**3GPP TSG-RAN WG3 #125R3-244685**

**Maastricht, NL,** **19th – 23th Aug 2024**

|  |
| --- |
| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
|  |
|  | **38.423** | **CR** | **1328** | **rev** | **2** | **Current version:** | **18.2.0** |  |
|   |
| *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)*.* |
|  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network | **X** | Core Network |  |

|  |
| --- |
|  |
| ***Title:***  | Correction on asymmetric UL and DL for TDD Carrier |
|  |  |
| ***Source to WG:*** | China Telecom,ZTE, CATT,China Unicom, Ericsson, Nokia, Nokia Shanghai Bell, Huawei |
| ***Source to TSG:*** | R3 |
|  |  |
| ***Work item code:*** | NR\_newRAT-Core |  | ***Date:*** | 2024-08-21 |
|  |  |  |  |  |
| ***Category:*** | A |  | ***Release:*** | Rel-18 |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)…Rel-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19) Rel-20 (Release 20)* |
|  |  |
| ***Reason for change:*** | Per TS38.104, TDD Band can be configured with asymmetric UL and DL,i.e, n50 for TDD (see Table 5.3.6-2 in TS38.101-1). However, the existing *Served Cell Information* *NR* IE the UL and DL bandwidth for TDD can only be set to symmetric. Therefore, it is need to introduce a new UL and DL Transmission Bandwidth for asymmetric TDD Band. |
|  |  |
| ***Summary of change:*** | * To introduce a new UL and DL Transmission Bandwidth for asymmetric TDD Band in existing *Served Cell Information NR* IE.
* To add semantics description for exisiting TDD Transmission Bandwidth IE

Impact Analysis:Impact assessment towards the previous version of the specification (same release):This CR has an isolated impact towards the previous version of the specification (same release). This CR only has an impact on the Served Cell Information by introducing the asymmetric TDD transmission bandwidth. |
|  |  |
| ***Consequences if not approved:*** | Asymmetric bandwidth for TDD cell can not be exchanged between two nodes |
|  |  |
| ***Clauses affected:*** | 9.2.2.11,9.3.5,9.3.7 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** | **X** |  |  Other core specifications  | TS 38.473. CR 1452 |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** | Rev1： update WI codeRev2: Correct the IE tabular format issue,fix ASN.1 and add more co-source companies |

//////////////////////////////////////////////////////////////irrelevant operations skipped/////////////////////////////////////////////////////////////////////

#### 9.2.2.11 Served Cell Information NR

This IE contains cell configuration information of an NR cell that a neighbouring NG-RAN node may need for the Xn AP interface.

| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| --- | --- | --- | --- | --- | --- | --- |
| NR-PCI | M |  | INTEGER (0..1007, …) | NR Physical Cell ID | – |  |
| NR CGI | M |  | 9.2.2.7 |  | – |  |
| TAC | M |  | 9.2.2.5 | Tracking Area Code | – |  |
| RANAC | O |  | RAN Area Code9.2.2.6 |  | – |  |
| **Broadcast PLMNs** |  | *1..<maxnoofBPLMNs>* |  | Broadcast PLMNs contained in the *SIB1* message as specified in TS 38.331[10], associated to the NR Cell Identity in the *NR CGI* IE. | – |  |
| >PLMN Identity | M |  | 9.2.2.4 |  | – |  |
| CHOICE *NR-Mode-Info* | M |  |  |  | – |  |
| >*FDD* |  |  |  |  |  |  |
| >>**FDD Info** |  | *1* |  |  | – |  |
| >>>UL NR Frequency Info | M |  | NR Frequency Info9.2.2.19 | This IE is ignored for NR operating bands for which uplink range of NREF is not defined in section 5.4.2.3 of TS 38.104 [24]. | – |  |
| >>>DL NR Frequency Info | M |  | NR Frequency Info9.2.2.19 |  | – |  |
| >>>UL Transmission Bandwidth | M |  | NR Transmission Bandwidth9.2.2.20 | This IE is ignored for NR operating bands for which uplink range of NREF is not defined in section 5.4.2.3 of TS 38.104 [24]. | – |  |
| >>>DL Transmission Bandwidth | M |  | NR Transmission Bandwidth9.2.2.20 |  | – |  |
| >>>UL Carrier List  | O |  | NR Carrier List9.2.2.63 | If included, the *UL Transmission Bandwidth* IE shall be ignored. | YES | ignore |
| >>>DL Carrier List | O |  | NR Carrier List9.2.2.63 | If included, the *DL Transmission Bandwidth* IE shall be ignored. | YES | ignore |
| >>>gNB-DU Cell Resource Configuration-FDD-UL | O |  | gNB-DU Cell Resource Configuration9.2.2.95 | Contains FDD UL resource configuration of gNB-DU’s cell. Only applicable if the gNB-DU is an IAB-DU or an IAB-donor-DU. | YES | ignore |
| >>>gNB-DU Cell Resource Configuration-FDD-DL | O |  | gNB-DU Cell Resource Configuration9.2.2.95 | Contains FDD UL resource configuration of gNB-DU’s cell. Only applicable if the gNB-DU is an IAB-DU or an IAB-donor-DU. | YES | ignore |
| >*TDD* |  |  |  |  |  |  |
| >>**TDD Info** |  | *1* |  |  | – |  |
| >>>Frequency Info | M |  | NR Frequency Info9.2.2.19 |  | – |  |
| >>>Transmission Bandwidth | M |  | NR Transmission Bandwidth9.2.2.20 | This IE is ignored if the UL Transmission BandwidthIE and DL Transmission Bandwidth IE are included | – |  |
| >>>Intended TDD DL-UL Configuration NR | O |  | 9.2.2.40 |  | YES | ignore |
| >>>TDD UL-DL Configuration Common NR  | O |  | OCTET STRING | Includes the *tdd-UL-DL-ConfigurationCommon* contained in the *SIB1* message as defined in TS 38.331 [10] | YES | ignore |
| >>>Carrier List  | O |  | NR Carrier List9.2.2.63 | If included, the *Transmission Bandwidth* IE shall be ignored. | YES | ignore |
| >>>gNB-DU Cell Resource Configuration-TDD | O |  | gNB-DU Cell Resource Configuration9.2.2.95 | Contains FDD UL resource configuration of gNB-DU’s cell. Only applicable if the gNB-DU is an IAB-DU or an IAB-donor-DU. | YES | ignore |
| **>>>Transmission Bandwidth asymmetric** |  | *0..1* |  | This IE is included if the TDD carrier is asymmetric UL and DL | YES | ignore |
| >>>>UL Transmission Bandwidth | M |  | Transmission Bandwidth9.2.2.20 | .  | – |  |
| >>>>DL Transmission Bandwidth | M |  | Transmission Bandwidth9.2.2.20 |  | – |  |
| Measurement Timing Configuration | M |  | OCTET STRING | Includes the *MeasurementTimingConfiguration* inter-node message for the served cell, as defined in TS 38.331 [10]. | – |  |
| Connectivity Support | M |  | 9.2.2.28 |  | – |  |
| **Broadcast PLMN Identity Info List NR** |  | *0..<maxnoofBPLMNs>* |  | This IE corresponds to information provided in the *PLMN-IdentityInfoList* IE and the *NPN-IdentityInfoList* IE (if available) in *SIB1* as specified in TS 38.331 [10]. All PLMN Identities and associated information contained in the *PLMN-IdentityInfoList* IE and NPN identities and associated information contained in the *NPN-IdentityInfoList* IE (if available) are included and provided in the same order as broadcast in the *SIB1* message.NOTE: In case of NPN-only cell, the PLMN Identities and associated information contained in the *PLMN-IdentityInfoList* IE are not included. | YES | ignore |
| **>****Broadcast PLMNs** |  | *1..<maxnoofBPLMNs>* |  | Broadcast PLMNs in the *SIB1* message, associated to the *NR Cell Identity* IE. | – |  |
| >>PLMN Identity | M |  | 9.2.2.4 |  | – |  |
| >TAC | M |  | 9.2.2.5 |  | – |  |
| >NR Cell Identity | M |  | BIT STRING (SIZE(36)) |  | – |  |
| >RANAC | O |  | RAN Area Code9.2.2.6 |  | – |  |
| >Configured TAC Indication | O |  | 9.2.2.39a | NOTE: This IE is associated with the TAC in the *Broadcast PLMN Identity Info List NR* IE | YES | ignore |
| >NPN Broadcast Information | O |  | 9.2.2.71 | If this IE is included the content of the *Broadcast PLMNs* IE in the *Broadcast PLMN Identity Info List NR* IE is ignored. | YES | reject |
| Configured TAC Indication | O |  | 9.2.2.39a | NOTE: This IE is associated with the TAC on top-level of the *Served Cell Information NR* IE | YES | ignore |
