**3GPP TSG-SA WG2 Meeting #165S2-24xxxxx**

**Hyderabad, India; 14th – 18th October 2024**

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  |  | **CR** |  | **rev** | **-** | **Current version:** | **19.1.0** |  |
|  | | | | | | | | |
| *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 | **X** | Core Network | **X** |

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| ***Title:*** | Support of Regenerative-based satellite access | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | China Telecom | | | | | | | | | |
| ***Source to TSG:*** | SA2 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** |  | | | | |  | ***Date:*** | | |  |
|  |  | | | |  | |  | | |  |
| ***Category:*** |  |  | | | | | ***Release:*** | | |  |
|  | *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-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | Support of Regenerative-based satellite access is concluded in clause 8.3 of TR 23.700-29.  Following the conclusion, the following changes are proposed:  - added general support of Regenerative-based satellite access;  - added distinguishing the usage of Transparent-based satellite access and Regenerative-based satellite access;  - added IP address change for TNLA and N3 DL TNL due to feeder link switch;  -added Mapped Cell ID treatment for AMF;  - added the NG removal/Setup for Regenerative-based satellite access based on decision of RAN3 at August meeting;  - added the AMF not change for the UEs during the feeder link switch based on decision of RAN3 at August meeting;  - added the AN PDB and CN PDB decision for Regenerative-based satellite access. | | | | | | | | |
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| ***Summary of change:*** | |  | | | | | | | | |
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| ***Consequences if not approved:*** | | Regenerative-based satellite access is not supported. | | | | | | | | |
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| ***Clauses affected:*** | | 5.4.11.1, 5.4.11.2, 5.4.11.x | | | | | | | | |
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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 \* \* \* \*

### 5.4.11 Support for integrating NR satellite access into 5GS

#### 5.4.11.1 General

This clause describes the specific aspects for NR satellite access.

Both Transparent-based satellite access and Regenerative-based satellite access are supported, as described in TS 38.300 [27]. Unless otherwise specified in this clause, the following applies to both payload type.

\* \* \* Second Change \* \* \* \*

#### 5.4.11.2 Support of RAT types defined in 5GC for satellite access

In case of NR satellite access, the RAT Types values "NR(LEO)", "NR(MEO)", "NR(GEO)" and "NR(OTHERSAT)" are used in 5GC to distinguish the different NR satellite access types (see clause 5.4.10).

When a UE is accessing to the network via satellite access, the AMF determines the RAT type as specified in clause 5.4.10.

5GC functions/entities can distinguish the usage of Transparent-based satellite access and Regenerative-based satellite access based on deployments, e.g. identification of gNB or Cell using satellite access, when specific handling is needed for a payload type.

\* \* \* Third Change \* \* \* \*

#### 5.4.11.x Suport for Regenerative-based satellite access

For LEO/MEO with Regenerative-based satellite access, when the gNB onboard satellite leaves the service area of an AMF(e.g. when setting over the horizon), the gNB shall remove the NG connection with the AMF as specified in 38.300 [27]. When the gNB onboard satellite goes to service area of new AMF or goes back to service area of old AMF, the gNB shall setup NG connection with the AMF.

For LEO/MEO with Regenerative-based satellite access, if gNB IP address change due to feeder link switchover, the updating of TNLA with AMF using the new IP address shall followhe procedures described in 5.21. For the UE(s) with active PDU session(s), the related N3 DL TNL address(es) shall be updated through N2 PDU Session Resource Modify Indication procedure.

For LEO/MEO with Regenerative-based satellite access, during feeder link switchover the gNB onboard satellite shall not change the AMF for the UE(s).

The mapped cell ID reported from the gNB onboard satellite to the AMF as described in 38.300[27] is decoupled with RAN node ID, i.e. only corresponding to geographic area, so that the last know cell of a UE is irrelevant to RAN node.

For Regenerative-based satellite access, AN PDB and CN PDB are different from Transparent-based satellite access. The decision for AN PDB and CN PDB under different orbit is described in 5.7.4.

Editor's Note: SA2 will align its specifications if new solution is developed by RAN.

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