**3GPP TSG-CT WG1 Meeting #130-eC1-21xxxx**

**Electronic meeting, 20–28 May 2021 Revision of C1-213097**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **24.501** | **CR** |  | **rev** | **1** | **Current version:** | **17.2.1** |  |
|  |
| *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 |  | Core Network | **X** |

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| ***Title:***  | The handling of Entries with same PLMN ID in the CAG information list |
|  |  |
| ***Source to WG:*** | China Mobile, NTT DOCOMO |
| ***Source to TSG:*** | C1 |
|  |  |
| ***Work item code:*** | 5GProtoc17 |  | ***Date:*** | 2021-05-13 |
|  |  |  |  |  |
| ***Category:*** | **F** |  | ***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 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-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)* |
|  |  |
| ***Reason for change:*** | In TS 24.501 9.11.3.18A, the “Length of entry contents” of CAG information list IE is one octet, which means there is a limit to the number of the CAG-IDs for one PLMN. In the case the number of allowed CAG-IDs for one PLMN configured by the network exceeds that limit, the allowed CAG-IDs for the PLMN need to be configured to separate Entries with the same PLMN ID.It is suggested either the UE support separate Entries with the same PLMN ID and not ignore one of the entries, or both the AMF and the UE consider supporting a range of CAG-IDs to avoid the limitation to the number of the CAG-IDs in an entry.In Rel-16, there's no restriction about only one entry for a PLMN, and no error handling on two entries for a PLMN either. So in Rel-16 how the UE and AMF behave in this case are up to implemention. A R16 UE may store one entry only, or consider an entry of CAG information list or the entire CAG information list as incorrect. These possible behaviours need to be considered. |
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| ***Summary of change:*** | 1. Add the case separate entries with the same PLMN ID.
2. Add EN for R16 UE.
3. Add EN for FFS of containing a range CAG-IDs in a entry.
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| ***Consequences if not approved:*** |  |
|  |  |
| ***Clauses affected:*** | 9.11.3.18A |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** | 1. Add NTT DOCOMO to the Source.
2. Update the descriptions in the text.
3. Add an EN for an abormal case.
4. Add an EN for R16 UE.
5. Add an EN for FFS of containing a range CAG-IDs in an entry.
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\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* NEXT CHANGE \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

9.11.3.18A CAG information list

The purpose of the CAG information list information element is to provide "CAG information list" or to delete the "CAG information list" at the UE.

The CAG information list information element is coded as shown in figures 9.11.3.18A.1 and 9.11.3.18A.2 and table 9.11.3.18A.1.

The CAG information list is a type 6 information element, with a minimum length of 3 octets.

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| CAG information list IEI | octet 1 |
| Length of CAG information list contents | octet 2octet 3 |
| Entry 1 | octet 4\*octet a\* |
| Entry 2 | octet a+1\*octet b\* |
| … | octet b+1\*octet g\* |
| Entry n | octet g+1\*octet h\* |

**Figure 9.11.3.18A.1: CAG information list information element**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |  |
| Length of entry contents | octet q |
| MCC digit 2 | MCC digit 1 | octet q+1 |
| MNC digit 3 | MCC digit 3 | octet q+2 |
| MNC digit 2 | MNC digit 1 | octet q+3 |
| 0Spare | 0Spare | 0Spare | 0Spare | 0Spare | 0Spare | 0Spare | CAGonly | octet q+4 |
| CAG-ID 1 | octet q+5\*octet q+8\* |
| CAG-ID 2 | octet q+9\*octet q+12\* |
| … | octet q+13\*octet q+4m\* |
| CAG-ID n | octet q+4m+1\*octet q+4m+4\* |

**Figure 9.11.3.18A.2: Entry n**

**Table 9.11.3.18A.1: CAG information list information element**

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| --- |
| MCC, Mobile country code (octet q+1 and bits 1 to 4 octet q+2)The MCC field is coded as in ITU-T Recommendation E.212 [42], annex A. |
|  |
| MNC, Mobile network code (bits 5 to 8 of octet q+2 and octet q+3)The coding of this field is the responsibility of each administration but BCD coding shall be used. The MNC shall consist of 2 or 3 digits. If a network operator decides to use only two digits in the MNC, bits 5 to 8 of octet 6 shall be coded as "1111". |
|  |
| The contents of the MCC and MNC digits are coded as octets 6 to 8 of the Temporary mobile group identity IE in figure 10.5.154 of 3GPP TS 24.008 [12].The contents of the MCC and MNC digits can be the same in separate entries. |
|  |
| Indication that the UE is only allowed to access 5GS via CAG cells (CAGonly) (bit 1 of octet q+4) |
| Bit |
| **1** |  |
| 0 | "Indication that the UE is only allowed to access 5GS via CAG cells" is not set (i.e. the UE is allowed to access 5GS via non-CAG cells) |
| 1 | "Indication that the UE is only allowed to access 5GS via CAG cells" is set (i.e. the UE is not allowed to access 5GS via non-CAG cells) |
|  |
| CAG-ID m (octet q+4m+1 to octet q+4m+4)This field contains the 32 bit CAG-ID. The coding of the CAG-ID is defined as the CAG-Identifier in 3GPP TS 23.003 [4].NOTE 1: The Length of CAG information list contents shall be 3 if no subscription data for CAG information list exists. NOTE 2: The Length of entry contents shall be 4 if there is no allowed CAG-ID for the PLMN. |

Editor's note (WI:5GProtoc17, CR#3216): How the UE handles the abnormal case the conflicted indications included in separate entries sharing the same PLMN-ID is FFS.

Editor's note (WI:5GProtoc17, CR#3216): Whether a clarification on Rel-16 is needed and how to avoid a Rel-16 UE considers an entry of CAG information list or the entire CAG information list as incorrect in the case separate entries sharing the same PLMN-ID are FFS.

Editor's note (WI:5GProtoc17, CR#3216): Whether to contain a range of CAG-IDs in an entry and how to encode it is FFS.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* END of CHANGE \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*