**3GPP TSG-RAN WG2 Meeting #110 Electronic R2-2006081**

**1st – 12th June, 2020**

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| *CR-Form-v12.0* |
| **CHANGE REQUEST** |
|  |
|  | **36.331** | **CR** | **4266** | **rev** | **3** | **Current version:** | **16.0.0** |  |
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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:***  | *upperLayerIndication* enhancements |
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| ***Source to WG:*** | Huawei, HiSilicon, BT, Samsung |
| ***Source to TSG:*** | R2 |
|  |  |
| ***Work item code:*** | NR\_newRAT-Core, TEI16 |  | ***Date:*** | 2020-05-21 |
|  |  |  |  |  |
| ***Category:*** | **C** |  | ***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 canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)Rel-12 (Release 12)**Rel-13 (Release 13)Rel-14 (Release 14)Rel-15 (Release 15)Rel-16 (Release 16)* |
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| ***Reason for change:*** | In RAN #86, a LS was received from GSMA in RP-193053 requesting further work from 3GPP to enhance the existing 5G indicator handling. RAN plenary requested RAN2 to work on this in RP-193265 and RAN concluded that the following changes to the E-UTRA RRC specification are required:1. Introduce signalling to enable a UE camped on an E-UTRA cell to be informed, with frequency band granularity, of the NR frequency bands available for configuration of EN-DC operation within the area of this cell. In the case of RAN sharing, it must be possible to provide the NR frequency bands independently per PLMN. RAN2 can involve other groups as necessary to introduce the appropriate signalling.
2. For a UE in RRC Idle (or Inactive), specify that the presence of the upperLayerIndication is only provided to upper layers if the UE supports EN-DC operation for one or more of the indicated frequency bands.
3. For a UE in RRC Connected, specify that the presence or absence of the *upperLayerIndication* is provided to upper layers depending on whether or not the UE is configured by RRC for EN-DC operation.
4. Improvement of rev 3 over rev 2 of the CR: according to the outcome of RIL S191 in LTE ASN.1 review, revise the CR to avoid per PLMN information for the case of no sharing or if the same EN-DC bands apply for all PLMNs by adopting 0 as lower bound for the list size
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| ***Summary of change:*** | The following changes are made:* Add SIBxy to broadcast NR band information for EN-DC operation
* Modify UE’s action on forwarding *upperLayerIndication* to upper layers after receiving SIB2
* Add action description of RRC\_CONNECTED UE to forward *upperLayerIndication* to upper layers
* Avoid per PLMN information for the case of no sharing or if the same EN-DC bands apply for all PLMNs by adopting 0 as lower bound for the list size

**Implementation of this CR from Rel-15 will not cause interoperability issues** |
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| ***Consequences if not approved:*** | A UE that doesn’t support any NR band for EN-DC in one area will pass the *upperLayerIndication* to upper layers (in order to display 5G icon) as per legacy. This will make the user confused. The *upperLayerIndication* will not be passed to upper layers when theUE is configured by RRC for EN-DC operation |
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| ***Clauses affected:*** | 5.2.2.9, 5.2.2.xy, 5.3.5.3, 5.3.5.4, 6.2.2, 6.3.1, 6.4, Annex G |
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|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  |  |
| ***affected:*** |  | **X** |  Test specifications |  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications |  |
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| ***Other comments:*** |  |
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| ***This CR's revision history:*** | *Rev : agreed in principle in RAN2#109bis-e**Rev 2: re-submission with no changes in RAN#110-e**Rev 3: added changes in 4. above due to RIL S191 in LTE ASN.1 review. Agreed in RAN#110-e*  |

5.2.2.9 Actions upon reception of *SystemInformationBlockType2*

Upon receiving *SystemInformationBlockType2*, the UE shall:

*<Partially omitted>*

1> else:

2> indicate to upper layers that *up-CIoT-EPS-Optimisation* is not present;

1. if *SystemInformationBlockTypexy* is not present:
2. to upper layers either forward *upperLayerIndication*, if present for the selected PLMN, or otherwise indicate absence of this field;

NOTE: *upperLayerIndication* is an indication to upper layers that the UE has entered a coverage area that offers 5G capabilities.

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| *<Next modification>* |

#### 5.2.2.34 Actions upon reception of *SystemInformationBlockPos*

No UE requirements related to the contents of the *SystemInformationBlockPos* apply other than those specified elsewhere e.g. within TS 36.355 [54], and/or within the corresponding field descriptions.

