receive, for the same HARQ process ID, DCI from a different *CORESETPoolIndex* that schedules the retransmission for multi-DCI multi-TRP. This applies to both PDSCH and PUSCH retransmissions. | UE | No | No | No |
| ***targetSMTC-SCG-r16***  Indicates the support of configuration of SMTC of target SCG cell with field *targetCellSMTC-SCG*. | UE | No | No | No |
| ***tdd-MultiDL-UL-SwitchPerSlot***  Indicates whether the UE supports more than one switch points in a slot for actual DL/UL transmission(s). | UE | No | TDD only | Yes |
| ***tdd-PCellUL-TX-AllUL-Subframe-r16***  Indicates whether the UE configured with *tdm-patternConfig-r16* can be semi-statically configured with LTE UL transmissions in all UL subframes not limited to the reference tdm-pattern (only for type 1 UE) in case of TDD PCell. UE indicating support can configure LTE TDD PCell with this feature on the band combination which indicates support of *tdm-restrictionTDD-endc-r16*. | UE | No | TDD only | FR1 only |
| ***tpc-PUCCH-RNTI***  Indicates whether the UE supports group DCI message based on TPC-PUCCH-RNTI for TPC commands for PUCCH. | UE | No | No | Yes |
| ***tpc-PUSCH-RNTI***  Indicates whether the UE supports group DCI message based on TPC-PUSCH-RNTI for TPC commands for PUSCH. | UE | No | No | Yes |
| ***tpc-SRS-RNTI***  Indicates whether the UE supports group DCI message based on TPC-SRS-RNTI for TPC commands for SRS. | UE | No | No | Yes |
| ***twoDifferentTPC-Loop-PUCCH***  Indicates whether the UE supports two different TPC loops for PUCCH closed loop power control. | UE | Yes | Yes | Yes |
| ***twoDifferentTPC-Loop-PUSCH***  Indicates whether the UE supports two different TPC loops for PUSCH closed loop power control. | UE | Yes | Yes | Yes |
| ***twoFL-DMRS***  Defines whether the UE supports DM-RS pattern for DL reception and/or UL transmission with 2 symbols front-loaded DM-RS without additional DM-RS symbols.  The left most in the bitmap corresponds to DL reception and the right most bit in the bitmap corresponds to UL transmission. | UE | Yes | No | Yes |
| ***twoFL-DMRS-TwoAdditionalDMRS-UL***  Defines whether the UE supports DM-RS pattern for UL transmission with 2 symbols front-loaded DM-RS with one additional 2 symbols DM-RS. | UE | Yes | No | Yes |
| ***twoPUCCH-AnyOthersInSlot***  Indicates whether the UE supports transmission of two PUCCH formats in TDM in the same slot, which are not covered by *twoPUCCH-F0-2-ConsecSymbols* and *onePUCCH-LongAndShortFormat*. | UE | No | No | Yes |
| ***twoPUCCH-F0-2-ConsecSymbols***  Indicates whether the UE supports transmission of two PUCCHs of format 0 or 2 in consecutive symbols in a slot. | UE | No | Yes | Yes |
| ***twoStepRACH-r16***  Indicates whether the UE supports the following basic structure and procedure of 2-step RACH:  - Fallback procedures from 2-step RA type to 4-step RA type;  - MSGA PRACH resource and format determination;  - MSGA PUSCH configuration;  - Validation and transmission of MSGA PRACH and PUSCH;  - Mapping between preamble of MSGA PRACH and PUSCH occasion with DMRS resource of MSGA PUSCH;  - MSGB monitoring and decoding;  - PUCCH transmission for HARQ-ACK feedback to a MSGB;  - Power control for MSGA PRACH, MSGA PUSCH and PUCCH carrying HARQ-ACK feedback to MSGB.  - Reconfiguration with sync using a contention free random access with 2-step RA type on MSGA PRACH and PUSCH resources that are associated with SSB resources of the target cell. | UE | No | No | No |
