**3GPP TSG SA WG2 Meeting #155S2-230xxxx**

**Athens, Greece, February 20 - 24, 2023 (revision of S2-230693r06, S2-2301853)**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **23.501** | **CR** | **3966** | **rev** | **2** | **Current version:** | **18.0.0** |  |
|  | | | | | | | | |
| *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 |  | Radio Access Network |  | Core Network | **X** |

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| ***Title:*** | Paging enhancement during satellite discontinuous coverage | | | | | | | | | |
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| ***Source to WG:*** | Vivo, Huawei, Hi Silicon | | | | | | | | | |
| ***Source to TSG:*** | SA2 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | 5GSAT\_Ph2 | | | | |  | ***Date:*** | | | 2023-01-06 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **B** |  | | | | | ***Release:*** | | | Rel-18 |
|  | *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:*** | | TR23.700-28 has conclusion about paging enhancement of UE considering satellite discontinuous coverage:  - AMF/MME takes the Tracking Area reported by RAN before AN release as the paging area.  Therefore, it is proposed to add such enhancement in TS23.501.    To enable this, it is necessary to let AMF notify NG-RAN to send UE location before AN release.   * Based on the satellite unreachability period (discontinuous coverage), AMF will request UE location from RAN. * When there is paging requirement, AMF will utilize the UE location that reported by RAN as paging area first. | | | | | | | | |
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| ***Summary of change:*** | | In case of NR satellite access, AMF will page the UE firstly with the UE location as received before AN release.  AMF requests RAN to report UE location based on unreachability period. | | | | | | | | |
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| ***Consequences if not approved:*** | | Incomplete specification based on Rel-18 5GSAT\_Ph2 conclusion. | | | | | | | | |
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| ***Clauses affected:*** | | 5.4.X.y (new)  Guidance to MCC, please insert the CRs in this order:  5.4.X Support of discontinuous network coverage for satellite access  (From CR4033)  5.4.X.1  Mobility Management and Power Saving Optimization  (From CR4033)  5.4.X.Y UE coverage information provisioning to the UE (from CR3956)  5.4.X.Z UE Coverage information provisioning to the AMF (from CR3956)  5.4.X.y  Paging (from CR3966)  5.4.X.y  Overload control (from CR4020) | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 \* \* \* \*

### 5.4.X.y Paging

For NR satellite access that provides discontinuous network coverage, AMF may utilize sub-area paging as described in clause 4.2.3.3 of TS 23.502 [3] (e.g. first page in the last known cell-id or TA and retransmission in all registered TAs). The AMF may utilize the location information as received at or before the AN release due to the discontinuous coverage for paging optimization.

The AMF may e.g. receive UE location from NG-RAN during the Registration procedure e.g. triggered for Mobility Management and Power Saving Optimization for discontinuous network coverage as described in clause 5.4.x.1, or the AMF may request UE location when UE is in CM-CONNECTED state as described in clause 5.4.7.\* \* \* \* End of change \* \* \* \*