#### 5.2.2.35 Actions upon reception of *SystemInformationBlockType27*

No UE requirements related to the contents of this *SystemInformationBlock (SystemInformationBlockType27* or *SystemInformationBlockType27-NB)* apply other than those specified elsewhere e.g. within procedures using the concerned system information, and/ or within the corresponding field descriptions.

#### 5.2.2.36 Actions upon reception of *SystemInformationBlockType28*

Upon receiving *SystemInformationBlockType28*, the UE shall perform actions as specified in 5.2.2.4.x in TS 38.331 [82].

#### 5.2.2.xy Actions upon reception of *SystemInformationBlockTypexy*

Upon receiving *SystemInformationBlockTypexy* the UE shall:

1> if *nrBandList* is included for the selected PLMN and the UE supports to operate in EN-DC using the serving cell and at least one of NR bands in *nrBandList:*

2> forward *upperLayerIndication*, as if the UE receives this field from SIB2, to upper layers;

1> else:

2> indicate upper layers absence of *upperLayerIndication*;

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| *<Next modification>* |

#### 5.3.5.3 Reception of an *RRCConnectionReconfiguration* not including the *mobilityControlInfo* by the UE

If the *RRCConnectionReconfiguration* message does not include the *mobilityControlInfo* and theUE is able to comply with the configuration included in this message, the UE shall:

*<Partially omitted>*

1> set the content of *RRCConnectionReconfigurationComplete* message as follows:

2> if the *RRCConnectionReconfiguration* message includes *perCC-GapIndicationRequest*:

3> include *perCC-GapIndicationList* and *numFreqEffective*;

2> if the frequencies are configured for reduced measurement performance:

3> include *numFreqEffectiveReduced*;

2> if the received *RRCConnectionReconfiguration* message included *nr-SecondaryCellGroupConfig*:

3> include *scg-ConfigResponseNR* in accordance with TS 38.331 [82], clause 5.3.5.3;

2> if the received *RRCConnectionReconfiguration* message was included in an NR *RRCResume* message:

3> include the *RRCConnectionReconfigurationComplete* message in the NR MCG RRC message *RRCResumeComplete* in accordance with TS 38.331 [82], clause 5.3.13.4;

1> if the UE is configured to operate in EN-DC as result of this procedure, forward *upperLayerIndication*, as if the UE receives this field from SIB2, to upper layers, otherwise indicate upper layers absence of this field;

1> if the UE is configured with NE-DC:

2> transfer the *RRCConnectionReconfigurationComplete* message via SRB1 embedded in NR RRC message *RRCReconfigurationComplete* as specified in TS 38.331 [82];

1> else:

2> submit the *RRCConnectionReconfigurationComplete* message to lower layers for transmission using the new configuration, upon which the procedure ends;

#### 5.3.5.4 Reception of an *RRCConnectionReconfiguration* including the *mobilityControlInfo* by the UE (handover)

If the *RRCConnectionReconfiguration* message includes the *mobilityControlInfo* and theUE is able to comply with the configuration included in this message, the UE shall:

*<Partially omitted>*

1> if the *RRCConnectionReconfiguration* message includes *rclwi-Configuration*:

2> perform the WLAN traffic steering command procedure as specified in 5.6.16.2;

1> if the *RRCConnectionReconfiguration* message includes *lwa-Configuration*:

2> perform the LWA configuration procedure as specified in 5.6.14.2;

1> if the *RRCConnectionReconfiguration* message includes *lwip-Configuration*:

2> perform the LWIP reconfiguration procedure as specified in 5.6.17.2;

1> if the *RRCConnectionReconfiguration* message includes the *sl-V2X-ConfigDedicated* or *mobilityControlInfoV2X*:

2> perform the V2X sidelink communication dedicated configuration procedure as specified in 5.3.10.15a;

NOTE 2d: In case of conditional reconfiguration the text "if the received *RRCConnectionReconfiguration. . .*" corresponds to applying the stored *RRCConnectionReconfiguration* message (according to 5.3.5.9.4).

1> if the UE is configured to operate in EN-DC as result of this procedure, forward *upperLayerIndication*, as if the UE receives this field from SIB2, to upper layers, otherwise indicate upper layers absence of this field;

1> set the content of *RRCConnectionReconfigurationComplete* message as follows:

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| *<Next modification>* |

### 6.2.2 Message definitions

*<Partially omitted>*

#### – *SystemInformation*

The *SystemInformation* message is used to convey one or more System Information Blocks or Positioning System Information Blocks. All the SIBs or posSIBs included are transmitted with the same periodicity. *SystemInformation-BR* and *SystemInformation-MBMS* use the same structure as *SystemInformation.*

