**3GPP TSG-RAN WG2 Meeting #130 R2-250XXXX**

**Malta, Malta, May. 17–23 2025**

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| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **36.304** | **CR** | **Draft** | **rev** | **-** | **Current version:** | **18.3.0** |  |
|  | | | | | | | | |
| *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:*** | Running CR for TS36.304 for IoT-NTN | | | | | | | | | |
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| ***Source to WG:*** | Nokia, Nokia Shanghai Bell | | | | | | | | | |
| ***Source to TSG:*** | R2 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | IoT\_NTN\_Ph3-Core | | | | |  | ***Date:*** | | | 2025-04-24 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | | Rel-19 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) … Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19) Rel-20 (Release 20)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | To introduce Rel-19 IoT NTN enhancements to TS 36.304. This version of RRC running CR is based on the RAN2 agreements up to RAN2#129related to store and forward operation | | | | | | | | |
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| ***Summary of change:*** | | 1. Introduce changes related to cell status and access barring for cell operating in store and forward mode. | | | | | | | | |
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| ***Consequences if not approved:*** | | Rel-19 IoT NTN enhancements are not supported. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 4.4,5.3.1, 5.3.3 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | | **X** |  | Other core specifications | | | | TS36.331CR ... | | |
| ***affected:*** | |  | **x** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **x** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | | R2-2501979 – First version of running CR | | | | | | | | |

## 4.4 NB-IoT functionality in Idle Mode

This specification is applicable to NB-IoT, except for the following functionality which is not applicable to NB-IoT:

- Acceptable cell

- Accessibility measurements

- Access Control based on ACDC categories

- Camped on Any cell state

- CSG, including support for manual CSG selection and CSG or Hybrid cell related functionality in PLMN selection, or HNB name (SIB9), Cell selection and Cell reselection.

- Emergency call

- E-UTRAN Inter-frequency Redistribution procedure

- Inter-RAT Cell Selection and Reselection including measurements in other RATs

- Logged measurements

- Mobility History Information

- Mobility states of a UE

- Priority based reselection

- RAN-assisted WLAN interworking

- RRC\_INACTIVE state

- Sidelink operation

## 5.3 Cell Reservations and Access Restrictions

There are two mechanisms which allow an operator to impose cell reservations or access restrictions. The first mechanism uses indication of cell status and special reservations for control of cell selection and reselection procedures. The second mechanism, referred to as Access Control, shall allow preventing selected classes of users or ACDC categories from sending initial access messages for load control reasons. For Access Control based on Access Classes, at subscription, one or more Access Classes are allocated to the subscriber and stored in the USIM TS 22.011 [4]. For Access Control based on ACDC categories, at subscription at least four ACDC categories are allocated to the subscriber and stored in the ACDC MO TS 24.105 [31] or USIM TS 31.102 [32].

IAB-MT does not apply the access control.

### 5.3.1 Cell status and cell reservations

Cell status and cell reservations are indicated in the *SystemInformationBlockType1* message (or *SystemInformationBlockType1-BR* message or *SystemInformationBlockType1-NB* message) TS 36.331 [3] by means of the following fields:

- *cellBarred* (IE type: "barred" or "not barred")   
This field indicates if the cell is barred for connectivity to EPC.  
This field is ignored by the UEs supporting *crs-IntfMitig* while *crs-IntfMitigEnabled* is included in SIB1.   
This field is ignored by the BL UEs or UEs in CE supporting *ce-CRS-IntfMitig* while *crs-IntfMigitNumPRBs* is included in SIB1-BR.  
This field is ignored by UEs supporting NTN while *cellBarred-NTN* is included in SIB1-BR or SIB1-NB.  
In case of multiple EPC PLMNs indicated in SIB1/SIB1-BR, this field is common for all EPC PLMNs

NOTE 1: IAB-MT ignores the *cellBarred*, *cellReservedForOperatorUse,* *intraFreqReselection* and *csg-Indication* (i.e. treats *intraFreqReselection* as if it was set to *allowed* and the *csg-Indication* as if it was set to *FALSE*) as defined in TS 36.331 [3].

- *cellBarred-5GC* (IE type: "barred" or "not barred")  
This field indicates if the cell is barred for connectivity to 5GC.  
This field is ignored if the UE does not support E-UTRA connected to 5GC or if the UE supports network-based CRS interference mitigation and *nw-BasedCRS-InterferenceMitigation* is included in *SystemInformationBlockType1*.  
In case of multiple 5GC PLMNs indicated in SIB1, this field is common for all 5GC PLMNs.

- *cellReservedForOperatorUse* (IE type: "reserved" or "not reserved")  
This field indicates if the cell is reserved for operator use.  
This field is ignored by the UEs supporting *crs-IntfMitig* while *crs-IntfMitigEnabled* is included in SIB1.   
This field is ignored by the BL UEs or UEs in CE supporting *ce-CRS-IntfMitig* while *crs-IntfMigitNumPRBs* is included in SIB1-BR.   
In case of multiple EPC or 5GC PLMNs indicated in SIB1/SIB1-BR, this field is specified per EPC or 5GC PLMN.

