**3GPP TSG-SA5 Meeting #154 *S5-241799***

**Changsha, Hunan Province, China, 15th Apr 2024 - 19th Apr 2024**

|  |
| --- |
| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
|  |
|  | **28.552** | **CR** | **0559** | **rev** | **-** | **Current version:** | **18.6.0** |  |
|  |
| *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)*.* |
|  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network | **X** | Core Network |  |

|  |
| --- |
|  |
| ***Title:***  | Rel-19 CR TS 28.552 Distribution of delay over Uplink air-interface |
|  |  |
| ***Source to WG:*** | Samsung R&D Institute UK |
| ***Source to TSG:*** | S5 |
|  |  |
| ***Work item code:*** | PM\_KPI\_5G\_Ph4 |  | ***Date:*** | 2024-04-07 |
|  |  |  |  |  |
| ***Category:*** | **B** |  | ***Release:*** | Rel-19 |
|  | *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-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19) Rel-20 (Release 20)* |
|  |  |
| ***Reason for change:*** | In TS 28.552 in clause 5.1.1.1.2, Distribution of delay DL air-interface is present but similar statistics for UL is missing. Further this measurement can be helpful in Reliability assessment in UL based on a time constraint imposed by URLLC service. This can also be utilised for troubleshooting and analysing various scenarios when packet delay starts increasing in an network affecting performance of delay critical services to end users. This will give useful insights about individual packets delay performance for different delay ranges which eventually can be used to ensuring delay requirements in delay-critical URLLC services. |
|  |  |
| ***Summary of change:*** | A new measurment is added for Distribution of delay over Uplink air-interface |
|  |  |
| ***Consequences if not approved:*** | It will not be possible to obtain Distribution of delay over Uplink air-interface for various purposes like troubleshooting, ensuring delay requirements in delay-critical URLLC services etc. |
|  |  |
| ***Clauses affected:*** | 5.1.1.1.X |
|  |  |
|  | **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:*** |  |

|  |
| --- |
| **1st Change** |

##### 5.1.1.1.X Distribution of delay over Uplink air-interface(Uu)

a) This measurement provides the distribution of the time it takes for packet/transport-block transmission over the air-interface in the uplink direction. The measurement is calculated per PLMN ID and per QoS level (mapped 5QI or QCI in NR option 3) and per supported S-NSSAI.

b) DER (n=1)

c) This measurement is obtained by calculating the uplink delay for a MAC SDU packet/transport-block by: calculating the time difference between the point in time when the UL MAC SDU is successfully sent to RLC (i.e. tSucc(i,drbid) as defined in TS 38.314 [29], Table 4.2.1.2.2-2) and the point in time when the UL MAC SDU is scheduled in MAC layer as per the scheduling grant provided (i.e. tSched(i,drbid) as defined in TS 38.314 [29], Table 4.2.1.2.2-2) and then incrementing the corresponding (time constraint/delay threshold) bin by 1 where the result of above subtraction falls into. The measurement is performed per PLMN ID and per QoS level (mapped 5QI or QCI in NR option 3) and per supported S-NSSAI.

d) Each measurement is an integer representing the number of MAC SDU packets/transport-blocks whose measured delay is within the range of the bin. The number of measurements is equal to the number of PLMNs multiplied by the number of QoS levels or multiplied by the number of supported S-NSSAIs.

e) DRB.AirIfDelayDistUL.Bin\_Filter, where Bin indicates a time constraint/delay threshold range.

 Where filter is either of PLMN ID, QoS level and S-NSSAI or a combination thereof.

 PLMN ID represents the PLMN ID, QoS represents the mapped 5QI or QCI level, and SNSSAI represents S-NSSAI.

 NOTE: Number of bins and the range for each bin is left to implementation.

f) NRCellDU

g) Valid for packet switched traffic

h) 5GS

i) One usage of this measurement is for performance assurance within integrity area (user plane connection quality) and for performance assurance for URLLC services.

|  |
| --- |
| **End of Changes** |