Signalling radio bearer: N/A

RLC-SAP: TM

Logical channels: BCCH and BR-BCCH

Direction: E‑UTRAN to UE

*SystemInformation message*

-- ASN1START

SystemInformation-BR-r13 ::= SystemInformation

SystemInformation-MBMS-r14 ::= SystemInformation

SystemInformation ::= SEQUENCE {

 criticalExtensions CHOICE {

 systemInformation-r8 SystemInformation-r8-IEs,

 criticalExtensionsFuture-r15 CHOICE {

 posSystemInformation-r15 PosSystemInformation-r15-IEs,

 criticalExtensionsFuture SEQUENCE {}

 }

 }

}

SystemInformation-r8-IEs ::= SEQUENCE {

 sib-TypeAndInfo SEQUENCE (SIZE (1..maxSIB)) OF CHOICE {

 sib2 SystemInformationBlockType2,

 sib3 SystemInformationBlockType3,

 sib4 SystemInformationBlockType4,

 sib5 SystemInformationBlockType5,

 sib6 SystemInformationBlockType6,

 sib7 SystemInformationBlockType7,

 sib8 SystemInformationBlockType8,

 sib9 SystemInformationBlockType9,

 sib10 SystemInformationBlockType10,

 sib11 SystemInformationBlockType11,

 ...,

 sib12-v920 SystemInformationBlockType12-r9,

 sib13-v920 SystemInformationBlockType13-r9,

 sib14-v1130 SystemInformationBlockType14-r11,

 sib15-v1130 SystemInformationBlockType15-r11,

 sib16-v1130 SystemInformationBlockType16-r11,

 sib17-v1250 SystemInformationBlockType17-r12,

 sib18-v1250 SystemInformationBlockType18-r12,

 sib19-v1250 SystemInformationBlockType19-r12,

 sib20-v1310 SystemInformationBlockType20-r13,

 sib21-v1430 SystemInformationBlockType21-r14,

 sib24-v1530 SystemInformationBlockType24-r15,

 sib25-v1530 SystemInformationBlockType25-r15,

 sib26-v1530 SystemInformationBlockType26-r15,

 sibxy-v16xy SystemInformationBlockTypexy-r16,

 sib27-v16xy SystemInformationBlockType27-r16,

 sib28-v16xy SystemInformationBlockType28-r16 },

 nonCriticalExtension SystemInformation-v8a0-IEs OPTIONAL

}

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| *<Next modification>* |

#### – *SystemInformationBlockType1*

*SystemInformationBlockType1* contains information relevant when evaluating if a UE is allowed to access a cell and defines the scheduling of other system information. *SystemInformationBlockType1-BR* uses the same structure as *SystemInformationBlockType1*.

Signalling radio bearer: N/A

RLC-SAP: TM

Logical channels: BCCH and BR-BCCH

Direction: E‑UTRAN to UE

*SystemInformationBlockType1 message*

-- ASN1START

SystemInformationBlockType1-BR-r13 ::= SystemInformationBlockType1

SystemInformationBlockType1 ::= SEQUENCE {

 cellAccessRelatedInfo SEQUENCE {

 plmn-IdentityList PLMN-IdentityList,

 trackingAreaCode TrackingAreaCode,

 cellIdentity CellIdentity,

 cellBarred ENUMERATED {barred, notBarred},

 intraFreqReselection ENUMERATED {allowed, notAllowed},

 csg-Indication BOOLEAN,

 csg-Identity CSG-Identity OPTIONAL -- Need OR

 },

 cellSelectionInfo SEQUENCE {

 q-RxLevMin Q-RxLevMin,

 q-RxLevMinOffset INTEGER (1..8) OPTIONAL -- Need OP

 },

 p-Max P-Max OPTIONAL, -- Need OP

 freqBandIndicator FreqBandIndicator,

 schedulingInfoList SchedulingInfoList,

 tdd-Config TDD-Config OPTIONAL, -- Cond TDD

 si-WindowLength ENUMERATED {

 ms1, ms2, ms5, ms10, ms15, ms20,

 ms40},

 systemInfoValueTag INTEGER (0..31),

 nonCriticalExtension SystemInformationBlockType1-v890-IEs OPTIONAL

}

SystemInformationBlockType1-v890-IEs::= SEQUENCE {

 lateNonCriticalExtension OCTET STRING (CONTAINING SystemInformationBlockType1-v8h0-IEs) OPTIONAL,