| ***twoTCI-Act-servingCellInCC-List-r16***  Indicates whether the UE supports receiving the Enhanced TCI States Activation/Deactivation for UE-specific PDSCH MAC CE (as specified in TS 38.321 [8] clause 6.1.3.24) indicating a serving cell configured as part of *simultaneousTCI-UpdateList1* or *simultaneousTCI-UpdateList2* as specified in TS 38.331 [9].  If the UE indicates support of *simultaneousTCI-ActMultipleCC-r16* for a FR and support of at least one of *singleDCI-SDM-scheme-r16*, *supportFDM-SchemeA-r16*, *supportFDM-SchemeB-r16*, *supportTDM-SchemeA-r16* or *supportInter-slotTDM-r16* for at least one band or component carrier of this FR, the UE shall indicate support of *twoTCI-Act-servingCellInCC-List-r16* for this FR. | UE | CY | No | Yes |
| ***type1-HARQ-ACK-Codebook-r16***  Indicates whether the UE supports Type 1 HARQ-ACK codebook for TDRA using the starting symbol of the PDCCH monitoring occasion in which the DL assignment is detected as the reference of the SLIV. If the UE supports this feature, the UE needs to report *dci-Format1-2And0-2-r16*. Support for FR1/FR2 is differentiated from the viewpoint of the scheduled carrier. | UE | No | No | Yes |
| ***type1-PUSCH-RepetitionMultiSlots***  Indicates whether the UE supports Type 1 PUSCH transmissions with configured grant as specified in TS 38.214 [12] with UL-TWG-repK value equal to 2, 4, or 8 with a single repetition of the transport block within each slot, and redundancy version pattern as indicated by UL-TWG-RV-rep. A UE supporting this feature shall also support Type 1 PUSCH transmissions with configured grant as specified in TS 38.214 [12] with UL-TWG-repK value of one. This applies only to non-shared spectrum channel access. For shared spectrum channel access, *type1-PUSCH-RepetitionMultiSlots-r16* applies. | UE | No | No | No |
| ***type2-CG-ReleaseDCI-0-1-r16***  Indicates whether the UE supports type 2 configured grant release by DCI format 0\_1. If the UE supports this feature, the UE needs to report *configuredUL-GrantType2*. | UE | No | No | No |
| ***type2-CG-ReleaseDCI-0-2-r16***  Indicates whether the UE supports type 2 configured grant release by DCI format 0\_2. If the UE supports this feature, the UE needs to report *configuredUL-GrantType2* and *dci-Format1-2And0-2-r16*. | UE | No | No | No |
| ***type2-HARQ-ACK-Codebook-r16***  Indicates whether the UE supports Type 2 HARQ-ACK codebook when HARQ-ACK feedback in a codebook corresponds to more than one unicast DL DCI for same scheduled cell in a monitoring occasion of a scheduling cell using the PDSCH starting time in addition to the existing monitoring occasion and Cell index to order the HARQ-ACK feedback. | UE | No | No | No |
| ***type2-PUSCH-RepetitionMultiSlots***  Indicates whether the UE supports Type 2 PUSCH transmissions with configured grant as specified in TS 38.214 [12] with UL-TWG-repK value equal to 2, 4, or 8 with a single repetition of the transport block within each slot, and redundancy version pattern as indicated by UL-TWG-RV-rep. A UE supporting this feature shall also support Type 2 PUSCH transmissions with configured grant as specified in TS 38.214 [12] with UL-TWG-repK value of one. This applies only to non-shared spectrum channel access. For shared spectrum channel access, *type2-PUSCH-RepetitionMultiSlots-r16* applies. | UE | No | No | No |
| ***type2-SP-CSI-Feedback-LongPUCCH***  Indicates whether UE supports Type II CSI semi-persistent CSI reporting over PUCCH Formats 3 and 4 as defined in clause 5.2.4 of TS 38.214 [12]. | UE | No | No | No |
| ***uci-CodeBlockSegmentation***  Indicates whether the UE supports segmenting UCI into multiple code blocks depending on the payload size. | UE | Yes | No | Yes |
| ***ul-64QAM-MCS-TableAlt***  Indicates whether the UE supports the alternative 64QAM MCS table for PUSCH with and without transform precoding respectively. | UE | No | No | Yes |
| ***ul-SchedulingOffset***  Indicates whether the UE supports UL scheduling slot offset (K2) greater than 12. | UE | Yes | Yes | Yes |