| NPN Broadcast Information | O |  | 9.2.2.71 | If this IE is included the content of the *Broadcast PLMNs* IE in the top *Served Cell Information NR* IE is ignored. | YES | reject |
| SSB Positions In Burst | O |  | 9.2.2.64 |  | YES | ignore |
| NR Cell PRACH Configuration | O |  | OCTET STRING | Includes the *NR Cell PRACH Configuration* IE as defined in section 9.3.1.139 in TS 38.473 [41]. | YES | ignore |
| CSI-RS Transmission Indication | O |  | ENUMERATED (activated, deactivated, ...) | This IE indicates the CSI-RS transmission status of the given cell.If the *Additional Measurement Timing Configuration List* IE is present, this IE is ignored. | YES | ignore |
| SFN Offset | O |  | 9.2.2.75 |  | YES | ignore |
| **Supported MBS FSA ID List** |  | *0..<maxnoofMBSFSAs>* |  | Shall contain all MBS Frequency Selection Area Identities associated to the NR Cell Identity in the *NR CGI* IE. | YES | ignore |
| >MBS Frequency Selection Area Identity | M |  | OCTET STRING(3) | Corresponds to information provided in the *MBS-FSAI* IE as defined in TS 38.331 [10]. | – |  |
| **NR-U Channel Info List** |  | *0..1* |  |  | YES | ignore |
| **>NR-U Channel Info Item** |  | *1..<maxnoofNR-UChannelIDs>* |  |  | – |  |
| >>NR-U Channel ID | M |  | INTEGER (1.. maxnoofNR-UChannelIDs, …) | Index to uniquely identify the part of the NR-U Channel Bandwidth consisting of a contiguous set of resource blocks (RBs) on which a channel access procedure is performed in shared spectrum.Value 1 represents the first part of the NR-U Channel Bandwidth on which a channel access procedure is performed. Value 2 represents the second part of the NR-U Channel Bandwidth on which a channel access procedure is performed, and so on. | – |  |
| >>NR ARFCN | M |  | INTEGER (0.. maxNRARFCN) | It represents the centre frequency of the NR-U Channel Bandwidth for NR bands restricted to operation with shared spectrum channel access, as defined in TS 37.213 [51]. Allowed values are specified in 38.101-1 [52] in Table 5.4.2.3-2, Table 5.4.2.3-3 and Table 5.4.2.3-4. | – |  |
| >>Bandwidth | M |  | ENUMERATED (10MHz, 20MHz, 40MHz, 60MHz, 80MHz, …,100MHz) |  | – |  |
| **Additional Measurement Timing Configuration List** | O | *1 .. <maxnoofMTCItems>* |  |  | YES | ignore |
| >Measurement Timing Configuration Index | M |  | INTEGER (0..16) | “0” refers to the configuration contained in the Measurement Timing Configuration IE.Any value between “1” and “16” refers to a configuration within the *Additional Measurement Timing Configuration List* IE.  | – |  |
| >**CSI- RS MTC Configuration List** | M | *1 .. <maxnoofCSIRSconfigurations*> |  | This list explicitly expresses the CSI-RS configurations contained in the MTC | – |  |
| >>CSI-RS Index | M |  | INTEGER (0..95) | Index of CSI-RS as in MTC | – |  |
| >>CSI-RS Status | M |  | ENUMERATED (activated, deactivated, …) | This IE indicates the CSI-RS transmission status of the configuration. | – |  |
| >>**CSI-RS Neighbour List** | O | *1 .. <maxnoofCSIRSneighbourCells>* |  | This list expresses the cells and CSI-RSs neighbouring the CSI-RS in the *CSI-RS Index* IE. | – |  |
| >>>NR CGI | M |  | 9.2.2.7 |  | – |  |
| >>>**CSI-RS MTC Neighbour List** | O | *1 .. < maxnoofCSIRSneighbourCellsInMT*C> |  | This list expresses the CSI-RSs served by the NR CGI, which are neighbouring the CSI-RS of the served cell and contained in the MTC indicated by the neighbouring NR cell. | – |  |
| >>>>CSI-RS Index | M |  | INTEGER (0..95) |  | – |  |
| RedCap Broadcast Information | O |  | BIT STRING (SIZE(8)) | The presence of this IE indicates that the *intraFreqReselectionRedC*ap is broadcast in the *SIB1* message of the corresponding cell, see TS 38.331 [10].Each position in the bitmap indicates which RedCap UEs are allowed access, according to the setting of RedCap barring indicators in the *SIB1* message, see TS 38.331 [10].First bit = 1Rx,second bit = 2Rx,third bit = halfDuplex,other bits reserved for future use. Value '1' indicates 'access allowed'. Value '0' indicates 'access not allowed”. | YES | ignore |
| eRedCap Broadcast Information | O |  | BIT STRING (SIZE(8)) | The presence of this IE indicates that the *intraFreqReselection-eRedCap* IE is broadcast in SIB1 of the corresponding cell, see TS 38.331 [10].Each position in the bitmap indicates which eRedCap UEs are allowed access, according to the setting of the barring indicators in SIB1, see TS 38.331 [10].First bit = 1Rx,second bit = 2Rx,third bit = half-duplex,other bits reserved for future use. Value '1' indicates 'access allowed'. Value '0' indicates 'access not allowed'. | YES | ignore |
| Mobile IAB Cell | O |  | 9.2.2.106 |  | YES | ignore |
| XR Broadcast Information | O |  | ENUMERATED (true, …) | Corresponds to information provided in the *cellBarred2RxXR* contained in the *SIB1* message as defined in TS 38.331 [10]. | YES | ignore |