 nonCriticalExtension SystemInformationBlockType1-v920-IEs OPTIONAL

}

-- Late non critical extensions

SystemInformationBlockType1-v8h0-IEs ::= SEQUENCE {

 multiBandInfoList MultiBandInfoList OPTIONAL, -- Need OR

 nonCriticalExtension SystemInformationBlockType1-v9e0-IEs OPTIONAL

}

SystemInformationBlockType1-v9e0-IEs ::= SEQUENCE {

 freqBandIndicator-v9e0 FreqBandIndicator-v9e0 OPTIONAL, -- Cond FBI-max

 multiBandInfoList-v9e0 MultiBandInfoList-v9e0 OPTIONAL, -- Cond mFBI-max

 nonCriticalExtension SystemInformationBlockType1-v10j0-IEs OPTIONAL

}

SystemInformationBlockType1-v10j0-IEs ::= SEQUENCE {

 freqBandInfo-r10 NS-PmaxList-r10 OPTIONAL, -- Need OR

 multiBandInfoList-v10j0 MultiBandInfoList-v10j0 OPTIONAL, -- Need OR

 nonCriticalExtension SystemInformationBlockType1-v10l0-IEs OPTIONAL

}

SystemInformationBlockType1-v10l0-IEs ::= SEQUENCE {

 freqBandInfo-v10l0 NS-PmaxList-v10l0 OPTIONAL, -- Need OR

 multiBandInfoList-v10l0 MultiBandInfoList-v10l0 OPTIONAL, -- Need OR

 nonCriticalExtension SEQUENCE {} OPTIONAL

}

-- Regular non critical extensions

SystemInformationBlockType1-v920-IEs ::= SEQUENCE {

 ims-EmergencySupport-r9 ENUMERATED {true} OPTIONAL, -- Need OR

 cellSelectionInfo-v920 CellSelectionInfo-v920 OPTIONAL, -- Cond RSRQ

 nonCriticalExtension SystemInformationBlockType1-v1130-IEs OPTIONAL

}

SystemInformationBlockType1-v1130-IEs ::= SEQUENCE {

 tdd-Config-v1130 TDD-Config-v1130 OPTIONAL, -- Cond TDD-OR

 cellSelectionInfo-v1130 CellSelectionInfo-v1130 OPTIONAL, -- Cond WB-RSRQ

 nonCriticalExtension SystemInformationBlockType1-v1250-IEs OPTIONAL

}

SystemInformationBlockType1-v1250-IEs ::= SEQUENCE {

 cellAccessRelatedInfo-v1250 SEQUENCE {

 category0Allowed-r12 ENUMERATED {true} OPTIONAL -- Need OP

 },

 cellSelectionInfo-v1250 CellSelectionInfo-v1250 OPTIONAL, -- Cond RSRQ2

 freqBandIndicatorPriority-r12 ENUMERATED {true} OPTIONAL, -- Cond mFBI

 nonCriticalExtension SystemInformationBlockType1-v1310-IEs OPTIONAL

}

SystemInformationBlockType1-v1310-IEs ::= SEQUENCE {

 hyperSFN-r13 BIT STRING (SIZE (10)) OPTIONAL, -- Need OR

 eDRX-Allowed-r13 ENUMERATED {true} OPTIONAL, -- Need OR

 cellSelectionInfoCE-r13 CellSelectionInfoCE-r13 OPTIONAL, -- Need OP

 bandwidthReducedAccessRelatedInfo-r13 SEQUENCE {

 si-WindowLength-BR-r13 ENUMERATED {

 ms20, ms40, ms60, ms80, ms120,

 ms160, ms200, spare},

 si-RepetitionPattern-r13 ENUMERATED {everyRF, every2ndRF, every4thRF,

 every8thRF},

 schedulingInfoList-BR-r13 SchedulingInfoList-BR-r13 OPTIONAL, -- Cond SI-BR

 fdd-DownlinkOrTddSubframeBitmapBR-r13 CHOICE {

 subframePattern10-r13 BIT STRING (SIZE (10)),

 subframePattern40-r13 BIT STRING (SIZE (40))