#### 4.2.7.x *Phy-ParametersSharedSpectrumChAccess*

| Definitions for parameters | Per | M | FDD-TDD  DIFF | FR1-FR2  DIFF |
| --- | --- | --- | --- | --- |
| ***configuredUL-GrantType1-r16***  Indicates whether the UE supports Type 1 PUSCH transmissions with configured grant as specified in TS 38.214 [12] with UL-TWG-repK value of one in shared spectrum channel access. | UE | No | No | No |
| ***configuredUL-GrantType2-r16***  Indicates whether the UE supports Type 2 PUSCH transmissions with configured grant as specified in TS 38.214 [12] with UL-TWG-repK value of one in shared spectrum channel access. | UE | No | No | No |
| ***downlinkSPS-r16***  Indicates whether the UE supports PDSCH reception based on semi-persistent scheduling. One SPS configuration is supported per cell group in shared spectrum channel access. | UE | No | No | No |
| ***dynamicSFI-r16***  Indicates whether the UE supports monitoring for DCI format 2\_0 and determination of slot formats via DCI format 2\_0 in shared spectrum channel access. | UE | No | No | No |
| ***mux-HARQ-ACK-PUSCH-DiffSymbol-r16***  Indicates whether the UE supports HARQ-ACK piggyback on a PUSCH with/without aperiodic CSI once per slot when the starting OFDM symbol of the PUSCH is different from the starting OFDM symbols of the PUCCH resource that HARQ-ACK would have been transmitted on in shared spectrum channel access.  This feature is mandatory if UE supports any of the deployment scenarios A.2, B, C, D and E in Annex B.3 of TS 38.300 [28]. | UE | CY | No | No |
| ***mux-SR-HARQ-ACK-CSI-PUCCH-MultiPerSlot-r16***  Indicates whether the UE supports multiplexing SR, HARQ-ACK and CSI on a PUCCH or piggybacking on a PUSCH more than once per slot when SR, HARQ-ACK and CSI are supposed to be sent with the same or different starting symbol in a slot in shared spectrum channel access. | UE | No | No | No |
| ***mux-SR-HARQ-ACK-CSI-PUCCH-OncePerSlot-r16***  *sameSymbol* indicates the UE supports multiplexing SR, HARQ-ACK and CSI on a PUCCH or piggybacking on a PUSCH once per slot, when SR, HARQ-ACK and CSI are supposed to be sent with the same starting symbols on the PUCCH resources in a slot. *diffSymbol* indicates the UE supports multiplexing SR, HARQ-ACK and CSI on a PUCCH or piggybacking on a PUSCH once per slot, when SR, HARQ-ACK and CSI are supposed to be sent with the different starting symbols in a slot in shared spectrum channel access.  If the UE indicates *sameSymbol* in this field and does not support *mux-HARQ-ACK-PUSCH-DiffSymbol-r16*, the UE supports HARQ-ACK/CSI piggyback on PUSCH once per slot, when the starting OFDM symbol of the PUSCH is the same as the starting OFDM symbols of the PUCCH resource(s) that would have been transmitted on.  If the UE indicates *sameSymbol* in this field and supports *mux-HARQ-ACK-PUSCH-DiffSymbol-r16*, the UE supports HARQ-ACK/CSI piggyback on PUSCH once per slot for which case the starting OFDM symbol of the PUSCH is the different from the starting OFDM symbols of the PUCCH resource(s) that would have been transmitted on.  The UE is mandated to support the multiplexing and piggybacking features indicated by *sameSymbol* for *mux-SR-HARQ-ACK-CSI-PUCCH-OncePerSlot-r16* if UE supports any of the deployment scenarios A.2, B, C, D and E in Annex B.3 of TS 38.300 [28]. | UE | CY | No | No |
| ***mux-SR-HARQ-ACK-PUCCH-r16***  Indicates whether the UE supports multiplexing SR and HARQ-ACK on a PUCCH or piggybacking on a PUSCH once per slot, when SR and HARQ-ACK are supposed to be sent with the different starting symbols in a slot in shared spectrum channel access. | UE | No | No | No |
| ***pdsch-RepetitionMultiSlots-r16***  Indicates whether the UE supports receiving PDSCH scheduled by DCI format 1\_1 when configured with higher layer parameter *pdsch-AggregationFactor* > 1, as defined in 5.1.2.1 of TS 38.214 [12]. | UE | No | No | No |
| ***pre-EmptIndication-DL-r16***  Indicates whether the UE supports interrupted transmission indication for PDSCH reception based on reception of DCI format 2\_1 as defined in TS 38.213 [11] in shared spectrum channel access. | UE | No | No | No |
| ***pusch-RepetitionMultiSlots-r16***  Indicates whether the UE supports transmitting PUSCH scheduled by DCI format 0\_1 when configured with higher layer parameter *pusch-AggregationFactor* > 1, as defined in clause 6.1.2.1 of TS 38.214 [12] in shared spectrum channel access.This feature is mandatory if UE supports any of the deployment scenarios A.2, B, C, D and E in Annex B.3 of TS 38.300 [28]. | UE | CY | No | No |
| ***pucch-Repetition-F1-3-4-r16***  Indicates whether the UE supports transmission of a PUCCH format 1 or 3 or 4 over multiple slots with the repetition factor 2, 4 or 8 in shared spectrum channel access. This feature is mandatory if UE supports any of the deployment scenarios A.2(whenever PUCCH is supported on shared spectrum channel access cell), B, C, D and E in Annex B.3 of TS 38.300 [28]. | UE | CY | No | No |
| ***sp-CSI-ReportPUCCH-r16***  Indicates whether UE supports semi-persistent CSI reporting using PUCCH formats 2, 3 and 4 in shared spectrum channel access. | UE | No | No | No |
| ***sp-CSI-ReportPUSCH-r16***  Indicates whether UE supports semi-persistent CSI reporting using PUSCH. | UE | No | No | No |
| ***ss-SINR-Meas-r16***  Indicates whether the UE can perform SS-SINR measurement in shared spectrum channel access as specified in TS 38.215 [13]. If this parameter is indicated for FR1 and FR2 differently, each indication corresponds to the frequency range of measured target cell. | UE | No | No | No |
| ***type1-PUSCH-RepetitionMultiSlots-r16***  Indicates whether the UE supports Type 1 PUSCH transmissions with configured grant in shared spectrum channel access as specified in TS 38.214 [12] with UL-TWG-repK value equal to 2, 4, or 8 with a single repetition of the transport block within each slot, and redundancy version pattern as indicated by UL-TWG-RV-rep. A UE supporting this feature shall also support Type 1 PUSCH transmissions with configured grant as specified in TS 38.214 [12] with UL-TWG-repK value of one. | UE | No | No | No |
| ***type2-PUSCH-RepetitionMultiSlots-r16***  Indicates whether the UE supports Type 2 PUSCH transmissions with configured grant in shared spectrum channel access as specified in TS 38.214 [12] with UL-TWG-repK value equal to 2, 4, or 8 with a single repetition of the transport block within each slot, and redundancy version pattern as indicated by UL-TWG-RV-rep. A UE supporting this feature shall also support Type 2 PUSCH transmissions with configured grant as specified in TS 38.214 [12] with UL-TWG-repK value of one. | UE | No | No | No |

