**3GPP TSG-SA5 Meeting #139-e *S5-215195***

**e-meeting, 11 - 20 October 2021**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **28.552** | **CR** | **0322** | **rev** | - | **Current version:** | **17.4.0** |  |
|  | | | | | | | | |
| *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 |  |

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| ***Title:*** | Rel-17 CR 28.552 Add Time-domain average Maximum Scheduled Layer Number for MIMO scenario | | | | | | | | | |
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| ***Source to WG:*** | China Unicom, CATT, ZTE,HUAWEI, ERICSSON | | | | | | | | | |
| ***Source to TSG:*** | S5 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | ePM\_KPI\_5G | | | | |  | ***Date:*** | | | 2021-09-30 |
|  |  | | | |  | |  | | |  |
| ***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-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
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| ***Reason for change:*** | | In TS 28.552 there is no mearsurement about scheduled layers of a cell and no clear calculation method of spatial transmission capacity is defined either. | | | | | | | | |
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| ***Summary of change:*** | | Add new Time-domain average Maximum Scheduled Layer Number for MIMO scenario. | | | | | | | | |
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| ***Consequences if not approved:*** | |  | | | | | | | | |
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| ***Clauses affected:*** | | 5.1.1.30.x(new), 5.1.1.30.y(new), A.x(new) | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  |  | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

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| **1st Change** |

##### 5.1.1.30.x PDSCH Time-domain average Maximum Scheduled Layer Number of cell for MIMO scenario

a) This measurement provides the Time-domain average maximum scheduled layer number for PDSCH under MIMO scenario in the downlink.

b) SI

c) This measurement is obtained as:

Where *LM(T)* denotes the Time-domain average of maximum scheduled layer number for PDSCH under MIMO scenario in the downlink in the time period T. denotes the maximum number of scheduled layer of PDSCH at sampling occasion j; *K(T)* denotes the number of sampling occasions at which is not 0; *T* denotes the time period during which the measurement is performed; and *j* denotes the sampling occasion during time period T, a sampling occasion is 1 symbol.

d) A single real value.`

e) RRU.MaxLayerDlMimo, *which indicates the PDSCH* *Time-domain average maximum scheduled layer number for MIMO scenario in the downlink.*

f) NRCellDU.

g) Valid for packet switching.

h) 5GS.

i) One usage of this measurement is evaluate the actural spatial capability of a cell in the downlink under MIMO scenario.

##### 5.1.1.30.y PUSCH Time-domain average Maximum Scheduled Layer Number of cell for MIMO scenario

a) This measurement provides the Time-domain average maximum scheduled layer number for PUSCH under MIMO scenario in the uplink.

b) SI

c) This measurement is obtained as:

Where *LM(T)* denotes the Time-domain average of maximum scheduled layer number for PUSCH under MIMO scenario in the uplink in the time period T. denotes the maximum number of scheduled layer of PUSCH at sampling occasion j; *K(T)* denotes the number of sampling occasions at which is not 0; *T* denotes the time period during which the measurement is performed; and *j* denotes the sampling occasion during time period T, a sampling occasion is 1 symbol.

d) A single real value.

e) RRU.MaxLayerUlMimo, *which indicates the PUSCH* *Time-domain average maximum scheduled layer number for MIMO scenario in the uplink.*

f) NRCellDU.

g) Valid for packet switching.

h) 5GS.

i) One usage of this measurement is evaluate the actural spatial capability of a cell in the uplink under MIMO scenario.

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| **2nd Change** |

# A.X Monitoring of Time-domain average Maximum Scheduled Layer Number for MIMO scenario

The Time-domain average maximum scheduled layer number for MIMO scenario measurement could provide operators the scheduled layer number, the actural spatial capability of a cell under MIMO scenario and can help operators to calculate the radio resource untilization rate.

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| **End of Change** |