**3GPP TSG-CT WG6 Meeting #89Bis *C6-180363***

**Sophia Antipolis, France, 10th July – 13th July 2018**

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| *CR-Form-v11.1* |
| **CHANGE REQUEST** |
|  |
|  | **31.111** | **CR** | **0691** | **rev** | **1** | **Current version:** | **15.3.0** |  |
|  |
| *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 | **X** | ME | **X** | Radio Access Network |  | Core Network |  |

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|  |
| ***Title:***  | Enhance Location Information object to accommodate 3 byte TAC for 5GS. |
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| ***Source to WG:*** | Qualcomm Incorporated, MediaTek Inc. |
| ***Source to TSG:*** | C6 |
|  |  |
| ***Work item code:*** |  |  | ***Date:*** | 2018-07-10 |
|  |  |  |  |  |
| ***Category:*** | **B** |  | ***Release:*** | Rel-15 |
|  | *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:*** | TAC is 3 bytes for NG-RAN as specified in 3GPP TS 38.413 clause 9.3.3.10 and in 3GPP TS 24.501 clause 9.10.3.8. Location Information object needs to be enhanced accordingly for NG-RAN. |
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| ***Summary of change:*** | Extended the Location Information object to accommodate 3rd byte of the new 3 byte TAC.Re-organized clause 8.19 creating sub-clauses for each RAT, in order to make the table more readable. |
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| ***Consequences if not approved:*** | 3 byte TAC cannot be packed inside location information object for NG-RAN. |
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| ***Clauses affected:*** | 8.19 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  |  |
| ***affected:*** |  | **x** |  Test specifications |  |
| ***(show related CRs)*** |  | **x** |  O&M Specifications |  |
|  |  |
| ***Other comments:*** |  |

## 8.19 Location Information

### 8.19.1 Location Information for GERAN

|  |  |  |
| --- | --- | --- |
| Byte(s) | Description | Length |
| 1 | Location Information tag | 1 |
| 2 | Length = '07' or '05' (see Note) | 1 |
| 3 – 5 | Mobile Country & Network Codes (MCC & MNC) | 3 |
| 6 – 7 | Location Area Code (LAC) | 2 |
| 8 – 9 | Cell Identity Value (Cell ID) (see Note) | 2 |
|  |  |  |
|  |  |  |
| NOTE: When this object is used in the Network Rejection event download, the Cell Identity Value (Cell ID) field shall not be present and the length field shall be set to '05'. |

The Mobile Country Code (MCC), the Mobile Network Code (MNC) and the Location Area Code (LAC) are coded as in TS 24.008 [9].

For GERAN, the Cell Identity Value is coded as in TS 24.008 [9].

### 8.19.2 Location Information for UTRAN

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| --- | --- | --- |
| Byte(s) | Description | Length |
| 1 | Location Information tag | 1 |
| 2 | Length = '09' or '05' (see Note) | 1 |
| 3 – 5 | Mobile Country & Network Codes (MCC & MNC) | 3 |
| 6 – 7 | Location Area Code (LAC) | 2 |
| 8 – 9 | Cell Identity Value (Cell ID) (see Note) | 2 |
| 10 – 11 | Extended Cell identity Value (see Note) | 2 |
| NOTE: When this object is used in the Network Rejection event download, the Cell Identity Value (Cell ID) and Extended Cell identity Value fields shall not be present and the length field shall be set to '05'. |

The Mobile Country Code (MCC), the Mobile Network Code (MNC) and the Location Area Code (LAC) are coded as in TS 24.008 [9].

Only the C-id part of the UC-id is returned in the Cell Identity Value (i.e. the 16 least significant bits of the UC-id), as defined in TS 25.401 [35] and TS 25.413 [36].

The Extended Cell identity Value is coded as the RNC-id part of the UC-id, as defined in TS 25.401 [35] and TS 25.413 [36]. It is left padded with zeros (this means that byte 10 contains the 4 most significant bits of the RNC-id value, and byte 11 contains the 8 least significant bits of the RNC-id value).

### 8.19.3 Location Information for E-UTRAN

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| --- | --- | --- |
| Byte(s) | Description | Length |
| 1 | Location Information tag | 1 |
| 2 | Length = '09' or '05' (see Note) | 1 |
| 3 – 5 | Mobile Country & Network Codes (MCC & MNC) | 3 |
| 6 – 7 | Tracking Area Code (TAC) | 2 |
| 8 – 11 | E-UTRAN Cell Identifier (ECI) (see Note) | 4 |
| NOTE: When this object is used in the Network Rejection event download, the E-UTRAN Cell Identifier (ECI) field shall not be present and the length field shall be set to '05'. |

The Mobile Country Code (MCC), the Mobile Network Code (MNC) is coded as in TS 24.008 [9].

The Tracking Area Code (TAC) for E-UTRAN is coded in 2 bytes as specified in TS 24.301 [46].

The E-UTRAN Cell Identifier (ECI) is coded as defined in TS 36.401 [48]. ECI has a length of 28 bits. The most significant bit of ECI is coded on the most significant bit of byte 8. The least significant bit of ECI is coded on the 4th bit of byte 11. The 4 least significant bits of byte 11 shall be set to 1.

### 8.19.4 Location Information for NG-RAN

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| --- | --- | --- |
| Byte(s) | Description | Length |
| 1 | Location Information tag | 1 |
| 2 | Length = '0B' or '03' (see Note) | 1 |
| 3 – 5 | Mobile Country & Network Codes (MCC & MNC) | 3 |
| 6 – 8 | Tracking Area Code (TAC) (see Note) | 3 |
| 9 – 13 | NR Cell Identifier (NCI) (see Note) | 5 |
| NOTE: When this object is used in the Network Rejection event download, the Tracking Area Code (TAC) and the NR Cell Identifier (NCI) fields shall not be present and the length field shall be set to '03'. |

The Mobile Country Code (MCC), the Mobile Network Code (MNC) is coded as in TS 24.008 [9].

The Tracking Area Code (TAC) for NG-RAN is coded in 3 bytes as specified in TS 24.501 [70]. The most significant bit of TAC is coded on the most significant bit of byte 6. The least significant bit of TAC is coded on the least significant bit of byte 8.

NR Cell Identifier (NCI) Value is coded on 36 bits as referenced in TS 38.413 [69] clause 9.3.1.7. The most significant bit of NCI is coded on the most significant bit of byte 9. The least significant bit of NCI is coded on the 4th bit of byte 13. The 4 least significant bits of byte 13 shall be set to 1.

### 8.19.5 Location Information when no surrounding macrocell is detected

When PROVIDE LOCAL INFORMATION with command qualifier '13' is used and no surrounding macrocell is detected for an Access Technology, a location information data object with length set to '00' shall be present.

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| --- | --- | --- |
| Byte(s) | Description | Length |
| 1 | Location Information tag | 1 |
| 2 | Length = '00' | 1 |