**3GPP TSG-SA5 Meeting #130-e *S5-202035rev1***

**Online, , 20th Apr 2020 - 28th Apr 2020**

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| *CR-Form-v12.0* |
| **CHANGE REQUEST** |
|  |
|  | **28.554** | **CR** | **0042** | **rev** | **-** | **Current version:** | **16.4.0** |  |
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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 | **x** | Core Network |  |

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| ***Title:***  | Add KPI for UL packet delay in NG-RAN |
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| ***Source to WG:*** | Ericsson LM |
| ***Source to TSG:*** | S5 |
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| ***Work item code:*** | 5G\_SLICE\_ePA |  | ***Date:*** | 2020-04-08 |
|  |  |  |  |  |
| ***Category:*** | **B** |  | ***Release:*** | Rel-16 |
|  | *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-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:*** | KPI for aggregated UL packet delay in NG-RAN is missing in TS 28.554. |
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| ***Summary of change:*** | A KPI named “Integrated uplink delay in RAN“ has been added. The UL measurements in KPI are from TS 28.552 (with measurement definitions from TS 38.314), and they are combined to show the complete UL packet delay performance in NG-RAN. |
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| ***Consequences if not approved:*** | There will not be any KPI for UL packet delay performance in NG-RAN (only for DL that exist today). |
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| ***Clauses affected:*** | 6.3.1.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 28.552 CR 0206, 0207 |
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| ***Other comments:*** | S5-202016 (CR 0206) and S5-202017 (CR 0207) are measurements proposed to be added to TS 28.552, required by this KPI. |
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| ***This CR's revision history:*** |  |

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| **1st modified section** |

#### 6.3.1.x Integrated uplink delay in RAN

a) ULDelay\_NR.

b) This KPI describes the average packet transmission delay through the RAN part from the UE. It is used to evaluate delay performance of NG-RAN in uplink. It is the average packet delay from when an UL RLC SDU was scheduled, as per the scheduling grant provided, until time when the corresponding PDCP SDU was sent to the core network from gNB-CU-UP. It is a time interval (0.1 mS). The KPI type is MEAN. This KPI can optionally be split into KPIs per QoS level (mapped 5QI or QCI in NR option 3) and per S-NSSAI.

c) ULDelay\_NR = DRB.PdcpReordDelayUl + DRB.PdcpF1Delay + DRB.RlcDelayUl + DRB.AirIfDelayUl.

or optionally ULDelay\_NR.*QOS* = DRB.PdcpReordDelayUl.*QOS* + DRB.PdcpF1Delay.*QOS* + DRB.RlcDelayUl.*QOS* + DRB.AirIfDelayUl.*QOS* where *QOS* identifies the target quality of service class.

or optionally ULDelay\_NR.*SNSSAI* = DRB.PdcpReordDelayUl.*SNSSAI* + DRB.PdcpF1Delay.*SNSSAI* + DRB.RlcDelayUl.*SNSSAI* + DRB.AirIfDelayUl.*SNSSAI* where *SNSSAI* identifies the S-NSSAI

For KPI on SubNetwork level, the individual measurements shall first be averaged for all NRCellDUs and gNBCUUPFunctions in the SubNetwork, before adding the averaged UL delay components together.

C alternative) For KPI on SubNetwork level, the individual measurements shall first be averaged for all NRCellDUs and gNBCUUPFunctions in the SubNetwork, before adding the averaged UL delay components together.

) / #GNBCUUPFunction) + / #NRCellDU)

 and optionally KPI for QoS:

 ) ) / #GNBCUUPFunction) + / #NRCellDU

and optionally KPI for S-NSSAI:

 ) ) / #GNBCUUPFunction) + / #NRCellDU

For the above equations:

*QOS* identifies the target quality of service class

*SNSSAI* identifies the S-NSSAI

#NRCellDU is the number of NRCellDU(s) in the SubNetwork

#GNBCUUPFunction is the number of GNBCUUPFunction(s) in the SubNetwork

d) SubNetwork

e) It is assumed that the F1 uplink delay is the same as the F1 downlink delay. In non-split gNB scenario, the value of DRB.PdcpF1Delay (optionally DRB.PdcpF1Delay.*QOS,* and optionally *DRB.PdcpF*1Delay.*SNSSAI)* is set to zero because there are no F1-interfaces in this scenario.

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| **End of modified section** |