 } OPTIONAL, -- Need OP

 fdd-UplinkSubframeBitmapBR-r13 BIT STRING (SIZE (10)) OPTIONAL, -- Need OP

 startSymbolBR-r13 INTEGER (1..4),

 si-HoppingConfigCommon-r13 ENUMERATED {on,off},

 si-ValidityTime-r13 ENUMERATED {true} OPTIONAL, -- Need OP

 systemInfoValueTagList-r13 SystemInfoValueTagList-r13 OPTIONAL -- Need OR

 } OPTIONAL, -- Cond BW-reduced

 nonCriticalExtension SystemInformationBlockType1-v1320-IEs OPTIONAL

}

SystemInformationBlockType1-v1320-IEs ::= SEQUENCE {

 freqHoppingParametersDL-r13 SEQUENCE {

 mpdcch-pdsch-HoppingNB-r13 ENUMERATED {nb2, nb4} OPTIONAL, -- Need OR

 interval-DLHoppingConfigCommonModeA-r13 CHOICE {

 interval-FDD-r13 ENUMERATED {int1, int2, int4, int8},

 interval-TDD-r13 ENUMERATED {int1, int5, int10, int20}

 } OPTIONAL, -- Need OR

 interval-DLHoppingConfigCommonModeB-r13 CHOICE {

 interval-FDD-r13 ENUMERATED {int2, int4, int8, int16},

 interval-TDD-r13 ENUMERATED { int5, int10, int20, int40}

 } OPTIONAL, -- Need OR

 mpdcch-pdsch-HoppingOffset-r13 INTEGER (1..maxAvailNarrowBands-r13) OPTIONAL -- Need OR

 } OPTIONAL, -- Cond Hopping

 nonCriticalExtension SystemInformationBlockType1-v1350-IEs OPTIONAL

}

SystemInformationBlockType1-v1350-IEs ::= SEQUENCE {

 cellSelectionInfoCE1-r13 CellSelectionInfoCE1-r13 OPTIONAL, -- Need OP

 nonCriticalExtension SystemInformationBlockType1-v1360-IEs OPTIONAL

}

SystemInformationBlockType1-v1360-IEs ::= SEQUENCE {

 cellSelectionInfoCE1-v1360 CellSelectionInfoCE1-v1360 OPTIONAL, -- Cond QrxlevminCE1