*Next change*

### 4.2.9 *MeasAndMobParameters*

| Definitions for parameters | Per | M | FDD-TDD DIFF | FR1-FR2 DIFF |
| --- | --- | --- | --- | --- |
| ***cli-RSSI-Meas-r16***  Indicates whether the UE can perform CLI RSSI measurements as specified in TS 38.215 [13] and supports periodical reporting and measurement event triggering as specified in TS 38.331 [9]. If the UE supports this feature, the UE needs to report *maxNumberCLI-RSSI-r16*. | UE | No | TDD only | Yes |
| ***cli-SRS-RSRP-Meas-r16***  Indicates whether the UE can perform SRS RSRP measurements as specified in TS 38.215 [13] and supports periodical reporting and measurement event triggering based on SRS-RSRP as specified in TS 38.331 [9]. If the UE supports this feature, the UE needs to report *maxNumberCLI-SRS-RSRP-r16* and *maxNumberPerSlotCLI-SRS-RSRP-r16*. | UE | No | TDD only | Yes |
| ***condHandoverFDD-TDD-r16***  Indicates whether the UE supports conditional handover between FDD and TDD cells. The parameter can only be set if *condHandover-r16* is set for at least one FDD band and one TDD band. The UE that indicates support of this feature shall also indicate support of *handoverFDD-TDD*. | UE | No | No | No |
| ***condHandoverFR1-FR2-r16***  Indicates whether the UE supports conditional handover HO between FR1 and FR2. The parameter can only be set if *condHandover-r16* is set for at least one FR1 band and one FR2 band. The UE that indicates support of this feature shall also indicate support of *handoverFR1-FR2*. | UE | No | No | No |
| ***csi-RS-RLM***  Indicates whether the UE can perform radio link monitoring procedure based on measurement of CSI-RS as specified in TS 38.213 [11] and TS 38.133 [5]. This parameter needs FR1 and FR2 differentiation. If the UE supports this feature, the UE needs to report *maxNumberResource-CSI-RS-RLM*. This applies only to non-shared spectrum channel access. For shared spectrum channel access, *csi-RS-RLM-r16* applies. | UE | Yes | No | Yes |
| ***csi-RSRP-AndRSRQ-MeasWithSSB***  Indicates whether the UE can perform CSI-RSRP and CSI-RSRQ measurement as specified in TS 38.215 [13], where CSI-RS resource is configured with an associated SS/PBCH. If this parameter is indicated for FR1 and FR2 differently, each indication corresponds to the frequency range of measured target cell. If the UE supports this feature, the UE needs to report *maxNumberCSI-RS-RRM-RS-SINR*. This applies only to non-shared spectrum channel access. For shared spectrum channel access, *csi-RSRP-AndRSRQ-MeasWithSSB-r16* applies. | UE | No | No | Yes |
| ***csi-RSRP-AndRSRQ-MeasWithoutSSB***  Indicates whether the UE can perform CSI-RSRP and CSI-RSRQ measurement as specified in TS 38.215 [13], where CSI-RS resource is configured for a cell that transmits SS/PBCH block and without an associated SS/PBCH block. If this parameter is indicated for FR1 and FR2 differently, each indication corresponds to the frequency range of measured target cell. If the UE supports this feature, the UE needs to report *maxNumberCSI-RS-RRM-RS-SINR*. This applies only to non-shared spectrum channel access. For shared spectrum channel access, *csi-RSRP-AndRSRQ-MeasWithoutSSB-r16* applies. | UE | No | No | Yes |
| ***csi-SINR-Meas***  Indicates whether the UE can perform CSI-SINR measurements based on configured CSI-RS resources as specified in TS 38.215 [13]. If this parameter is indicated for FR1 and FR2 differently, each indication corresponding to the frequency range of measured target cell. If the UE supports this feature, the UE needs to report *maxNumberCSI-RS-RRM-RS-SINR*. This applies only to non-shared spectrum channel access. For shared spectrum channel access, *csi-SINR-Meas-r16* applies. | UE | No | No | Yes |
| ***eutra-AutonomousGaps-r16***  Defines whether the UE supports, upon configuration of *useAutonomousGaps* by the network, acquisition of relevant information from a neighbouring E-UTRA cell by reading the SI of the neighbouring cell using autonomous gap and reporting the acquired information to the network as specified in TS 38.331 [9] when MR-DC is not configured. | UE | No | No | No |
| ***eutra-AutonomousGaps-NEDC-r16***  Defines whether the UE supports, upon configuration of *useAutonomousGaps* by the network, acquisition of relevant information from a neighbouring E-UTRA cell by reading the SI of the neighbouring cell using autonomous gap and reporting the acquired information to the network as specified in TS 38.331 [9] when NE-DC is configured. | UE | No | No | No |
| ***eutra-AutonomousGaps-NRDC-r16***  Defines whether the UE supports, upon configuration of *useAutonomousGaps* by the network, acquisition of relevant information from a neighbouring E-UTRA cell by reading the SI of the neighbouring cell using autonomous gap and reporting the acquired information to the network as specified in TS 38.331 [9] when NR-DC is configured. | UE | No | No | No |
| ***eutra-CGI-Reporting***  Defines whether the UE supports acquisition of relevant CGI-information from a neighbouring E-UTRA cell by reading the SI of the neighbouring cell and reporting the acquired information to the network as specified in TS 38.331 [9] when the (NG)EN-DC and NE-DC are not configured or, when consistent DRX is configured in NR-DC. The consistent DRX configuration implies that MN and SN have the same DRX cycle and on-duration configured by MN completely contains on-duration configured by SN. It is mandated if the UE supports EUTRA. | UE | CY | No | No |
| ***eutra-CGI-Reporting-NEDC***  Defines whether the UE supports acquisition of relevant information from a neighbouring E-UTRA cell by reading the SI of the neighbouring cell and reporting the acquired information to the network as specified in TS 38.331 [9] when theNE-DCis configured. | UE | No | No | No |
