**3GPP TSG-RAN WG2 Meeting #118-e *R2-22nnnnn***

**E-meeting, 09 May – 20 May 2022**

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| **CHANGE REQUEST** | | | | | | | | |
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|  |  | **CR** | 1225 | **rev** | 1 | **Current version:** |  |  |
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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:*** | Introduction of gNB ID length reporting in the NR CGI report [gNB\_ID\_Length] | | | | | | | | | |
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| ***Source to WG:*** | Ericsson, Verizon, China Telecom, Bell Mobility, Samsung, Rogers, TELUS, Telecom Italia, T-Mobile USA, US Cellular, Deutsche Telekom, Nokia | | | | | | | | | |
| ***Source to TSG:*** |  | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | TEI17 | | | | |  | ***Date:*** | | | 2022-05-17 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | | Rel-17 |
|  | *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)* | |
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| ***Reason for change:*** | | In case of NR cells, a gNB ID represents the (22..32) MSBs of the (36bits long) NR Cell IDs. In the current specifications there is no indication of the size of the gNB id in NR CGI or NR Cell Identity (NCI). At the same time NR CGI is assumed to be unique. If an operator wants to make use of different gNB ID lengths in its network it is not obvious how the operator can ensure that all resulting NR CGIs are unique. This has a major effect on the capability of an operator to exploit flexible NG-RAN Node ID lengths for a network with different levels of node densification and for future deployment densification.  Thus, the feature of broadcasting gNB ID lengths by the NR cells is introduced. To ensure that this gNB ID length is reported as part of the CGI reporting procedure, one needs to include this newly added field in the NR CGI measurement report sent by the UE to an EUTRA node. | | | | | | | | |
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| ***Summary of change:*** | | Introducing broadcasting of the gNB ID length and UE reporting of gNB identity length, as part of the NR CGI reporting procedure | | | | | | | | |
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| ***Consequences if not approved:*** | | The network node that fetches the CGI report from the UE does not know how many bits out of the 36 bits of NR cell ID represents the length of the gNB ID. Hence for an NG based HO source RAN node may not be able to find the target RAN node and this leads to a RLF. | | | | | | | | |
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| ***Clauses affected:*** | | 22.3.4 | | | | | | | | |
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|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | | **X** |  | Other core specifications | | | | TS 38.331 CR 3181  TS 36.331 CR 4821  TS 38.306 CR 0747  TS 36.306 CR 1850  TS 38.300 CR 0474  TS 38.413 CR 0571 | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR … CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR … CR ... | | |
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| ***Other comments:*** | |  | | | | | | | | |
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| ***This CR's revision history:*** | | Revision 0 implementation of the agreement from RAN2 118 meeting before come back session | | | | | | | | |

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/\*Start of the changes\*/

### 22.3.4 Inter-RAT/Inter-frequency Automatic Neighbour Relation Function



Figure 22.3.4-1: Automatic Neighbour Relation Function in case of e.g. UTRAN detected cell

For Inter-RAT and Inter-Frequency ANR, each cell contains an Inter Frequency Search list. This list contains all frequencies that shall be searched.

For Inter-RAT cells, the NoX2 attribute in the NCRT is absent, as X2 is only defined for E-UTRAN.

The function works as follows:

The eNB serving cell A has an ANR function. During connected mode, the eNB can instruct a UE to perform measurements and detect cells on other RATs/frequencies. The eNB may use different policies for instructing the UE to do measurements, and when to report them to the eNB.

1 The eNB instructs a UE to look for neighbour cells in the target RATs/frequencies. To do so the eNB may need to schedule appropriate idle periods to allow the UE to scan all cells in the target RATs/frequencies.

2 The UE reports the PCI of the detected cells in the target RATs/frequencies. The PCI is defined by the carrier frequency and the Primary Scrambling Code (PSC) in case of UTRAN FDD cell, by the carrier frequency and the cell parameter ID in case of UTRAN TDD cell, by the Band Indicator + BSIC + BCCH ARFCN in case of GERAN cell, by the PN Offset in case of CDMA2000 cell, and by the NR PSS/SSS in case of NR cell.

When the eNB receives UE reports containing PCIs of cell(s) the following sequence may be used.

3 The eNB instructs the UE, using the newly discovered PCI as parameter, to read the CGI and the RAC of the detected neighbour cell in case of GERAN detected cells, CGI, LAC, RAC and all broadcasted PLMN-ID(s) in case of UTRAN detected cells, CGI in case of CDMA2000 detected cells, and NCGI(s), TAC(s), RANAC(s), all available PLMN ID(s), gNB identity length(s) and all available NR frequency band(s) in case of NR detected cells. For the Inter-frequency case, the eNB instructs the UE, using the newly discovered PCI as parameter, to read the ECGI, TAC and all available PLMN ID(s) of the inter-frequency detected cell. The UE ignores transmissions from the serving cell while finding the requested information transmitted in the broadcast channel of the detected inter-system/inter-frequency neighbour cell. To do so, the eNB may need to schedule appropriate idle periods to allow the UE to read the requested information from the broadcast channel of the detected inter-RAT/inter-frequency neighbour cell.

4 After the UE has read the requested information in the new cell, it reports the detected CGI and RAC (in case of GERAN detected cells) or CGI, LAC, RAC and all broadcasted PLMN-ID(s) (in case of UTRAN detected cells) or CGI (in case of CDMA2000 detected cells) or all broadcast NCGI(s), TAC(s), RANAC(s), PLMN-ID(s), gNB identity length(s) and NR frequency band(s) (in case of NR detected cells) to the serving cell eNB. In the inter-RAT NR case, the UE may report *noSIB1* indication in case the detected NR cell does not broadcast SIB1, as described in TS 36.331 [16]. In the inter-frequency case, the UE reports the ECGI, the, tracking area code and all PLMN-ID(s) that have been detected. If the detected cell is a CSG or hybrid cell, the UE also reports the CSG ID to the serving cell eNB.

5 The eNB updates its inter-RAT/inter-frequency Neighbour Cell Relation Table.

In the inter-frequency case and if needed, the eNB can use the PCI and ECGI for a new X2 interface setup towards this eNB. The setup of the X2 interface is described in clause 22.3.2.

NOTE: The eNB may differentiate the open access HeNB from the other types of (H)eNB by the PCI configuration or ECGI configuration.

/\*End of the changes\*/