**3GPP TSG-SA5 Meeting #162 *S5-253989***

Goteborg, Sweden, 25 - 29 August 2025

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| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **28.554** | **CR** | **0244** | **rev** | **1** | **Current version:** | **19.4.1** |  |
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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 | **x** | Core Network | **x** |

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| ***Title:*** | Rel-19 CR TS 28.554 Change the structure of clauses 6.9 and 6.10 | | | | | | | | | |
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| ***Source to WG:*** | Huawei, Ericsson | | | | | | | | | |
| ***Source to TSG:*** | SA5 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | TEI19 | | | | |  | ***Date:*** | | | 2025-08-15 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | F |  | | | | | ***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 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-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)  Rel-20 (Release 20)* | |
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| ***Reason for change:*** | | The structure of clauses 6.9 and 6.10 are not aligned with other clauses in TS 28.554. In clause 6.9, these KPIs should belong to the category of Utilization KPI so move them under 6.4. In clause 6.10, the KPI category should be Availability KPI and the layers of clauses are too complex.  Editor’s note in clause 4 is resloved because Availability KPIs are already included in this TS. | | | | | | | | |
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| ***Summary of change:*** | | Void clauses 6.9 and 6.10. Move KPIs in 6.9 under 6.4 and replace 6.10 by new clauses 6.Y.  Remove the editor’s note in clause 4 and add Availability in the list of KPI categories. | | | | | | | | |
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| ***Consequences if not approved:*** | | The structure of TS 28.554 is not consistent. | | | | | | | | |
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| ***Clauses affected:*** | | 4, 6.9, 6.10, 6.4.X(new), 6.4.Y(new), 6.4.Z(new), 6.Y(new), 6.Y.1(new), 6.Y.2(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 ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

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| **1st Change** |

# 4 End to end KPI concept and overview

The following KPI categories are included in the present document:

- Accessibility (see the definition in [3]).

- Integrity (see the definition in [3]).

- Utilization.

- Retainability (see the definition in [3]).

- Mobility.

- Energy Efficiency.

- Reliability (See the definition in [13]).

- Availability.

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| **2nd Change** |

## 6.9 Void

## 6.10 Void

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| **3rd Change** |

## 6.4 Utilization KPI

### 6.4.X Average air-interface efficiency achievable per UE within the observed NRCellDU

a) AvgCqiEfficiency\_Cell.

b) The KPI describes the average air-interface efficiency for a NRCellDU according to CQI tables. The KPI takes into account both the channel rank(RI) and the channel quality(CQI), and can comprehensively reflect the overall channel quality of the cell.

b-1) real, refers to that of efficiency defined in TS 38.214 [14]

b-2) MEAN

c) Below is the equation for average air-interface efficiency for NRCellDU:



Where  is the efficiency used in the CQI table defined in TS 38.214 [14].

d) NRCellDU

### 6.4.Y Air interface downlink average efficiency based on MCS

a) AvgDlMcsEfficiency\_Cell.

b) The KPI describes the air-interface downlink efficiency for a NRCellDU according to PDSCH MCS index tables in TS 38.214 [14]. The KPI takes spatial multiplexing into account based on the MCS distribution measurement in TS 28.552 [6], and can comprehensively reflect the average efficiency of the cell both in SU MIMO and MU MIMO scenarios.

b-1) real, refers to that of efficiency defined in TS 38.214 [14]

b-2) MEAN

c) Below is the equation for air-interface downlink average efficiency based on MCS for NRCellDU:



Where X represents the index of rank value (1 to 8), Y represents the index of table value (1 to 4), and Z represents the index of the MCS value (0 to 31).

 is the efficiency when table index =Y and MCS index =Z used in PDSCH MCS tables defined in 5.1.3.1 in TS 38.214 [14].

 is the total used DL PRBs in statistical period T, which is specified in 5.1.1.2.1 in TS 28.552 [6].

d) NRCellDU

NOTE: The MCS efficiency here is based on scheduled PRB and decided by the MCS index which is defined in TS 38.214 [14] in clause 5.1.3.1.

### 6.4.Z Air interface uplink average efficiency based on MCS

a) AvgUlMcsEfficiency\_Cell.

b) The KPI describes the air-interface uplink efficiency for a NRCellDU according to PUSCH MCS index tables in TS 38.214 [14]. The KPI takes spatial multiplexing into account based on the MCS distribution measurement in TS 28.552 [6], and can comprehensively reflect the average efficiency of the cell both in SU MIMO and MU MIMO scenarios.

b-1) real, refers to that of efficiency defined in TS 38.214 [14]

b-2) MEAN

c) Below is the equation for air-interface uplink average efficiency based on MCS for NRCellDU:



Where X represents the index of rank value (1 to 8), Y represents the index of table value (1 to 2), and Z represents the index of the MCS value (0 to 31).

 is the efficiency when table index =Y and MCS index =Z used in PUSCH MCS tables defined in 6.1.4.1 in TS 38.214 [14].

 is the total used UL PRBs in statistical period T, which is specified in 5.1.1.2.2 in TS 28.552 [6].

d) NRCellDU

NOTE: The MCS efficiency here is based on scheduled PRB and decided by the MCS index which is defined in TS 38.214 [14] in clause 5.1.3.1.

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| **4th Change** |

## 6.Y Availability KPI

### 6.Y.1 Cell Availability KPI

a) CellAvailAvgTimeCU

b) This KPI describes the Average availability of cells in a gNB-CU for providing services to UEs. Cell availability is the time duration for which an active cell in a gNB-CU stays “In-Service”. This KPI provides “average availability time duration per cell” in a gNB-CU.

b-1) Integer, time duration (second)

b-2) MEAN

c) It is obtained by summing all measurements of OEU.CellInServiceTotal.NCGI (as defined in TS 28.552 [6] clause 5.1.4.1.1) for all the gNB-DUs GNB-DU CONFIGURATION UPDATE messages in a gNB-CU and then dividing the result by Ncell where Ncell is the total number of active cells (NR CGIs) present in Cells Status List in GNB-DU CONFIGURATION UPDATE messages of all the gNB-DUs in a gNB-CU as explained in TS 38.473 [16] clause 9.2.1.7.

d) GNBCUCPFunction

### 6.Y.2 Radio access network availability KPI

a) NwAvailAvgTimeRAN

b) This KPI describes the Average availability of a network in terms of cells availability for providing services to UEs. Cell availability is the time duration for which an active cell in a network stays “In-Service”. This KPI provides “average availability time duration per cell” of an entire RAN sub-network.

b-1) Integer, time duration (second)

b-2) MEAN

c) It is obtained by summing all measurements of CellAvailAvgTimeCU and then dividing the result by Ncu where Ncu is the total number of gNB-CUs present in the RAN network.

d) SubNetwork

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| **End of Change** |