| ***eutra-CGI-Reporting-NRDC***  Defines whether the UE supports acquisition of relevant information from a neighbouring E-UTRA cell by reading the SI of the neighbouring cell and reporting the acquired information to the network as specified in TS 38.331 [9] when theNR-DC is configured wherein MN and SN have different DRX cycles, or on-duration configured by MN does not contain on-duration configured by SN if the DRX cycles are the same. | UE | No | No | No |
| ***eventA-MeasAndReport***  Indicates whether the UE supports NR measurements and events A triggered reporting as specified in TS 38.331 [9]. This field only applies to SN configured measurement when (NG)EN-DC is configured. For NR MCG, this feature is mandatory supported. | UE | Yes | Yes | No |
| ***eventB-MeasAndReport***  Indicates whether the UE supports EUTRA measurement and event B triggered reporting as specified in TS 38.331 [9]. It is mandated if the UE supports EUTRA. | UE | CY | No | No |
| ***handoverLTE-5GC***  Indicates whether the UE supports HO to EUTRA connected to 5GC. It is mandated if the UE supports EUTRA connected to 5GC. | UE | CY | Yes | Yes |
| ***handoverFDD-TDD***  Indicates whether the UE supports HO between FDD and TDD. It is mandated if the UE supports both FDD and TDD. This field only applies to NR SA/NR-DC/NE-DC (e.g. PCell handover). For PSCell change when (NG)EN-DC/NR-DC is configured, this feature is mandatory supported. UEs supporting this shall indicate support of *handoverInterF* for both FDD and TDD. | UE | Yes | No | No |
| ***handoverFR1-FR2***  Indicates whether the UE supports HO between FR1 and FR2. Support is mandatory for the UE supporting both FR1 and FR2. This field only applies to NR SA/NR-DC/NE-DC (e.g. PCell handover). For PSCell change when (NG)EN-DC/NR-DC is configured, this feature is mandatory supported. UEs supporting this shall indicate support of *handoverInterF* for both FR1 and FR2. | UE | Yes | No | No |
| ***handoverInterF***  Indicates whether the UE supports inter-frequency HO. It indicates the support for inter-frequency HO from the corresponding duplex mode and from frequency range indicated to be supported as described in Annex B. This field only applies to NR SA/NR-DC/NE-DC (e.g. PCell handover). For PSCell change when (NG)EN-DC/NR-DC is configured, this feature is mandatory supported. | UE | Yes | Yes | Yes |
| ***handoverLTE-EPC***  Indicates whether the UE supports HO to EUTRA connected to EPC. It is mandated if the UE supports EUTRA connected to EPC. | UE | CY | Yes | Yes |
| ***handoverUTRA-FDD-r16***  Indicates whether the UE supports NR to UTRA-FDD CELL\_DCH CS handover. It is mandatory to support both UTRA-FDD measurement and event B triggered reporting, and periodic UTRA-FDD measurement and reporting if the UE supports HO to UTRA-FDD. If this field is included, then UE shall support IMS voice over NR. | UE | No | Yes | Yes |
| ***idleInactiveNR-MeasReport-r16***  Indicates whether the UE supports configuration of NR SSB measurements in RRC\_IDLE/RRC\_INACTIVE and reporting of the corresponding results upon network request as specified in TS 38.331 [9]. If this parameter is indicated for FR1 and FR2 differently, each indication corresponds to the frequency range of measured target cell. | UE | No | No | Yes |
| ***idleInactiveNR-MeasBeamReport-r16***  Indicates whether the UE supports beam level measurements in RRC\_IDLE/RRC\_INACTIVE and reporting of the corresponding beam measurement results upon network request as specified in TS 38.331 [9]. A UE supports this feature shall also support *idleInactiveNR-MeasReport-r16*. If this parameter is indicated for FR1 and FR2 differently, each indication corresponds to the frequency range of measured target cell. | UE | No | No | Yes |
| ***idleInactiveEUTRA-MeasReport-r16***  Indicates whether the UE supports configuration of E-UTRA measurements in RRC\_IDLE/RRC\_INACTIVE and reporting of the corresponding results upon network request as specified in TS 38.331 [9]. | UE | No | No | No |
| ***idleInactive-ValidityArea-r16***  Indicates whether the UE supports configuration of a validity area for NR measurements in RRC\_IDLE/RRC\_INACTIVE as specified in TS 38.331 [9]. | UE | No | No | No |
| ***independentGapConfig***  This field indicates whether the UE supports two independent measurement gap configurations for FR1 and FR2 specified in clause 9.1.2 of TS 38.133 [5]. The field also indicates whether the UE supports the FR2 inter-RAT measurement without gaps when (NG)EN-DC is not configured. | UE | No | No | No |
| ***intraAndInterF-MeasAndReport***  Indicates whether the UE supports NR intra-frequency and inter-frequency measurements and at least periodical reporting. This field only applies to NE-DC and SN configured measurement when (NG)EN-DC is configured. For NR MCG, this feature is mandatory supported. | UE | Yes | Yes | No |
| ***interFrequencyMeas-NoGap-r16***  Indicates whether the UE can perform inter-frequency SSB based measurements without measurement gaps if the SSB is completely contained in the active BWP of the UE as specified in TS 38.133 [5]. | UE | No | No | Yes |
| ***periodicEUTRA-MeasAndReport***  Indicates whether the UE supports periodic EUTRA measurement and reporting. It is mandated if the UE supports EUTRA. | UE | CY | No | No |
| ***maxNumberCLI-RSSI-r16***  Defines the maximum number of CLI-RSSI measurement resources for CLI RSSI measurement. If the UE supports cli-RSSI-Meas-r16, the UE shall report this capability. | UE | CY | TDD only | No |
| ***maxNumberCLI-SRS-RSRP-r16***  Defines the maximum number of SRS-RSRP measurement resources for SRS-RSRP measurement. If the UE supports cli-SRS-RSRP-Meas-r16, the UE shall report this capability.  NOTE 1: A slot is based on minimum SCS among active BWPs across all CCs configured for SRS-RSRP measurement.  NOTE 2: A SRS resource occasion that overlaps with the slot is counted as one measurement resource in the slot. | UE | CY | TDD only | No |
