**3GPP TSG-CT WG1 Meeting #137-eC1-22xxxx**

**E-Meeting, 18th – 26th August 2022 Revision of C1-224648**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  |  | **CR** |  | **rev** | **6** | **Current version:** |  |  |
|  | | | | | | | | |
| *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 |  |

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| ***Title:*** | The last visited registered TAI for satellite access | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | China Mobile, Ericsson, China Southern Power Grid | | | | | | | | | |
| ***Source to TSG:*** | C1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | 5GSAT\_ARCH-CT | | | | |  | ***Date:*** | | | 2022-08-20 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | | -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)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | TS 23.501 subclause 5.4.11.6 specifies the support of Mobility Registration Update for NR satellite access:  *A moving radio cell for NR satellite access may indicate support for one or more TACs for each PLMN.*  *…*  *When indicating a last visited TAI in a Registration Update, a UE may indicate any TAI supported in a radio cell for the RPLMN or equivalent to the RPLMN for the last UE access prior to the Registration Update that is part of the UE Registration Area.*  In the case cell moves without UE movement, random indicating the last visited registered TAI could result in the accuracy of the decision of the registration area.  In TS 24.501 the following definition applies:  ***Last visited registered TAI:*** *A TAI which is contained in the registration area that the UE registered to the network and which identifies the tracking area last visited by the UE. If the cell is a satellite NG-RAN cell broadcasting multiple TAIs, a TAI which is contained in the registration area that the UE registered to the network and last selected by the UE as the current TAI.*  From the above it can be concluded that the last vistited registered TAI comes from the current TAI.  To avoid random indicating the LVRT without UE movement, keeping the current TAI/LVRT unchanged as possible until it has to change due to no longer included in broadcasting TAIs is suggested. | | | | | | | | |
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| ***Summary of change:*** | | Add the case the last visited registered TAI for a UE in *satellite NG-RAN cells broadcasting multiple TAIs*. | | | | | | | | |
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| ***Consequences if not approved:*** | | In the case cell moves without UE movement, random indicating the last visited registered TAI could result in the accuracy of the decision of the registration area. | | | | | | | | |
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| ***Clauses affected:*** | | 5.3.4 | | | | | | | | |
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|  | | **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:*** | |  | | | | | | | | |

\* \* \* First Change \* \* \* \*

### 5.3.4 Registration areas

Within the 5GS, the registration area is managed independently per access type, i.e., 3GPP access or non-3GPP access. The AMF assigns a registration area to the UE during the registration procedure. A registration area is defined as a set of tracking areas and each of these tracking areas consists of one or more cells that cover a geographical area. Within the 5GS, the concept of "registration to multiple tracking areas" applies:

a) A tracking area is identified by a TAI which is broadcast in the cells of the tracking area. The TAI is constructed from a TAC and a PLMN identity. In case of a shared network:

1) one or more TACs; and

2) any of the following:

i) multiple PLMN identities;

ii) multiple SNPN identities; or

iii) one or more PLMN identities and one or more SNPN identities;

are broadcast.

b) In order to reduce the tracking area update signalling within the 5GS, the AMF can assign several tracking areas to the UE. These tracking areas construct a list of tracking areas which is identified by a TAI list. When generating the TAI list, the AMF shall include only TAIs that are applicable on the access where the TAI list is sent. The AMF shall be able to allocate a TAI list over different NG-RAN access technologies. The AMF shall not allocate a TAI list containing both tracking areas in NB-N1 mode and tracking areas not in NB-N1 mode.

c) The UE considers itself registered to a list of tracking areas and does not need to trigger the registration procedure for mobility and periodic registration update used for mobility (i.e. the 5GS registration type IE set to "mobility registration updating" in the REGISTRATION REQUEST message) as long as the UE stays in one of the tracking areas of the list of tracking areas received from the AMF.

d) The UE will consider the TAI list as valid, until it receives a new TAI list in the next registration procedure for mobility and periodic registration update or generic UE configuration update procedure, or the UE is commanded by the network to delete the TAI list by a reject message or it is deregistered from the 5GS. If the registration request is accepted or the TAI list is reallocated by the AMF, the AMF shall provide at least one entry in the TAI list. If the new and the old TAI list are identical, the AMF does not need to provide the new TAI list to the UE during mobility registration update or periodic registration update.

e) The TAI list can be reallocated by the AMF.

f) When the UE is deregistered from the 5GS, the TAI list in the UE is invalid.

g) The UE includes the last visited registered TAI, if available, to the AMF. The last visited registered TAI is stored in a non-volatile memory in the USIM if the corresponding file is present in the USIM, else in the non-volatile memory in the ME, as described in annex C. The last visited registered TAI changes when the current TAI is no longer included in the TAIs currently broadcasted in the satellite NG-RAN cell.

\* \* \* End of Changes \* \* \* \*