 nonCriticalExtension SystemInformationBlockType1-v1430-IEs OPTIONAL

}

SystemInformationBlockType1-v1430-IEs ::= SEQUENCE {

 eCallOverIMS-Support-r14 ENUMERATED {true} OPTIONAL, -- Need OR

 tdd-Config-v1430 TDD-Config-v1430 OPTIONAL, -- Cond TDD-OR

 cellAccessRelatedInfoList-r14 SEQUENCE (SIZE (1..maxPLMN-1-r14)) OF

 CellAccessRelatedInfo-r14 OPTIONAL, -- Need OR

 nonCriticalExtension SystemInformationBlockType1-v1450-IEs OPTIONAL

}

SystemInformationBlockType1-v1450-IEs ::= SEQUENCE {

 tdd-Config-v1450 TDD-Config-v1450 OPTIONAL, -- Cond TDD-OR

 nonCriticalExtension SystemInformationBlockType1-v1530-IEs OPTIONAL

}

SystemInformationBlockType1-v1530-IEs ::= SEQUENCE {

 hsdn-Cell-r15 ENUMERATED {true} OPTIONAL, -- Need OR

 cellSelectionInfoCE-v1530 CellSelectionInfoCE-v1530 OPTIONAL, -- Need OP

 crs-IntfMitigConfig-r15 CHOICE {

 crs-IntfMitigEnabled-15 NULL,

 crs-IntfMitigNumPRBs-r15 ENUMERATED {n6, n24}

 } OPTIONAL, -- Need OR

 cellBarred-CRS-r15 ENUMERATED {barred, notBarred},

 plmn-IdentityList-v1530 PLMN-IdentityList-v1530 OPTIONAL, -- Need OR

 posSchedulingInfoList-r15 PosSchedulingInfoList-r15 OPTIONAL, -- Need OR

 cellAccessRelatedInfo-5GC-r15 SEQUENCE {

 cellBarred-5GC-r15 ENUMERATED {barred, notBarred},

 cellBarred-5GC-CRS-r15 ENUMERATED {barred, notBarred},

 cellAccessRelatedInfoList-5GC-r15 SEQUENCE (SIZE (1..maxPLMN-r11)) OF

 CellAccessRelatedInfo-5GC-r15

 } OPTIONAL, -- Need OP

 ims-EmergencySupport5GC-r15 ENUMERATED {true} OPTIONAL, -- Need OR

 eCallOverIMS-Support5GC-r15 ENUMERATED {true} OPTIONAL, -- Need OR

 nonCriticalExtension SystemInformationBlockType1-v1540-IEs OPTIONAL

}

SystemInformationBlockType1-v1540-IEs ::= SEQUENCE {

 si-posOffset-r15 ENUMERATED {true} OPTIONAL, -- Need ON

 nonCriticalExtension SystemInformationBlockType1-v16xy-IEs OPTIONAL

}

SystemInformationBlockType1-v16xy-IEs ::= SEQUENCE {

 eDRX-Allowed-5GC-r16 ENUMERATED {true} OPTIONAL, -- Need OR

 bandwidthReducedAccessRelatedInfo-v16xy SEQUENCE {

 transmissionInControlChRegion-r16 ENUMERATED {true} OPTIONAL -- Need OR

 } OPTIONAL, -- Cond BW-reduced

 plmn-IdentityList-v16xy PLMN-IdentityList-v16xy OPTIONAL, -- Need OR

 nonCriticalExtension SEQUENCE {} OPTIONAL

}

PLMN-IdentityList ::= SEQUENCE (SIZE (1..maxPLMN-r11)) OF PLMN-IdentityInfo

PLMN-IdentityInfo ::= SEQUENCE {

 plmn-Identity PLMN-Identity,

 cellReservedForOperatorUse ENUMERATED {reserved, notReserved}

}

PLMN-IdentityList-v1530 ::= SEQUENCE (SIZE (1..maxPLMN-r11)) OF PLMN-IdentityInfo-v1530

PLMN-IdentityInfo-v1530 ::= SEQUENCE {

 cellReservedForOperatorUse-CRS-r15 ENUMERATED {reserved, notReserved}

}

PLMN-IdentityList-r15::= SEQUENCE (SIZE (1..maxPLMN-r11)) OF PLMN-IdentityInfo-r15

PLMN-IdentityList-v16xy::= SEQUENCE (SIZE (1..maxPLMN-r11)) OF PLMN-IdentityInfo-v16xy

PLMN-IdentityInfo-r15 ::= SEQUENCE {

 plmn-Identity-5GC-r15 CHOICE{

 plmn-Identity-r15 PLMN-Identity,

 plmn-Index-r15 INTEGER (1..maxPLMN-r11)

 },

 cellReservedForOperatorUse-r15 ENUMERATED {reserved, notReserved},

 cellReservedForOperatorUse-CRS-r15 ENUMERATED {reserved, notReserved}

}

PLMN-IdentityInfo-v16xy ::= SEQUENCE {

 cp-CIoT-5GS-Optimisation-r16 ENUMERATED {true} OPTIONAL, -- Need OR

 up-CIoT-5GS-Optimisation-r16 ENUMERATED {true} OPTIONAL, -- Need OR

 iab-support ENUMERATED {true} OPTIONAL -- Need OR

}

SchedulingInfoList ::= SEQUENCE (SIZE (1..maxSI-Message)) OF SchedulingInfo

SchedulingInfo ::= SEQUENCE {

 si-Periodicity ENUMERATED {rf8, rf16, rf32, rf64, rf128, rf256, rf512},

 sib-MappingInfo SIB-MappingInfo

}

SchedulingInfoList-BR-r13 ::= SEQUENCE (SIZE (1..maxSI-Message)) OF SchedulingInfo-BR-r13

SchedulingInfo-BR-r13 ::= SEQUENCE {

 si-Narrowband-r13 INTEGER (1..maxAvailNarrowBands-r13),

 si-TBS-r13 ENUMERATED {b152, b208, b256, b328, b408, b504, b600, b712, b808, b936}

}

SIB-MappingInfo ::= SEQUENCE (SIZE (0..maxSIB-1)) OF SIB-Type

SIB-Type ::= ENUMERATED {

 sibType3, sibType4, sibType5, sibType6,

 sibType7, sibType8, sibType9, sibType10,

 sibType11, sibType12-v920, sibType13-v920,

 sibType14-v1130, sibType15-v1130,

 sibType16-v1130, sibType17-v1250, sibType18-v1250,

 ..., sibType19-v1250, sibType20-v1310, sibType21-v1430,

 sibType24-v1530, sibType25-v1530, sibType26-v1530,

 sibTypexy-v16xy, sibType27-v16xy, sibType28-v16xy}

SystemInfoValueTagList-r13 ::= SEQUENCE (SIZE (1..maxSI-Message)) OF SystemInfoValueTagSI-r13

SystemInfoValueTagSI-r13 ::= INTEGER (0..3)

