**3GPP TSG-SA5 Meeting #137e *S5-213253***

**electronic meeting, online, 10 - 19 May 2021** Revision of S5-20xxxx

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| *CR-Form-v11.4* | | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | | |
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|  | **32.255** | **CR** | **0306** | **rev** | **1** | **Current version:** | **17.1.1** |  |
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| *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:*** | Correct the message flow for URLLC Charging | | | | | | | | | |
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| ***Source to WG:*** | Huawei | | | | | | | | | |
| ***Source to TSG:*** | S5 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | 5G\_URLLC | | | | |  | ***Date:*** | | | 2021-04-27 |
|  |  | | | |  | |  | | |  |
| ***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 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-12 (Release 12)* *Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16)* | |
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| ***Reason for change:*** | | As per TS 23.501 and TS 23.502, for the URLLC charging, dual connectivity based end to end redundant user plane paths and the redundant transmission at transport layer is the redundancy of PDU sessions. The redundant transmission on the N3/N9 interface is the redundancy of QoS flows.The corresponding message flows should be added. | | | | | | | | |
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| ***Summary of change:*** | | Correct the message flow for dual connectivity based end to end redundant user plane paths.  Add the message flow for redundant transmission on N3/N9 interfaces and transport layer. | | | | | | | | |
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| ***Consequences if not approved:*** | | Can not support the URLLC service charging. | | | | | | | | |
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| ***Clauses affected:*** | | 5.2.2.17.1, 5.2.2.17.2.1, 5.2.2.17.2.2, 5.2.2.17.2.3, 5.2.2.17.X(New), 5.2.2.17.Y(New) | | | | | | | | |
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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 ... | | |
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| ***Other comments:*** | |  | | | | | | | | |

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| **First change** |

##### 5.2.2.17.1 General

Support highly reliable URLLC services is specified in TS 23.501 [200] clause 5.33 procedures and TS 23.502 [201] message flows for different scenarios:

- Dual Connectivity based end to end Redundant User Plane Paths.

- Support of redundant transmission on N3/N9 interfaces.

- Support for redundant transmission at transport layer.

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| **Next change** |

###### 5.2.2.17.2.1 PDU Session establishment

The charging message flow of PDU session establishment for supporting Dual Connectivity based end to end Redundant User Plane Paths, is based on Figure 5.2.2.2.2-1 description with the differences identified in clause 4.3.2.2.1.1 TS 23.502 [202].

In the Step 9ch-a, if the PDU Session requires redundancy, SMF sends the Charging Data Request [Initial] with the redundant transmission information.

If the PDU session establishment without redundancy handling based on local policy, SMF sends the Charging Data Request [Initial] as descriped in Figure 5.2.2.2.2-1. CHF considers the PDU session is used for the non-redundant transmission.

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| **Next change** |

###### 5.2.2.17.2.2 Void

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| **Next change** |

###### 5.2.2.17.2.3 Void

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| **Next change** |

##### 5.2.2.17.X Redundant transmission on N3/N9 interfaces

###### 5.2.2.17.X.1 PDU Session establishment

The charging message flow of PDU session establishment for supporting redundant transmission on N3/N9 interfaces, is based on Figure 5.2.2.2.2-1 description with the differences identified in clause 4.3.2.2.1.1 TS 23.502 [202].

As described in clause 5.33.1.2 of TS 23.501 [201], SMF decides to perform redundant transmission for one or more QoS Flows at the step 10.

In the Step 16ch-a，the SMF sends the Charging Data Request [Update] with the redundant transmission information.

###### 5.2.2.17.X.2 PDU Session Modification

The charging message flow of PDU session modification for supporting redundant transmission on N3/N9 interfaces, is based on Figure 5.2.2.2.3-1 description with the differences identified in clause 4.3.3.2 TS 23.502 [202].

2ch-a. If redundant transmission has not been activated to the PDU session and the SMF performs redundant transmission for the QoS Flow in step 2a, the SMF sends Charging Data Request [Update] to the CHF for the PDU session, with the trigger "Redundant transmission change".

If redundant transmission has been activated on the PDU Session, and the SMF stops redundant transmission in step 2a, the SMF sends Charging Data Request [Update] to the CHF for the PDU session, with the trigger "Redundant transmission change".

2ch-b. The CHF update the CDR for the URLLC.

2ch-c. The CHF acknowledges by sending Charging Data Response [Update] to the SMF.

###### 5.2.2.17.X.3 PDU Session Release

The charging message flow of PDU session release for supporting Dual Connectivity based end to end Redundant User Plane Paths, is based on Figure 5.2.2.2.4-1 description with the differences identified in clause 4.3.4.2 TS 23.502 [202].

2ch-a. The SMF sends Charging Data Request [Termination] to the CHF for terminating the charging associated with PDU session in each UPF, with the trigger "End of PDU session".

2ch-b. The CHF closes the CDR for the URLLC.

2ch-c. The CHF acknowledges by sending Charging Data Response [Termination] to the SMF.

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| **Next change** |

##### 5.2.2.17.Y Redundant transmission at transport layer

###### 5.2.2.17.Y.1 PDU Session establishment

The charging message flow of PDU session establishment for supporting redundant transmission at transport layer, is based on Figure 5.2.2.2.2-1 description with the differences identified in clause 4.3.2.2.1.1 TS 23.502 [202].

As per the clause 5.33.2.3 TS 23.501[201], the knowledge of supporting redundant transmission at transport layer can be configured in the SMF, or be configured in UPF and then obtained by the SMF via N4 capability negotiation during N4 Association setup procedure.

In the Step 16ch-a，, SMF sends the Charging Data Request [Update] with the redundant transmission information.

###### 5.2.2.17.Y.2 PDU Session Modification

The charging message flow of PDU session modification for supporting redundant transmission at transport layer, is based on Figure 5.2.2.2.3-1.

###### 5.2.2.17.Y.3 PDU Session Release

The charging message flow of PDU session release for supporting redundant transmission at transport layer, is based on Figure 5.2.2.2.4-1.

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| **End of change** |