**3GPP TSG-WG SA2 Meeting #154 *S2-2210589***

**Toulouse, France, November 14 – 18, 2022 (revision of S2-220xxxx)**

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| *CR-Form-v12.2* |
| **CHANGE REQUEST** |
|  |
|  | **23.501** | **CR** | **3793** | **rev** | **-** | **Current version:** | **17.6.0** |  |
|  |
| *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:***  | Support of Satellite Edge Computing via UPF deployed on satellite |
|  |  |
| ***Source to WG:*** | Huawei, HiSilicon, CATT |
| ***Source to TSG:*** | SA2 |
|  |  |
| ***Work item code:*** | 5GSATB |  | ***Date:*** | 2022-11-04 |
|  |  |  |  |  |
| ***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 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-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19)* |
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| ***Reason for change:*** | Support of Satellite Edge Computing via UPF deployed on satellite is concluded in clause 8.2 of TR 23.700-27. This contribution proposes to add corresponding descriptions into the TS. |
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| ***Summary of change:*** | Add a new clause 5.X.Y to describe the support of Satellite Edge Computing via UPF deployed on GEO satellite. |
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| ***Consequences if not approved:*** | The Satellite Edge Computing via UPF deployed on satellite is not supported. |
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| ***Clauses affected:*** | 5.X.Y(new) |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** | **X** |  |  Other core specifications  | TS 23.502 CR 3629TS 23.503 CR 0779 |
| ***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 High level features

## 5.X Support for 5G satellite backhaul

### 5.X.Y Satellite Edge Computing via UPF deployed on satellite

Satellite edge computing service requires deploying UPF and edge computing services on satellites.

The UPF deployed on satellite can act as UL CL/BP/local PSA UPF or act as PSA UPF.

NOTE 1: In this release, Satellite Edge Computing via UPF deployed on satellite only applies to GEO satellite backhaul.

In the case of the UPF deployed on satellite acting as PSA, the following enhancements apply:

- In the case of UE accessing network via GEO satellite backhaul, the AMF sends the satellite backhaul category to the PCF, and the PCF generates or updates the URSP rule as defined in clause 6.1.2.2 of TS 23.503 [45] including an appropriate Route Selection Descriptor for services deployed on GEO satellite.

- UE establishes a PDU Session as described in clause 4.3.2 of TS 23.502 [3].

In the case of the UPF deployed on satellite acting as UL CL/BP and local PSA, the SMF performs UL CL/BP/local PSA selection and insertion during the PDU Session Establishment procedure as described in clause 4.3.2 of TS 23.502 [3] or PDU Session Modification procedure as described in clause 4.3.3 of TS 23.502 [3] based on GEO satellite ID provided by the AMF, which includes:

- The AMF determines the GEO satellite ID serving the UE and sends the GEO satellite ID to the SMF.

NOTE 2: It is assumed that AMF determines the GEO Satellite ID based on local configuration, e.g. based on Global RAN Node IDs associated with satellite backhaul.

- The SMF determines DNAI based on local configuration and the GEO Satellite ID received from AMF.

NOTE 3: It's assumed that a DNAI value is assigned for each GEO Satellite ID by the operator. SMF is local configured with mapping relationship between DNAI and GEO Satellite ID.

- The SMF obtains the EAS Deployment Information as described in clause 6.2.3.4 of TS 23.548 [130]. If the UE is allowed to access the service(s) according to the EAS Deployment Information, the SMF selects the UL CL/BP/local PSA based on the DNAI corresponding to the GEO Satellite ID and other factors as described in clause 6.2.3.2 of TS 23.548 [130].

- The SMF provides traffic filters to the UL CL/BP to perform traffic routing as described in clause 5.6.4.

\* \* \* \* End of changes \* \* \* \*