**3GPP TSG-RAN WG2 Meeting #115 Electronic *R2-2109161***

**Online, 16 – 27 August 2021**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **36.306** | **CR** | **1823** | **rev** | **1** | **Current version:** | **16.5.0** |  |
|  | | | | | | | | |
| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME | **x** | Radio Access Network | **x** | Core Network |  |

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| ***Title:*** | Clarification to RI bit width for Cat5 UEs | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Nokia, Nokia Shanghai Bell | | | | | | | | | |
| ***Source to TSG:*** | R2 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_newRAT-Core,TEI16 | | | | |  | ***Date:*** | | | 2021-08-26 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | | 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-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | RAN1 was asked about RI bit width determination for Cat5 UEs in EN-DC that do not support 4-layer spatial multiplexing. Based on the LS response in [R2-2106908](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_115-e/Docs/R2-2106908.zip), the RI bit width for this case is determined according to network configuration parameter maxLayersMIMO-r10, PBCH antenna ports and the UE category (without suffix), i.e. same as in the legacy LTE. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Capture a NOTE in the field description of *fourLayerTM3-TM4-r15* in (Rel-16) 36.306 about the RI bit width for Cat5 UEs.  **Impact analysis**  Impacted functionality: MIMO.  Impacted architectural options: (NG)EN-DC, NE-DC  Inter-operability:   1. If the network is implemented according to the CR and the UE is not ambiguity remains if the UE must use 2-bit or 1-bit RI bit width despite not supporting more than 2-layer spatial multiplexing 2. If the UE is implemented according to the CR and the network is not ambiguity remains at the network which RI bit width format to assume during reception. | | | | | | | | |
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| ***Consequences if not approved:*** | | Determination of the RI bit width for Cat5 UE supporting only 2-layer spatial multiplexing remains unclear. | | | | | | | | |
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| ***Clauses affected:*** | | 4.3.5.37 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **x** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **x** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **x** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

*First Modified Subclause*

### 4.3.5 RF parameters

#### 4.3.5.1 *supportedBandListEUTRA*

This field defines which E-UTRA radio frequency bands, see TS 36.101 [6], are supported by the UE. For each band, support for either only half duplex operation, or full duplex operation is indicated. For TDD, the half duplex indication is not applicable.

##### 4.3.5.1.1 *ue-PowerClass-N-r13*, *ue-PowerClass-5-r13*

These fields define for each supported E-UTRA band whether the UE supports power UE Power Class 1, 2, 4 or 5 for the band, as specified in TS 36.101 [6] and TS 36.307 [27]. Absence of these fields means that the UE supports the default UE Power Class for the band, as specified in TS 36.101 [6].

##### 4.3.5.1.2 *intraFreq-CE-NeedForGaps-r13*

This field defines for each supported E-UTRA band whether measurement gaps are required to perform intra-frequency measurements on the E-UTRA band for UE in CE Mode A or CE Mode B.

##### 4.3.5.1.3 *ue-CA-PowerClass-N*

This field defines the power class the UE supports for a E-UTRA band combination, as specified in TS 36.101 [6] and TS 36.307 [27]. Absence of these fields means that the UE supports the default UE Power Class for the band combination, as specified in TS 36.101 [6].

#### 4.3.5.1A *supportedBandList-r13*

This field defines which NB-IoT radio frequency bands, as specified in TS 36.101 [6], are supported by the UE. This field is only applicable for UEs of any *ue-Category-NB*.

##### 4.3.5.1A.1 *powerClassNB-20dBm-r13*

This field defines whether the UE supports power class 20dBm in NB-IoT for the band, as specified in TS 36.101 [6].

##### 4.3.5.1A.2 *powerClassNB-14dBm-r14*

This field defines whether the UE supports power class 14 dBm in NB-IoT for all the bands that are supported by the UE, as specified in TS 36.101 [6]. The UE shall not include the field if it includes *powerClassNB-20dBm-r13*.

