**3GPP TSG-SA WG2 Meeting #143E (e-meeting) *S2-2100487r03***

**February 24 – March 09, 2021, Elbonia (revision of S2-210xxxx)**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **23.501** | **CR** | **2587** | **rev** | **-** | **Current version:** | **16.7.0** |  |
|  |
| *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 | **X** | Radio Access Network |  | Core Network | **X** |

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| ***Title:***  | Packet Loss Rate measurements |
|  |  |
| ***Source to WG:*** | LG Electronics, Huawei, Lenovo, Motorola Mobility |
| ***Source to TSG:*** | SA2 |
|  |  |
| ***Work item code:*** | ATSSS\_Ph2 |  | ***Date:*** | 2017-02-18 |
|  |  |  |  |  |
| ***Category:*** | **B** |  | ***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)* |
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| ***Reason for change:*** | According to conclusion of TR 23.700-93, PMF needs to be enhanced to support PLR measurements |
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| ***Summary of change:*** | Add description on PLR. |
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| ***Consequences if not approved:*** | Cannot support PLR measurements. |
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| ***Clauses affected:*** | 5.32.5.2a (new) |
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|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  |  |
| ***affected:*** |  | **X** |  Test specifications |  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications |  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

\* \* \* \* Start of 1st Change \* \* \* \*

5.32.5.2a Packet Loss Rate Measurements

The UE and the UPF may decide to estimate the Packet Loss Rate (PLR) for an SDF over both accesses. For example, the UE may take this decision when an ATSSS rule in the UE requires the traffic of an SDF to be steered in accordance with a PLR-based threshold condition (e.g. PLR < 2%).

The UE and the UPF calculate the PLR for an SDF by exchanging PMF-PLR Report messages, as specified below. A PMF-PLR Report message is sent over 3GPP access or over non-3GPP access, using either the default QoS flow or a "target" QoS flow, as specified in clause 5.32.5.1.

The calculation of the PLR by the UE and by the UPF is based on the following mechanism. It is assumed that the PLR should be calculated for a target QoS flow, however, the same mechanism applies when the PLR should be calculated for the default QoS flow.

- The UE requests from UPF to start counting the number of received UL packets by sending a PMF-PLR Count Request message. The UPF starts counting of the received UL packets over the target QoS Flow and over the access network which the PMF-PLR Count Request message was received from. The UE starts counting the transmitted UL packets over the target QoS Flow and access network when it receives a PMF-PLR Count Response message from UPF.

- The UE requests from UPF to report the number of counted UL packets by sending a PMF-PLR Report Request message. The UPF sends a PMF-PLR Report Response message including the number of UL packets counted since it received the last PMF-PLR Count Request message.

NOTE: A PMF-PLR Report Request message can also indicate to UPF to start counting packets if the UE wants to measure the Packet Loss Rate again.

- The UE calculates the UL packet loss ratio based on the local counting result of the number of transmitted UL packets and reported number of received UL packets in the UPF.

- The UPF applies the same procedure for calculating the DL PLR

- When the UP connection of the MA PDU session is deactivated on an access, no PMF-PLR messages are sent on this access. The PMF in the UPF shall not send PMF-PLR message on this access if the UP connection is not available or after it receives notification from the (H-)SMF to stop sending the PMF-PLR message on this access.

- The UE and the UPF derive an estimation of the average PLR per QoS Flow over an access type by averaging the PLR measurements obtained over this access.

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