- *cellBarred-CRS* (IE type: "barred" or "not barred")  
This field indicates if the cell is barred for connectivity to EPC for UEs supporting network-based CRS interference mitigation.  
*barred* means the cell is barred for UEs supporting *crs-IntfMitig* while *crs-IntfMitigEnabled* is included in SIB1. For BL UEs or UEs in CE capable of *ce-CRS-IntfMitig*, *barred* means the cell is barred while *crs-IntfMitigNumPRBs* is included in SIB1-BR.  
This field is ignored by the UE if the UE does not support CRS interference mitigation or while *crs-IntfMitigConfig* is not included in SIB1 (SIB1-BR for BL UEs or UEs in CE).  
In case of multiple PLMNs indicated in SIB1/SIB1-BR, this field is common for all PLMNs.

- *cellBarred-5GC-CRS* (IE type: "barred" or "not barred")  
This field indicates if the cell is barred for connectivity to 5GC for UEs supporting network-based CRS interference mitigation.  
This field is ignored if the UE does not support E-UTRA connected to 5GC or network-based CRS interference mitigation.  
In case of multiple 5GC PLMNs indicated in SIB1, this field is common for all 5GC PLMNs.

- *cellReservedForOperatorUse-CRS* (IE type: "reserved" or "not reserved")  
This field indicates if the cell is reserved for operator use for UEs supporting network-based CRS interference mitigation.  
*reserved* means the cell is "reserved" for operator use for UEs supporting *crs-IntfMitig* while *crs-IntfMitigEnabled* is included in SIB1.   
For BL UEs or UEs in CE capable of *ce-CRS-IntfMitig*, *reserved* means the cell is "reserved" for operator use while *crs-IntfMitigNumPRBs* is included in SIB1-BR.  
This field is ignored if the UE does not support CRS interference mitigation or while *crs-IntfMitigConfig* is not included in SIB1 (SIB1-BR for BL UEs or UEs in CE).  
In case of multiple PLMNs indicated in SIB1/SIB1-BR, this field is specified per PLMN.

- *iab-Support* (IE type: "true")  
Indicated in *SIB1* message. In case of multiple PLMNs indicated in *SIB1*, this field is specified per PLMN. This field indicates if the cell is barred for IAB node or the cell does not support IAB node, or both. When this field is absent, the IAB node shall treat this cell as if cell status is barred.

- *cellBarred-NTN* (IE type: "barred" or "not barred")  
This field indicates if the cell is barred for connectivity to EPC via NTN.  
This field is ignored if the UE does not support NTN connectivity.This field is ignored by the UE supporting store and forward operation for NTN while *sf-OperationMode* is included in SIB1-BR or SIB1-NB.

*- sf-OperationMode* (IE type: “barred” or “not barred”)  
Presence of this field indicates that the cell is operating in store and forward mode. This field indicates if the cell is barred for the UE capable of store and forward operation. This field is ignored if the UE does not support store and forward operation.

The following description for handling of barred and reserved cells is per CN type. If the UE supports more than one CN type, the UE shall only exclude a cell as candidate for selection/reselection if it is excluded for both CN types.

NOTE 2: Fields *cellBarred-CRS* and *cellReservedForOperatorUse-CRS* are not indicated in *SystemInformationBlockType1-NB*

When cell status is indicated as "not barred" and "not reserved" for operator use,

- All UEs shall treat this cell as candidate during the cell selection and cell reselection procedures.

When cell status is indicated as "not barred" and "reserved" for operator use for any PLMN,

- UEs assigned to Access Class 11 or 15 (or corresponding Access Identity) operating in their HPLMN/EHPLMN shall treat this cell as candidate during the cell selection and reselection procedures if the field *cellReservedForOperatorUse* for that PLMN set to "reserved".

- UEs assigned to an Access Class in the range of 0 to 9 (or corresponding Access Identity 0), 12 to 14 (or corresponding Access Identity) or to Access Identity 1, 2 or 3 shall behave as if the cell status is "barred" in case the cell is "reserved for operator use" for the registered PLMN or the selected PLMN.

NOTE 3: ACs 11, 15 (or corresponding Access Identity) are only valid for use in the HPLMN/ EHPLMN; ACs 12, 13, 14 (or corresponding Access Identity) are only valid for use in the home country TS 22.011 [4].

NOTE 4: Access Identities 1, 2 are valid in the PLMNs as specified in TS 22.261 [41].

NOTE 5: Access Identity 3 is only valid for PLMNs that indicate to potential Disaster Inbound Roamers that the UEs can access the PLMN as specified in TS 22.261 [41].