#### 4.3.5.2 *supportedBandCombination*

This field defines the carrier aggregation, MIMO and MBMS reception capabilities (via MBSFN or SC-PTM) supported by the UE for configurations with inter-band, intra-band non-contiguous, intra-band contiguous carrier aggregation and without carrier aggregation. For each band in a band combination the UE provides the supported CA bandwidth classes and the corresponding MIMO capabilities for downlink. The UE also has to provide the supported uplink CA bandwidth class and the corresponding MIMO capability for at least one band in the band combination. Applicability of provisioning uplink CA bandwidth class for each band in the band combinations is defined in TS 36.101 [6]. A MIMO capability applies to all carriers of a bandwidth class of a band in a band combination. For bandwidth classes that include multiple component carriers (i.e. bandwidth classes B, C, D and so on), the UE may also indicate a separate MIMO capability that applies to each individual carrier of a bandwidth class of a band in a band combination.

In all non-CA band combinations the UE shall indicate a bandwidth class supporting the maximum channel bandwidth defined for the band.

In all non-CA band combinations the UE shall indicate at least the number of layers for spatial multiplexing according to the UE's Rel-8/9 category (Cat. 1-5). If the UE provides a Rel-10 category (Cat. 6-8) it shall indicate at least the number of layers according to that category for at least one band combination. In all other band combinations a UE indicating a category 2 and higher shall indicate support for at least 2 layers for downlink spatial multiplexing for all bands. The indicated number of layers for spatial multiplexing may exceed the number of layers required according to the category indicated by the UE. The carrier aggregation and MIMO capabilities indicated for at least one band combination together with modulation scheme shall meet the processing requirements defined by the physical layer parameter values in the UE category (i.e., maximum number of DL-SCH/UL-SCH transport block bits received/transmitted within a TTI, maximum number of bits of a DL-SCH/UL-SCH transport block received/transmitted within a TTI, and total number of soft channel bits for downlink).

NOTE: If the UE reports a subset of supported band combinations based on *requestedFrequencyBands* and/or *skipFallbackCombinations* and/or *maximumCCsRetrieval,* reported band combination(s) may or may not meet the processing requirements defined by the physical layer parameter values in the UE category.

The UE that supports MBMS reception via MBSFN shall support MBMS reception via MBSFN on the PCell of MCG, and it may indicate support for MBMS reception via MBSFN on configured SCells (*mbms-SCell*) and for any cell that may be additionally configured as an SCell (*mbms-NonServingCell*) according to this field. The UE may indicate support for MBMS reception from FeMBMS/Unicast mixed cells (*fembmsMixedCell*) or MBMS-dedicated cells (*fembmsDedicatedCell*). The UE that supports MBMS reception via SC-PTM shall support MBMS reception via SC-PTM on the PCell of MCG, and it may indicate support for MBMS reception via SC-PTM on configured SCells (*scptm-SCell*) and for any cell that may be additionally configured as an SCell (*scptm-NonServingCell*) according to this field. The UE shall apply the system information acquisition and change monitoring procedure relevant for MBMS operation for these cells.

The UE indicating more than one frequency in the *MBMSInterestIndication* message as specified in TS 36.331 [5] shall support simultaneous reception of MBMS (via MBSFN or SC-PTM) on the indicated frequencies when the frequencies of the configured serving cells and the indicated frequencies belong to at least one band combination.

NOTE: For the purposes of determining whether the carrier aggregation and MIMO capabilities indicated for a band combination meets the processing requirements defined by the physical layer parameter values in the UE category as described above, the carrier aggregation and MIMO capabilities indicated for a band combination is considered to meet the processing requirements if the UE supports the maximum processing requirements defined by the UE category assuming 20MHz channel bandwidth is supported on all bands.

While PCell is not changed, the UE shall support release of any SCell(s) or any uplink configuration of SCell(s) without requiring reconfiguration of parameters related to UE radio access capabilities for the remaining serving cell(s) in the fallback band combination, except for release of an SCell from a contiguous CA band configuration that results in a non-contiguous CA band configuration.