CellSelectionInfo-v920 ::= SEQUENCE {

 q-QualMin-r9 Q-QualMin-r9,

 q-QualMinOffset-r9 INTEGER (1..8) OPTIONAL -- Need OP

}

CellSelectionInfo-v1130 ::= SEQUENCE {

 q-QualMinWB-r11 Q-QualMin-r9

}

CellSelectionInfo-v1250 ::= SEQUENCE {

 q-QualMinRSRQ-OnAllSymbols-r12 Q-QualMin-r9

}

CellAccessRelatedInfo-r14 ::= SEQUENCE {

 plmn-IdentityList-r14 PLMN-IdentityList,

 trackingAreaCode-r14 TrackingAreaCode,

 cellIdentity-r14 CellIdentity

}

CellAccessRelatedInfo-5GC-r15 ::= SEQUENCE {

 plmn-IdentityList-r15 PLMN-IdentityList-r15,

 ran-AreaCode-r15 RAN-AreaCode-r15 OPTIONAL, -- Need OR

 trackingAreaCode-5GC-r15 TrackingAreaCode-5GC-r15,

 cellIdentity-5GC-r15 CellIdentity-5GC-r15

}

CellIdentity-5GC-r15 ::= CHOICE{

 cellIdentity-r15 CellIdentity,

 cellId-Index-r15 INTEGER (1..maxPLMN-r11)

}

PosSchedulingInfoList-r15 ::= SEQUENCE (SIZE (1..maxSI-Message)) OF PosSchedulingInfo-r15

PosSchedulingInfo-r15 ::= SEQUENCE {

 posSI-Periodicity-r15 ENUMERATED {rf8, rf16, rf32, rf64, rf128, rf256, rf512},

 posSIB-MappingInfo-r15 PosSIB-MappingInfo-r15

}

PosSIB-MappingInfo-r15 ::= SEQUENCE (SIZE (1..maxSIB)) OF PosSIB-Type-r15

PosSIB-Type-r15 ::= SEQUENCE {

 encrypted-r15 ENUMERATED { true } OPTIONAL, -- Need OP

 gnss-id-r15 GNSS-ID-r15 OPTIONAL, -- Need OP

 sbas-id-r15 SBAS-ID-r15 OPTIONAL, -- Need OP

 posSibType-r15 ENUMERATED { posSibType1-1,

 posSibType1-2,

 posSibType1-3,

 posSibType1-4,

 posSibType1-5,

 posSibType1-6,

 posSibType1-7,

 posSibType2-1,

 posSibType2-2,

 posSibType2-3,

 posSibType2-4,

 posSibType2-5,

 posSibType2-6,

 posSibType2-7,

 posSibType2-8,

 posSibType2-9,

 posSibType2-10,

 posSibType2-11,

 posSibType2-12,

 posSibType2-13,

 posSibType2-14,

 posSibType2-15,

 posSibType2-16,

 posSibType2-17,

 posSibType2-18,

 posSibType2-19,

 posSibType3-1,

 ...,

 posSibType1-8-v16xy,

 posSibType2-20-v16xy,

 posSibType2-21-v16xy,

 posSibType2-22-v16xy,

 posSibType2-23-v16xy,

 posSibType2-24-v16xy,

 posSibType2-25-v16xy,

 posSibType4-1-v16xy,

 posSibType5-1-v16xy

 },

 ...

}

-- ASN1STOP

|  |
| --- |
| *<Next modification>* |

### 6.3.1 System information blocks

*<Partially omitted>*

#### – *SystemInformationBlockType28*

The IE *SystemInformationBlockType28* contains NR sidelink communication configuration.

*SystemInformationBlockType28* information element

-- ASN1START

SystemInformationBlockType28-r16 ::= SEQUENCE {

 sl-ConfigCommonNR-r16 OCTET STRING OPTIONAL, -- Need OR

 lateNonCriticalExtension OCTET STRING OPTIONAL,

 ...

}

-- ASN1STOP

| *SystemInformationBlockType28* field descriptions |
| --- |
| ***sl-ConfigCommonNR***Container for the configuration for NR sidelink communication, this fieild includes the *SL-ConfigCommonNR* IE as specified in TS 38.331 [82]. |

#### – *SystemInformationBlockTypexy*

The IE *SystemInformationBlockTypexy* contains NR bands list which can be used for EN-DC operation with the serving cell.

*SystemInformationBlockTypexy* information element

-- ASN1START

SystemInformationBlockTypexy-r16 ::= SEQUENCE {

 plmn-InfoList-r16 PLMN-InfoList-r16,

 bandListENDC-r16 BandListENDC-r16,

 ...