When cell status "barred" is indicated or to be treated as if the cell status is "barred",

- The UE is not permitted to select/reselect this cell, not even for emergency calls.

- The UE shall consider other cells for cell selection/reselection according to the following rule:

- If the cell is to be treated as if the cell status is "barred" due to being unable to acquire the *MasterInformationBlock (*or *MasterInformationBlock-NB),* the *SystemInformationBlockType1 (*or *SystemInformationBlockType1-BR* message or *SystemInformationBlockType1-NB),* the *SystemInformationBlockType2 (*or *SystemInformationBlockType2-NB)* or *SystemInformationBlockType31 (*or *SystemInformationBlockType31-NB)* if broadcasted for UEs supporting NTN:

- the UE may exclude the barred cell as a candidate for cell selection/reselection for up to 300 seconds.

- the UE may select another cell on the same frequency if the selection criteria are fulfilled.

- the UE may select the same cell in normal coverage if the UE was barred in the cell due to being unable to acquire *MasterInformationBlock*, *SystemInformationBlockType1-BR*, or *SystemInformationBlockType2* in enhanced coverage, but was able to acquire *MasterInformationBlock*, *SystemInformationBlockType1*, and *SystemInformationBlockType2* in normal coverage, if the selection criteria are fulfilled.

- the UE may select the same cell in enhanced coverage if the UE was barred in the cell due to being unable to acquire *MasterInformationBlock*, *SystemInformationBlockType1*, or *SystemInformationBlockType2* in normal coverage, but was able to acquire *MasterInformationBlock*, *SystemInformationBlockType1-BR*, and *SystemInformationBlockType2*, if the selection criteria are fulfilled.

- else

- If the cell is a CSG cell:

- the UE may select another cell on the same frequency if the selection/reselection criteria are fulfilled.

- else

- If the field *intraFreqReselection* in field *cellAccessRelatedInfo* in *SystemInformationBlockType1 (*or *SystemInformationBlockType1-BR* message or *SystemInformationBlockType1-NB)* message is set to "allowed", the UE may select another cell on the same frequency if re-selection criteria are fulfilled.

- The UE shall exclude the barred cell as a candidate for cell selection/reselection for 300 seconds.

- If the field *intraFreqReselection* in field *cellAccessRelatedInfo* in *SystemInformationBlockType1* (or *SystemInformationBlockType1-BR* message or *SystemInformationBlockType1-NB*) message is set to "not allowed" the UE shall not re-select a cell on the same frequency as the barred cell;

- The UE shall exclude the barred cell and the cells on the same frequency as a candidate for cell selection/reselection for 300 seconds.

Editor Note: Whether all the above steps are needed for UE capable of store and forward is FFS.

The cell selection of another cell may also include a change of RAT or, if the previous and selected cell are both E-UTRA cells, a change of the CN type.

### 5.3.2 Access control

For UE camping on E-UTRA connected to EPC, information on cell access restrictions associated with the Access Classes or ACDC categories is broadcast as system information, TS 36.331 [3]. For UE camping on E-UTRA connected to 5GC, information on cell access restrictions associated with Access Categories and Identities is broadcast as system information, TS 36.331 [3].

For UE camping on E-UTRA connected to EPC, the UE shall ignore Access Class or ACDC category related cell access restrictions when selecting a cell to camp on, i.e. it shall not reject a cell for camping on because access on that cell is not allowed for any of the Access Classes or ACDC categories of the UE. A change of the indicated access restriction shall not trigger cell reselection by the UE. For UE camping on E-UTRA connected to 5GC, the UE shall ignore Access Category and Identity related cell access restrictions for cell reselection. A change of the indicated access restriction shall not trigger cell reselection by the UE.

For UE camping on E-UTRA connected to EPC, access Class or ACDC category related cell access restrictions shall be checked by the UE when starting RRC connection establishment procedure as specified in TS 36.331 [3]. For UE camping on E-UTRA connected to 5GC, Access Category and Identity related cell access restrictions shall be checked by the UE for NAS initiated access attempts and RNAU as specified in TS 36.331 [3].

### 5.3.3 Emergency call

A restriction on emergency calls, if needed, is indicated by the field *ac-BarringForEmergency* TS 36.331 [3]. If access class 10 is indicated as barred in a cell, UEs with access class 0 to 9 or without an IMSI are not allowed to initiate emergency calls in this cell. For UEs with access classes 11 to 15, emergency calls are not allowed if both access class 10 and the relevant access class (11 to 15) are barred. Otherwise, emergency calls are allowed for those UEs.

Full details of operation under "Access class barred list" are described in TS 22.011 [4].

For E-UTRA connected to 5GC, the restriction on emergency calls is indicated by access control information of access category 2 under unified access control TS 36.331 [3].

Editor Note: Whether emergency calls are allowed in the cell that operates in store and forward mode is FFS.