While reporting the sTTI/sPT capabilities, the UE is allowed to report the same band combination more than once with this IE, if the UE supports different combinations of the corresponding sTTI/sPT capabilities.

##### 4.3.5.2.1 *supportedBandCombinationReduced-r13*

This field is used to indicate the carrier aggregation, MIMO and MBMS reception capabilities supported by the UE as defined in 4.3.5.2 if requested by E-UTRAN as specified in TS 36.331 [5]. All descriptions in 4.3.5.2 are applied for this field unless explicitly stated otherwise. It is mandatory for UEs supporting carrier aggregation beyond 5 component carriers.

If a CA band combination beyond 5 component carriers is included in this field, the UE supports Activation/Deactivation MAC Control Element of four octets as specified in TS 36.321 [4]. If a CA band combination beyond 5 component carriers with uplink is included in this field, the UE supports Extended PHR MAC Control Element supporting 32 serving cells with configured uplink as specified in TS 36.321 [4].

If the fallback band combinations for a given band combination are omitted in this field (see TS 36.331 [5]), the UE shall for all the omitted fallback band combinations support the same UE radio access capabilities as for the parent band combination.

NOTE: A fallback band combination may have multiple different parent band combinations.

While reporting the sTTI/sPT capabilities, the UE is allowed to report the same band combination more than once with this IE, if the UE supports different combinations of the corresponding sTTI/sPT capabilities.

#### 4.3.5.3 *multipleTimingAdvance*

This field defines whether multiple timing advances are supported for each band combination supported by the UE. It is mandatory for UEs of this release of the specification to support this capability for band combinations having an UL on multiple FDD bands as specified in TS 36.101 [6]. If the band combination comprised of more than one band entry (i.e., inter-band or intra-band non-contiguous band combination), the field indicates that different timing advances on different band entries are supported. If the band combination comprised of one band entry (i.e., intra-band contiguous band combination), the field indicates that different timing advances across component carriers of the band entry are supported. It is mandatory for UEs to support 2 TAGs for inter-frequency DAPS handover.

#### 4.3.5.4 *simultaneousRx-Tx*

This field defines whether the UE supports simultaneous reception and transmission for inter-band TDD band combination.

#### 4.3.5.5 *supportedCSI-Proc-r11*

This field defines the maximum number of CSI processes supported on a component carrier within a band with PDSCH transmission mode 10. For bandwidth classes that include multiple component carriers (i.e. bandwidth classes B, C, D and so on), the field defines the maximum number of CSI processes supported by the UE on all component carriers in the corresponding band.

#### 4.3.5.6 *freqBandRetrieval-r11*

This parameter defines whether the UE supports reception of *requestedFrequencyBands* as specified in TS 36.331 [5].

#### 4.3.5.7 *dl-256QAM-r12*

This field defines whether the UE supports 256QAM in DL. This field is only applicable for UEs of category 11-12 and UEs of DL category 11 and onwards. It is mandatory for UEs of DL category 13-14 and 17 to support this feature. A UE that supports 256QAM in DL shall support 256QAM in DL in all supported frequency bands.

#### 4.3.5.8 *supportedNAICS-2CRS-AP-r12*

This field defines a bitmap points to the entries of *naics-Capability-List-r12* to indicate NAICS 2 CRS AP capability for the band combination.

#### 4.3.5.9 *dc-Support-r12*

This field defines whether synchronous DC and power control mode 1 is supported by the UE which is capable of *extendedMaxMeasId*, *multipleTimingAdvance* for a given band combination. If the band combination entry is comprised of a single band, DC is supported for the intra-band contiguous band combination. If the band combination entry is comprised of multiple bands, DC is supported for the inter-band or intra-band non-contiguous band combination.