| Range bound | Explanation |
| --- | --- |
| maxnoofBPLMNs | Maximum no. of broadcast PLMNs by a cell. Value is 12. |
| maxnoofMBSFSAs | Maximum no. of MBS FSAs by one gNB. Value is 256. |
| maxnoofNR-UChannelIDs | Maximum no. NR-U channel IDs in a cell. Value is 16. |
| maxnoofMTCItems | Maximum no. of measurement timing configurations associated with the neighbour cell. Value is 16. |
| maxnoofCSIRSconfigurations | Maximum number of CSI RS configurations reported in the MTC. Value is 96 |
| maxnoofCSIRSneighbourCells | Maximum number of cells neighbouring a CSI-RS coverage area. Value is 16 |
| maxnoofCSIRSneighbourCellsInMTC | Maximum number of CSI-RS coverage areas neighbouring a specific CSI-RS coverage area. Value is 16 |

//////////////////////////////////////////////////////////////irrelevant operations skipped/////////////////////////////////////////////////////////////////////

### 9.3.5 Information Element definitions

//////////////////////////////////////////////////////////////irrelevant operations skipped/////////////////////////////////////////////////////////////////////

 id-ECNMarkingorCongestionInformationReportingRequest,

 id-TAISliceUnavailableCellList,

 id-MobileIABCell,

 id-XR-Bcast-Information,

 id-MaximumDataBurstVolume,

 id-CPAC-Preparation-Type,

 id-MN-only-MDT-collection,

 id-Transmission-Bandwidth-asymmetric,

 maxEARFCN,

 maxnoofAllowedAreas,

 maxnoofAMFRegions,

//////////////////////////////////////////////////////////////irrelevant operations skipped/////////////////////////////////////////////////////////////////////

-- N

//////////////////////////////////////////////////////////////irrelevant operations skipped/////////////////////////////////////////////////////////////////////

NRModeInfoTDD ::= SEQUENCE {

 nrFrequencyInfo NRFrequencyInfo,

 nrTransmissonBandwidth NRTransmissionBandwidth,

 iE-Extension ProtocolExtensionContainer { {NRModeInfoTDD-ExtIEs} } OPTIONAL,

 ...

}

NRModeInfoTDD-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 { ID id-IntendedTDD-DL-ULConfiguration-NR CRITICALITY ignore EXTENSION IntendedTDD-DL-ULConfiguration-NR PRESENCE optional }|

 { ID id-TDDULDLConfigurationCommonNR CRITICALITY ignore EXTENSION TDDULDLConfigurationCommonNR PRESENCE optional }|

 { ID id-CarrierList CRITICALITY ignore EXTENSION NRCarrierList PRESENCE optional }|

 { ID id-tdd-GNB-DU-Cell-Resource-Configuration CRITICALITY ignore EXTENSION GNB-DU-Cell-Resource-Configuration PRESENCE optional }|

 {ID id-Transmission-Bandwidth-asymmetric CRITICALITY ignore EXTENSION Transmission-Bandwidth-asymmetric PRESENCE optional }, ...