| ***increasedNumberofCSIRSPerMO-r16***  Indicates support of up to 192 CSI-RS resource for L3 mobility configuration per measurement object configured with *associatedSSB*. | UE | No | No | Yes |
| ***maxNumberCSI-RS-RRM-RS-SINR***  Defines the maximum number of CSI-RS resources for RRM and RS-SINR measurement across all measurement frequencies per slot. If UE supports any of *csi-RSRP-AndRSRQ-MeasWithSSB*, *csi-RSRP-AndRSRQ-MeasWithoutSSB*, and *csi-SINR-Meas*, UE shall report this capability. | UE | CY | No | No |
| ***maxNumberPerSlotCLI-SRS-RSRP-r16***  Defines the maximum number of SRS-RSRP measurement resources per slot for SRS-RSRP measurement. If the UE supports *cli-SRS-RSRP-Meas-r16*, the UE shall report this capability. | UE | CY | TDD only | No |
| ***maxNumberResource-CSI-RS-RLM***  Defines the maximum number of CSI-RS resources within a slot per spCell for CSI-RS based RLM. If UE supports any of *csi-RS-RLM* and *ssb-AndCSI-RS-RLM*, UE shall report this capability. | UE | CY | No | Yes |
| ***nr-AutonomousGaps-r16***  Defines whether the UE supports, upon configuration of *useAutonomousGaps* by the network, acquisition of relevant information from a neighbouring NR cell by reading the SI of the neighbouring cell using autonomous gap and reporting the acquired information to the network as specified in TS 38.331 [9] when MR-DC is not configured. If this parameter is indicated for FR1 and FR2 differently, each indication corresponds to the frequency range of measured target cell. | UE | No | No | Yes |
| ***nr-AutonomousGaps-ENDC-r16***  Defines whether the UE supports, upon configuration of *useAutonomousGaps* by the network, acquisition of relevant information from a neighbouring NR cell by reading the SI of the neighbouring cell using autonomous gap and reporting the acquired information to the network as specified in TS 38.331 [9] when (NG)EN-DC is configured. If this parameter is indicated for FR1 and FR2 differently, each indication corresponds to the frequency range of measured target cell. | UE | No | No | Yes |
| ***nr-AutonomousGaps-NEDC-r16***  Defines whether the UE supports, upon configuration of *useAutonomousGaps* by the network, acquisition of relevant information from a neighbouring NR cell by reading the SI of the neighbouring cell using autonomous gap and reporting the acquired information to the network as specified in TS 38.331 [9] when NE-DC is configured. If this parameter is indicated for FR1 and FR2 differently, each indication corresponds to the frequency range of measured target cell. | UE | No | No | Yes |
| ***nr-AutonomousGaps-NRDC-r16***  Defines whether the UE supports, upon configuration of *useAutonomousGaps* by the network, acquisition of relevant information from a neighbouring NR cell by reading the SI of the neighbouring cell using autonomous gap and reporting the acquired information to the network as specified in TS 38.331 [9] when NR-DC is configured. If this parameter is indicated for FR1 and FR2 differently, each indication corresponds to the frequency range of measured target cell. | UE | No | No | Yes |
| ***nr-CGI-Reporting***  Defines whether the UE supports acquisition of relevant CGI-information from a neighbouring intra-frequency or inter-frequency NR cell by reading the SI of the neighbouring cell and reporting the acquired information to the network as specified in TS 38.331 [9] when (NG)EN-DC and NE-DC are not configured or, when consistent DRX is configured in NR-DC. The consistent DRX configuration implies that MN and SN have the same DRX cycle and on-duration configured by MN completely contains on-duration configured by SN. | UE | Yes | No | No |
| ***nr-CGI-Reporting-ENDC***  Defines whether the UE supports acquisition of relevant CGI-information from a neighbouring intra-frequency or inter-frequency NR cell by reading the SI of the neighbouring cell and reporting the acquired information to the network as specified in TS 38.331 [9] when the (NG)EN-DC is configured. | UE | Yes | No | No |
| ***reportAddNeighMeasForPeriodic-r16***  Defines whether the UE supports periodic reporting of best neighbour cells per serving frequency, as defined in TS 38.331 [9]. | UE | Yes | No | No |
| ***nr-CGI-Reporting-NEDC***  Defines whether the UE supports acquisition of relevant information from a neighbouring intra-frequency or inter-frequency NR cell by reading the SI of the neighbouring cell and reporting the acquired information to the network as specified in TS 38.331 [9] when the NE-DC is configured. | UE | Yes | No | No |
| ***nr-CGI-Reporting-NPN-r16***  Defines whether the UE supports acquisition of NPN-relevant CGI-information from a neighbouring intra-frequency or inter-frequency NR NPN cell by reading the SI of the neighbouring cell and reporting the acquired information to the network as specified in TS 38.331 [9]. If UE supports NPN, UE shall report this capability. | UE | CY | No | No |
| ***nr-CGI-Reporting-NRDC***  Defines whether the UE supports acquisition of relevant information from a neighbouring intra-frequency or inter-frequency NR cell by reading the SI of the neighbouring cell and reporting the acquired information to the network as specified in TS 38.331 [9] when the NR-DC is configured wherein MN and SN have different DRX cycles, or on-duration configured by MN does not contain on-duration configured by SN if the DRX cycles are the same. | UE | Yes | No | No |
| ***nr-NeedForGap-Reporting-r16***  Indicates whether the UE supports reporting the measurement gap requirement information for NR target in the UE response to a network configuration RRC message. | UE | No | No | No |