##### 4.3.5.9.1 *asynchronous-r12*

In addition to the UE capability indicated by *dc-Support*, this field defines whether asynchronous DC and power control mode 2 is supported by the UE which is capable of *simultaneousRx-Tx*. If the band combination is comprised of a single band entry for more than two carriers, the UE shall support any permutations of carriers to CGs. If the concerning band combination is comprised of more than two band entries, the carriers corresponding to a band entry shall belong to one cell group. For this band combination, the UE may indicate the supported carrier permutations to CGs.

##### 4.3.5.9.2 *supportedCellGrouping-r12*

In addition to the UE capability indicated by *asynchronous*, this field defines for which mapping of serving cells to cell groups (i.e. MCG or SCG) the UE supports asynchronous DC.

#### 4.3.5.10 *modifiedMPR-Behavior-r10*

This field defines whether the UE supports modified MPR/A-MPR behaviours as specified in TS 36.101 [6].

#### 4.3.5.11 *freqBandPriorityAdjustment-r12*

This field defines whether the UE supports the prioritization of the frequency bands in multiBandInfoList over the band in freqBandIndicator as defined by freqBandIndicatorPriority-r12 in TS 36.331 [5].

#### 4.3.5.12 *commSupportedBandsPerBC-r12*

This field indicates, for a particular band combination, the bands on which the UE supports simultaneous reception of EUTRA and sidelink communication. If the UE indicates support simultaneous transmission (using *commSimultaneousTx-r12*), this field also indicates, for a particular band combination, the bands on which the UE supports simultaneous transmission of EUTRA and sidelink communication. The first bit refers to the first band indicated by *commSupportedBands-r12*, with value 1 indicating sidelink is supported simultaneously.

#### 4.3.5.13 *supportedCSI-Proc-r12*

This field defines the maximum number of CSI processes with PDSCH transmission mode 10 supported by the UE on a single component carrier for bandwidth classes that include multiple component carriers (i.e. bandwidth classes B, C, D and so on).

#### 4.3.5.14 *fourLayerTM3-TM4-r10*

This field defines whether the UE supports 4-layer spatial multiplexing with transmission mode 3 and transmission mode 4.

#### 4.3.5.15 *fourLayerTM3-TM4-perCC-r12*

This field defines whether the UE supports 4-layer spatial multiplexing with transmission mode 3 and transmission mode 4 on a single component carrier for bandwidth classes that include multiple component carriers (i.e. bandwidth classes B, C, D and so on).

#### 4.3.5.16 *multiNS-Pmax-r10*

This field defines whether the UE supports the mechanisms defined for cells broadcasting *NS-PmaxList* as specified in TS 36.331 [5].

#### 4.3.5.16A *multiNS-Pmax-r13*

This field defines whether the UE supports the mechanisms defined for NB-IoT cells broadcasting *NS-PmaxList* as specified in TS 36.331 [5].

#### 4.3.5.17 *differentFallbackSupported-r13*

This field defines whether the UE supports the different capabilities for at least one fallback case of the concerning band combination. The sTTI/sPT capabilities are also considered by the UE when using this field.

#### 4.3.5.18 *maximumCCsRetrieval-r13*

This field defines whether the UE supports reception of *requestedMaxCCsDL* and *requestedMaxCCsUL*.

#### 4.3.5.19 *skipFallbackCombinations-r13*

This field defines whether the UE supports receiving reception of *skipFallbackCombinations* that requests UE to exclude fallback band combinations from capability signalling. UE that indicates support for this shall also indicate support for *requestReducedFormat-r13*. In this release of the specification, UEs capable of *supportedBandCombinationReduced* shall indicate support for *skipFallbackCombinations-r13*.

#### 4.3.5.20Void

#### 4.3.5.21 *reducedIntNonContComb-r13*

This field defines whether the UE supports receiving *requestReducedIntNonContComb*. If the UE supports *reducedIntNonContComb-r13,* the UE only includes one intra-band non-contiguous CA band combination, and exclude the other intra-band non-contiguous CA band combinations for which the presence of uplink CA bandwidth class in the band combination entry is different. One band combination entry can also indicate support of any other possible permutations in the presence of uplink CA bandwidth class where a paired downlink CA bandwidth class is the same or where the number of UL CCs is smaller than the one of paired DL CCs expressed by the CA bandwidth class.