}

NRNRB ::= ENUMERATED { nrb11, nrb18, nrb24, nrb25, nrb31, nrb32, nrb38, nrb51, nrb52, nrb65, nrb66, nrb78, nrb79, nrb93, nrb106, nrb107, nrb121, nrb132, nrb133, nrb135, nrb160, nrb162, nrb189, nrb216, nrb217, nrb245, nrb264, nrb270, nrb273, ..., nrb33, nrb62, nrb124, nrb148, nrb248, nrb44, nrb58, nrb92, nrb119, nrb188, nrb242, nrb15}

NRPagingeDRXInformation ::= SEQUENCE {

 nRPaging-eDRX-Cycle NRPaging-eDRX-Cycle,

 nRPaging-Time-Window NRPaging-Time-Window OPTIONAL,

 iE-Extensions ProtocolExtensionContainer { {NRPagingeDRXInformation-ExtIEs} } OPTIONAL,

 ...

}

NRPagingeDRXInformation-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 ...

}

//////////////////////////////////////////////////////////////irrelevant operations skipped/////////////////////////////////////////////////////////////////////

NRTransmissionBandwidth-ExtIEs XNAP-PROTOCOL-EXTENSION ::= {

 ...

}

Transmission-Bandwidth-asymmetric ::= SEQUENCE {

 ul-Transmission-Bandwidth Transmission-Bandwidth,

 dl-Transmission-Bandwidth Transmission-Bandwidth,

 iE-Extensions ProtocolExtensionContainer { { Transmission-Bandwidth-asymmetric-ExtIEs} } OPTIONAL,

 ...

}

Transmission-Bandwidth-asymmetric-ExtIEs F1AP-PROTOCOL-EXTENSION ::= {

 ...

}

NumberOfAntennaPorts-E-UTRA ::= ENUMERATED {an1, an2, an4, ...}

NG-RANTraceID ::=OCTET STRING (SIZE (8))

NonGBRResources-Offered ::= ENUMERATED {true, ...}

NRV2XServicesAuthorized ::= SEQUENCE {

 vehicleUE VehicleUE OPTIONAL,

 pedestrianUE PedestrianUE OPTIONAL,

 iE-Extensions ProtocolExtensionContainer { {NRV2XServicesAuthorized-ExtIEs} } OPTIONAL,

 ...

}

//////////////////////////////////////////////////////////////irrelevant operations skipped/////////////////////////////////////////////////////////////////////

### 9.3.7 Constant definitions

//////////////////////////////////////////////////////////////irrelevant operations skipped/////////////////////////////////////////////////////////////////////

-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

--

-- IEs

--

-- \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

//////////////////////////////////////////////////////////////irrelevant operations skipped/////////////////////////////////////////////////////////////////////

id-PDUSetbasedHandlingIndicator ProtocolIE-ID ::= 451

id-TAISliceUnavailableCellList ProtocolIE-ID ::= 452

id-MobileIAB-AuthorizationStatus ProtocolIE-ID ::= 453

id-MIAB-MT-BAP-Address ProtocolIE-ID ::= 454

id-MobileIABCell ProtocolIE-ID ::= 455

id-sk-Counter ProtocolIE-ID ::= 456

id-Source-M-NG-RANnodeID ProtocolIE-ID ::= 457

id-S-CPAC-CompleteConfig-Indicator ProtocolIE-ID ::= 458

id-SourceSN-to-TargetSN-QMCInfo ProtocolIE-ID ::= 459

id-RegistrationRequestForDataCollection ProtocolIE-ID ::= 460

id-ReportCharacteristicsForDataCollection ProtocolIE-ID ::= 461

id-ReportingPeriodicityForDataCollection ProtocolIE-ID ::= 462

id-NodeAssociatedInfoResult ProtocolIE-ID ::= 463

id-SLPositioning-Ranging-Services-Info ProtocolIE-ID ::= 464

id-XR-Bcast-Information ProtocolIE-ID ::= 465

id-PDUSessionsListToBeReleased-UPError ProtocolIE-ID ::= 466

id-MaximumDataBurstVolume  ProtocolIE-ID ::= 467

id-CPAC-Preparation-Type ProtocolIE-ID ::= 468

id-UserPlaneFailureIndication ProtocolIE-ID ::= 469

id-MN-only-MDT-collection ProtocolIE-ID ::= 470

id-Transmission-Bandwidth-asymmetric ProtocolIE-ID ::= xxx

//////////////////////////////////////////////////////////////irrelevant operations skipped/////////////////////////////////////////////////////////////////////