}

BandListENDC-r16 ::= SEQUENCE (SIZE (1.. maxBandsENDC-r16)) OF FreqBandIndicatorNR-r15

PLMN-InfoList-r16 ::= SEQUENCE (SIZE (0..maxPLMN-r11)) OF PLMN-Info-r16

PLMN-Info-r16 ::= SEQUENCE {

 nrBandList-r16 BIT STRING (SIZE(maxBandsENDC-r16)) OPTIONAL -- Need OR

}

-- ASN1STOP

| *SystemInformationBlockTypexy* field descriptions |
| --- |
| ***bandListENDC***A list of NR bands which can be configured as SCG in EN-DC operation with serving cell for the forwarding of *upperLayerIndication* to upper layers.  |
| ***plmn-InfoList***This field includes the same number of entries, and listed in the same order as PLMNs across the *plmn-IdentityList* fields *plmn-IdentityList* and *plmn-IdentityList-r14* included in SIB1. I.e. the first entry corresponds to the first entry of the combined list that results from concatenating the entries included in the second to the original *plmn-IdentityList* field in SIB1. If the size of the field is set to 0, all bands in *bandListENDC* apply for all PLMNs listed in SIB1. |
| ***Nr-BandList***This field indicates a list of bands and is encoded as a bitmap, where the bit N is set to “1” if the current serving cell supports EN-DC operation with the *N*-th NR band in *bandListENDC*. The bits which have no corresponding bands in *bandListENDC* shall be set to 0; bit 1 of the bitmap is the leading bit of the bit string. |

*<Partially omitted>*

|  |
| --- |
| *<Next modification>* |

## 6.4 RRC multiplicity and type constraint values

### – Multiplicity and type constraint definitions

-- ASN1START

ffsValue INTEGER ::= 65536 -- Placeholder for all FFS value

hiFFS INTEGER ::= 64 -- Highest value of a range that still is FFS. To be removed.

maxAccessCat-1-r15 INTEGER ::= 63 -- Maximum number of Access Categories - 1

maxACDC-Cat-r13 INTEGER ::= 16 -- Maximum number of ACDC categories (per PLMN)

maxAvailNarrowBands-r13 INTEGER ::= 16 -- Maximum number of narrowbands

maxBandComb-r10 INTEGER ::= 128 -- Maximum number of band combinations.

maxBandComb-r11 INTEGER ::= 256 -- Maximum number of additional band combinations.

maxBandComb-r13 INTEGER ::= 384 -- Maximum number of band combinations in Rel-13

maxBands INTEGER ::= 64 -- Maximum number of bands listed in EUTRA UE caps

maxBandsNR-r15 INTEGER ::= 1024 -- Maximum number of NR bands listed in EUTRA UE caps

maxBandsENDC-r16 INTEGER ::= 10 -- Maximum number of NR bands from across all the PLMNs sharing the serving cell in EN-DC for the forwarding of *upperLayerIndication.*

maxBandwidthClass-r10 INTEGER ::= 16 -- Maximum number of supported CA BW classes per band

maxBandwidthCombSet-r10 INTEGER ::= 32 -- Maximum number of bandwidth combination sets per

 -- supported band combination

<Partially omitted>

-- ASN1STOP

|  |
| --- |
| *<Next modification>* |

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

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

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| TDoc Number (RP-xxxxxx): CR Title | CR Number(s) | CR Revision Number(s) | Earliest Implementable Release | Additional Information |
| RP-181233: Successful acknowledgement of RRCConnectionRelease for BL and CE UE | 3324 | 1 | Release 13 | *RRCConnectionRelease* message, for which the poll bit is not set, can be considered succesfully acknowledged when UE has sent HARQ ACK feedback. |
| RP-182674: CR for T312 on LTE HetNet mobility | 3506 | 5 | Release 12 | Remove T312 in leaving condition for event trigger. |
| RP-182671: Corrections on paging monitoring and SI acquisition in RRC\_CONNECTED for BL UEs and UEs in CE | 3647 | 2 | Release 13 |  |
| RP-190548: Update description of ack-NACK-NumRepetitions | 3899 | 2 | Release 13 |  |
| RP-190548: Corrections of NB-IoT Access Barring | 3900 | 2 | Release 13 |  |
| RP-191382: SI update notification and access barring in NB-IoT | 4020 | 2 | Release 13 |  |
| RP-192195 : Correction on handling of SCell(s) during Make Before Break handover | 3986 | 3 | Release 14 |  |
| RP-192940: Stop using redirectedCarrierOffsetDedicated after reselection to another frequency | 4144 | 1 | Release 14 |  |
| RP-200338: Corrections to T312 and Discovery Signals measurement | 4198 | 1 | Release 12 |  |
| RP-200367: Correction on H1 and H2 events | 4103 | 2 | Release 15 |  |
| RP-xxxxxx: *upperLayerIndication* enhancements | 4266 | 3 | Release 15 |  |
| NOTE 1: In case a CR has mirror CR(s), the mirror CR(s) are not listed.NOTE 2: The Additional Information column briefly describes the content of a CR in cases where the CR title may not be descriptive enough. If the CR title is descriptive enough, then the Additional Information column may be left blank. |