For example, if the UE supports *reducedIntNonContComb-r13,* the UE only needs to report "DL: CA\_42C-42A, UL: 42A paired with DL 42C", in order to indicate also support of "DL: CA\_42C-42A, UL: 42A paired with DL 42A", "DL: CA\_42A-42C, UL: 42A paired with DL 42A" and "DL: CA\_42A-42C, UL: 42A paired with DL 42C".

For these band combinations not included in the capability, RF parameters specified within *BandCombinationParameters* (e.g., *supportedMIMO-CapabilityUL*, *multipleTimingAdvance* if supported) and measurement parameters specified within *BandCombinationListEUTRA* are the same as the ones for the band combination included in the UE capability.

#### 4.3.5.22 *additionalRx-Tx-PerformanceReq-r13*

This field indicates whether the UE supports the additional Rx and Tx performance requirement for a given band combination as specified in TS 36.101 [6].

#### 4.3.5.23 *maxLayersMIMO-Indication-r12*

This field defines whether the UE supports the network configuration of *maxLayersMIMO* as specified in TS 36.331 [5].

If the UE supports *fourLayerTM3-TM4* or *intraBandContiguousCC-InfoList* or *FeatureSetDL-PerCC* for MR-DC, UE supports the configuration of *maxLayersMIMO* for these cases regardless of indicating *maxLayersMIMO-Indication*.

#### 4.3.5.24 *rf-RetuningTimeDL-r14*

This field indicates the interruption time on DL reception within a band pair during the RF retuning for switching between the band pair to transmit SRS on a PUSCH-less SCell as specified in TS 36.331 [5]. This field is mandatory present if switching between the band pair is supported.

#### 4.3.5.25 *rf-RetuningTimeUL-r14*

This field indicates the interruption time on UL transmission within a band pair during the RF retuning for switching between the band pair to transmit SRS on a PUSCH-less SCell as specified in TS 36.331 [5]. This field is mandatory present if switching between the band pair is supported.

#### 4.3.5.26 *diffFallbackCombReport-r14*

This field indicates whether the UE supports reporting of UE radio access capabilities for the CA band combinations asked by the eNB as well as, if any, reporting of different UE radio access capabilities for their fallback band combination as specified in TS 36.331 [5]. The UE does not report fallback combinations if their UE radio access capabilities are the same as the ones for the CA band combination asked by the eNB. UEs capable of *supportedBandCombinationReduced* shall indicate support for *diffFallbackCombReport-r14*. UE that indicates support for this shall also indicate support for *requestReducedFormat-r13*.

#### 4.3.5.27 *v2x-SupportedTxBandCombListPerBC-r14, v2x-SupportedRxBandCombListPerBC-r14*

This field indicates, for a particular band combination of EUTRA, the supported band combination list among *v2x-SupportedTxBandCombinationList* or *v2x-SupportedRxBandCombinationList* on which the UE supports simultaneous transmission and reception of EUTRA and V2X sidelink communication respectively.

#### 4.3.5.28 *txAntennaSwitchDL-r13*

The field indicates the entry number of the first-listed band with UL in the band combination that causes this DL to be affected when transmit antenna switching occurs. If this field is not included, this DL is not affected by transmit antenna switching. All DL and UL that switch together indicate the same entry number.

#### 4.3.5.29 *txAntennaSwitchUL-r13*

The presence of this field indicates the UE supports transmit antenna selection for this UL band in the band combination as described in TS 36.213 [22], clauses 8.2 and 8.7.

The field indicates the entry number of the first-listed band with UL in the band combination that switches together with this UL when transmit antenna switching occurs. All DL and UL that switch together indicate the same entry number.