| ***pcellT312-r16***  Indicates whether the UE supports T312 based fast failure recovery for PCell. | UE | No | No | No |
| ***simultaneousRxDataSSB-DiffNumerology***  Indicates whether the UE supports concurrent intra-frequency measurement on serving cell or neighbouring cell and PDCCH or PDSCH reception from the serving cell with a different numerology as defined in clause 8 and 9 of TS 38.133 [5]. | UE | No | No | Yes |
| ***simultaneousRxDataSSB-DiffNumerology-Inter-r16***  Indicates whether the UE supports concurrent SSB based inter-frequency measurement without measurement gap on neighbouring cell and PDCCH or PDSCH reception from the serving cell with a different numerology as defined in clause 8 and 9 of TS 38.133 [5]. UE indicates support of this indicates support of *interFrequencyMeas-NoGap-r16*. | UE | No | No | Yes |
| ***sftd-MeasPSCell***  Indicates whether the UE supports SFTD measurements between the PCell and a configured PSCell. If this capability is included in UE-MRDC-Capability, it indicates that the UE supports SFTD measurement between PCell and PSCell in (NG)EN-DC. If this capability is included in UE-NR-Capability, it indicates that the UE supports SFTD measurement between PCell and PSCell in NR-DC. | UE | No | Yes | No |
| ***sftd-MeasPSCell-NEDC***  Indicates whether the UE supports SFTD measurement between the NR PCell and a configured E-UTRA PSCell in NE-DC. | UE | No | Yes | No |
| ***sftd-MeasNR-Cell***  Indicates whether the SFTD measurement with and without measurement gaps between the EUTRA PCell and the NR cells is supported by the UE which is capable of EN-DC/NGEN-DC when EN-DC/NGEN-DC is not configured. The SFTD measurement without gaps can be used when the UE supports at least one EN-DC band combination consisting of the set of the current E-UTRA serving frequencies and the NR frequency where SFTD measurement is configured. In UE-NR-Capability, this field is not used, and UE does not include the field. | UE | No | Yes | No |
| ***sftd-MeasNR-Neigh***  Indicates whether the inter-frequency SFTD measurement with and without measurement gaps between the NR PCell and inter-frequency NR neighbour cells is supported by the UE when MR-DC is not configured. The SFTD measurement without gaps can be used when the UE supports at least one DC or CA band combination consisting of the set of the current NR serving frequencies and the NR frequency where SFTD measurement is configured. | UE | No | Yes | No |
| ***sftd-MeasNR-Neigh-DRX***  Indicates whether the inter-frequency SFTD measurement using DRX off period between the NR PCell and the inter-frequency NR neighbour cells is supported by the UE when MR-DC is not configured. | UE | No | Yes | No |
| ***ssb-RLM***  Indicates whether the UE can perform radio link monitoring procedure based on measurement of SS/PBCH block as specified in TS 38.213 [11] and TS 38.133 [5]. This field shall be set to *supported*. This applies only to non-shared spectrum channel access. For shared spectrum channel access, *ssb-RLM-DynamicChAccess-r16* or *ssb-RLM-Semi-StaticChAccess-r16* applies. | UE | Yes | No | No |
| ***ssb-AndCSI-RS-RLM***  Indicates whether the UE can perform radio link monitoring procedure based on measurement of SS/PBCH block and CSI-RS as specified in TS 38.213 [11] and TS 38.133 [5]. If the UE supports this feature, the UE needs to report *maxNumberResource-CSI-RS-RLM*. This applies only to non-shared spectrum channel access. For shared spectrum channel access, *ssb-AndCSI-RS-RLM-r16* applies. | UE | No | No | No |
| ***ss-SINR-Meas***  Indicates whether the UE can perform SS-SINR measurement as specified in TS 38.215 [13]. If this parameter is indicated for FR1 and FR2 differently, each indication corresponds to the frequency range of measured target cell. This applies only to non-shared spectrum channel access. For shared spectrum channel access, *ss-SINR-Meas-r16* applies. | UE | No | No | Yes |
| ***supportedGapPattern***  Indicates measurement gap pattern(s) optionally supported by the UE for NR SA, for NR-DC, for NE-DC and for independent measurement gap configuration on FR2 in (NG)EN-DC. The leading / leftmost bit (bit 0) corresponds to the gap pattern 2, the next bit corresponds to the gap pattern 3, as specified in TS 38.133 [5] and so on. The UE shall set the bits corresponding to the measurement gap pattern 13, 14, 17, 18 and 19 to 1 if the UE is an NR standalone capable UE that supports a band in FR2 or if the UE is an (NG)EN-DC capable UE that supports *independentGapConfig* and supports a band in FR2. | UE | CY | No | No |
| ***supportedGapPattern-r16***  Indicates measurement gap pattern(s) optionally supported by the UE for NR SA, for NR-DC for PRS measurement and NR/E-UTRA RRM measurement. The leading / leftmost bit (bit 0) corresponds to the gap pattern 24, the next bit corresponds to the gap pattern 25, as specified in TS 38.133 [5]. The applicability of the gap patterns 24 and 25 is defined in clause 9.1.2 of TS 38.133 [5]. A UE that indicates support of this capability shall indicate support of *NR-DL-PRS-ProcessingCapability-r16* defined in TS 37.355 [22]. | UE | No | No | No |
| ***supportedGapPattern-NRonly***  Indicates measurement gap pattern(s) optionally supported by the UE for NR SA and NR-DC when the frequencies to be measured within this measurement gap are all NR frequencies. The leading / leftmost bit (bit 0) corresponds to the gap pattern 2, the next bit corresponds to the gap pattern 3 and so on. The UE shall set the bits corresponding to the measurement gap pattern 2, 3 and 11 to 1. | UE | FD | No | No |
| ***supportedGapPattern-NRonly-NEDC***  Indicates whether the UE supports gap patterns 2, 3 and 11 in NE-DC when the frequencies to be measured within this measurement gap are all NR frequencies. | UE | No | No | No |