#### 4.3.5.30 *supportedMIMO-CapabilityDL-r15*

This field defines the number of downlink MIMO layers the UE supports when the UE is configured with sTTI. Only two layers or four layers for MIMO support using this field are applicable with sTTI.

#### 4.3.5.31 *dl-1024QAM-r15*

This field defines whether the UE supports 1024QAM in DL on this band or on this band within the band combination as described in TS 36.331 [5]. This field is only applicable for UEs of DL category 20, 22 and onwards.

When *dl-1024QAM-ScalingFactor-r15* and *dl-1024QAM-TotalWeightedLayers-r15* are included, the UE supports 1024QAM in a set of CCs in a band combination if the CCs belong to bands indicated to support 1024QAM in that band combination, and the 1024QAM processing capability condition described by equation 4.3.5.31-1 is satisfied.

where:

- is the scaling factor for processing a CC configured with 1024QAM with respect to a CC not configured with 1024QAM as indicated by *dl-1024QAM-ScalingFactor-r15*,

- is the total number of DL layers across all CCs configured with 1024QAM,

- is the total number of DL layers acoss all CCs not configured with 1024QAM, and

- *y* is total number of weighted layers the UE can process for 1024QAM. Value of *y* is indicated by *dl-1024QAM-TotalWeightedLayers-r15* for all band combinations except for those (NG)EN-DC/NE-DC band combinations for which *dl-1024QAM-TotalWeightedLayers* is included in *ca-ParametersEUTRA* (see TS 38.306 [32] and TS 38.331 [35]).

Equation 4.3.5.31-1: 1024QAM processing capability condition.

NOTE: The 1024QAM processing capability condition described by equation 4.3.5.31-1 applies only when at least one of the CCs in a band combination is configured with 1024QAM.

#### 4.3.5.32 *srs-MaxSimultaneousCCs-r14*

This field indicates, for a particular band combination, the maximum number of simultaneously configurable target CCs supported by the UE for SRS switching.

#### 4.3.5.33 *powerClass-14dBm-r15*

This field defines whether the UE supports power class 14 dBm when operating in coverage enhancement mode A or B for all the bands that are supported by the UE, as specified in TS 36.101 [6]. A UE indicating support of *powerClass-14dBm-r15* shall also indicate support of *ce-ModeA-r13*.

#### 4.3.5.34 *supportedMIMO-CapabilityDL-MRDC-r15*

This field indicates in MR-DC the maximum number of supported layers in TM9/10 for the component carrier in the corresponding bandwidth class.

#### 4.3.5.35 *srs-FlexibleTiming-r14*

This field indicates, for a particular band pair, whether the UE supports configuration of *soundingRS-FlexibleTiming-r14*. For a TDD-TDD band pair, UE shall include at least one of *srs-FlexibleTiming-r14* and/or *srs-HARQ-ReferenceConfig-r14* when *rf-RetuningTimeDL-r14* or *rf-RetuningTimeUL-r14* corresponding to the band pair is larger than 1 OFDM symbol.

#### 4.3.5.36 *srs-HARQ-ReferenceConfig-r14*

This field indicates, for a particular band pair, whether the UE supports configuration of *harq-ReferenceConfig-r14*. For a TDD-TDD band pair, UE shall include at least one of *srs-FlexibleTiming-r14* and/or *srs-HARQ-ReferenceConfig-r14* when *rf-RetuningTimeDL-r14* or *rf-RetuningTimeUL-r14* corresponding to the band pair is larger than 1 OFDM symbol.

#### 4.3.5.37 *fourLayerTM3-TM4-r15*

This field indicates whether the UE supports 4-layer spatial multiplexing for TM3 and TM4 for MR-DC within the indicated feature set.

NOTE: Cat5 UE supporting only 2-layer spatial multiplexing will still determine the RI bit width according to TS 36.212 [26], which means it may still use 2-bit RI bit width despite not supporting more than 2-layer spatial multiplexing.

#### 4.3.5.38 *supportedCSI-Proc-r15*

This field indicates in MR-DC the number of CSI processes for the component carrier in the corresponding bandwidth class.

#### 4.3.5.39 *intraFreqAsyncDAPS-r16*

This field indicates whether the UE supports asynchronous DAPS handover in source PCell and intra-frequency target PCell.

#### 4.3.5.40 *intraFreqDAPS-r16*

This field indicates whether the UE supports DAPS handover in source PCell and intra-frequency target PCell, i.e. 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 intra-frequency DAPS handover.

#### 4.3.5.41 *Void*

#### 4.3.5.42 *interFreqAsyncDAPS-r16*

This field indicates whether the UE supports asynchronous DAPS handover in source PCell and inter-frequency target PCell.

#### 4.3.5.43 *interFreqDAPS-r16*

This field indicates whether the UE supports DAPS handover in source PCell and inter-frequency target PCell, i.e. support of simultaneous DL reception of PDCCH and PDSCH from source and target cell. For a BC, the capability applies to every carrier pair for source and target. A UE indicating this capability shall also support synchronous DAPS handover, and single UL transmission for inter-frequency DAPS handover.

#### 4.3.5.44 *interFreqMultiUL-TransmissionDAPS-r16*

This field indicates whether the UE supports simultaneous UL transmission in source PCell and inter-frequency target PCell.

#### 4.3.5.45 *intraFreqTwoTAGs-DAPS-r16*

This field indicates whether the UE supports different timing advance groups in source PCell and intra-frequency target PCell. It is mandatory for *intraFreqDAPS* capable UE.

#### 4.3.5.46 *v2x-SupportedTxBandCombListPerBC-v1630, v2x-SupportedRxBandCombListPerBC-v1630*

This field indicates, for a particular band combination of EUTRA, the supported band combination list among *v2x-SupportedBandCombinationListEUTRA-NR* on which the UE supports simultaneous transmission or reception of EUTRA and NR sidelink communication respectively, or simultaneous transmission or reception of EUTRA and mixed V2X sidelink and NR sidelink communication respectively.

#### 4.3.5.47 *scalingFactorTxSidelink-r16, scalingFactorRxSidelink-r16*

This field indicates, for a particular band combination of EUTRA, the scaling factor, as defined in TS 38.306 [32], for the PC5 band combination(s) *v2x-SupportedBandCombinationListEUTRA-NR* on which the UE supports simultaneous transmission/reception of EUTRA and NR sidelink communication respectively, or simultaneous transmission or reception of EUTRA and joint V2X sidelink communication and NR sidelink communication respectively (as indicated by *v2x-SupportedTxBandCombListPerBC-v1630 /* *v2x-SupportedRxBandCombListPerBC-v1630*). The leading / leftmost value corresponds to the first band combination included in *v2x-SupportedBandCombinationListEUTRA-NR* which is indicated with value 1 by *v2x-SupportedTxBandCombListPerBC-v1630 /* *v2x-SupportedRxBandCombListPerBC-v1630*, the next value corresponds to the second band combination included in *v2x-SupportedBandCombinationListEUTRA-NR* which is indicated with value 1 by *v2x-SupportedTxBandCombListPerBC-v1630 /* *v2x-SupportedRxBandCombListPerBC-v1630* and so on.

#### 4.3.5.48 *interBandPowerSharingSyncDAPS-r16*

This field indicates whether the UE supports power sharing for inter-band synchronous DAPS handovers as defined in TS 36.213 [22].

A UE that supports power sharing for inter-band synchronous DAPS handovers shall also support inter-frequency DAPS handovers.

#### 4.3.5.49 *interBandPowerSharingAsyncDAPS-r16*

This field indicates whether the UE supports power sharing for inter-band asynchronous DAPS handovers as defined in TS 36.213 [22].

A UE that supports power sharing for inter-band asynchronous DAPS handovers shall also support inter-frequency DAPS handovers.

*End of Changes*