*Next change*

# Annex A.5: General differentiation of capabilities in Cross-Carrier operation

Annex A.5 specifies for which multiple serving cells a UE supporting cross-carrier operation shall support a feature/capability for which it indicates support within the capability signalling.

A UE that indicates support for cross-carrier operation in CA (e.g. MCG or SCG):

- For the fields for which the UE is allowed to indicate different support for different bands, the UE shall support the feature on the PCell and/or SCell(s) in cross-carrier operation, as specified in table A.5-1 in accordance to the following rules:

- Triggered serving cell: the UE shall support the feature if the UE indicates support of the feature for the band of the scheduled/triggered/indicated serving cell;

- Triggering&Triggered serving cells: UE shall support the feature if the UE indicates support of the feature for the band of both the scheduling/triggering/indicating serving cell and the scheduled/triggered/indicated serving cell;

Table A.5-1: General UE capabilities for which differentiation is allowed

|  |  |
| --- | --- |
| UE-NR-Capability | Classification |
| activeConfiguredGrant-r16 | Triggered serving cell |
| aperiodicTRS | Triggered serving cell |
| beamSwitchTiming, beamSwitchTiming-r16 | Triggered serving cell |
| bwp-DiffNumerology (NOTE 1) | Triggering&Triggered serving cells |
| bwp-SameNumerology (NOTE 1) | Triggering&Triggered serving cells |
| crossCarrierScheduling-SameSCS | Triggering&Triggered serving cells |
| crossCarrierSchedulingProcessing-DiffSCS-r16 (NOTE 2) | Triggering&Triggered serving cells |
| jointReleaseConfiguredGrantType2-r16 | Triggered serving cell |
| jointReleaseSPS-r16 | Triggered serving cell |
| sps-r16 | Triggered serving cell |
| ue-SpecificUL-DL-Assignment | Triggering&Triggered serving cells |
| ul-CancellationCrossCarrier-r16 | Triggering&Triggered serving cells |
| NOTE 1: For *bwp-DiffNumerology* and *bwp-SameNumerology*, the supported number of BWPs for each band is still based on the indicated number for this band regardless of whether it is a scheduling cell or scheduled cell.  NOTE 2: For *crossCarrierSchedulingProcessing-DiffSCS-r16*, if reported value is different between the band of the scheduled/triggered/indicated cell and the band of the scheduling/triggering/indicating cell, the value reported for the scheduling/triggering/indicating cell is applied. | |

*End of change*