**3GPP TSG-SA5 Meeting #133e *S5-205152***

**e-meeting 12th - 21st October 2020**

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| *CR-Form-v12.0* |
| **CHANGE REQUEST** |
|  |
|  |  **28.554** | **CR** | **0065** | **rev** | **-** | **Current version:** | **16.6.0** |  |
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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 | **X** |

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| ***Title:***  | Editorial Correction of TS 28.554 |
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| ***Source to WG:*** | Huawei, Orange |
| ***Source to TSG:*** | S5 |
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| ***Work item code:*** | ePM\_KPI\_5G |  | ***Date:*** | 2020-09-24 |
|  |  |  |  |  |
| ***Category:*** | **F** |  | ***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:*** | The work of KPI definition in TS 28.554 is finalized for Rel-16, the editor’s notes should be addressed and editorial errors should be corrected. |
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| ***Summary of change:*** | Address remianing editor’s notes and correct the editorial errors. |
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| ***Consequences if not approved:*** | Editorial errors will be left in the specification. |
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| ***Clauses affected:*** | 4, 5, 6.2.1, 6.2.2, 6.2.3, 6.2.5, 6.6.3, 6.7.1 |
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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:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

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| **1st of changes** |

# 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.

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| **2nd of changes** |

# 5 KPI definitions template

a) Name (Mandatory): This field shall contain the name of the KPI.

b) Description (Mandatory): This field shall contain the description of the KPI.
Within this field it should describe if the KPI is focusing on network or user view. This filed should also describe the logical KPI formula to derive the KPI. For example, a success rate KPI’s logical formula is the number of successful events divided by all events. This field should also show the KPI unit (e.g., kbit/s, millisecond) and the KPI type (e.g., mean, ratio).

c) Formula definition (Optional):
This field should contain the KPI formula using the 3GPP defined measurement names.
This field can be used only when the measurement(s) needed for the KPI formula are defined in 3GPP TS for performance measurements (TS 28.552 [6]). This field shall clarify how the aggregation shall be done, for the KPI object level(s) defined in d).

d) KPI Object (Mandatory):
This field shall contain the DN of the object instance where the KPI is applicable, including the object where the measurement is made. The DN identifies one object instance of the following IOC:

- NetworkSliceSubnet

- SubNetwork

- NetworkSlice

- NRCellDU

- NRCellCU

e) Remark: (Optional):
This field is for additional information reqquired for the KPI definition,
 e.g. the definition of a call in UTRAN.

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| **3rd of changes** |

### 6.2.1 Mean registered subscribers of network and network slice through AMF

a) AMFMeanRegNbr.

b) This KPI describe the mean number of subscribers that are registered to a network slice instance. It is obtained by counting the subscribers in AMF that are registered to a network slice instance. It is an Interger. The KPI type is CUM.

c) 

d) SubNetwork, NetworkSlice

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| **4th of changes** |

### 6.2.2 Registered subscribers of network and network slice through UDM

a) UDMRegNbr.

b) This KPI describe the total number of subscribers that are registered to a network slice instance. It is corresponding to the measurement RM.RegisteredSubUDMNbrMean that counts subscribers registered in UDM. It is an Interger. The KPI type is CUM.

c) 

d) SubNetwork, NetworkSlice

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| **5th of changes** |

### 6.2.3 Registration success rate of one single network slice

a) RSR.

b) This KPI describes the ratio of the number of successfully performed registration procedures to the number of attempted registration procedures for the AMF set which related to one single network slice and is used to evaluate accessibility provided by the end-to-end network slice and network performance. It is obtained by successful registration procedures divided by attempted registration procedures. It is a percentage. The KPI type is RATIO.

c)



Note: Above measurements with subcounter .*Type* should be defined in 3GPP TS 24.501 [4].

d) NetworkSlice

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| **6th of changes** |

### 6.2.5 PDU session Establishment success rate of one network slice (S-NSSAI)

a) PDUSessionEstSR.

b) This KPI describes the ratio of the number of successful PDU session establishment request to the number of PDU session establishment request attempts for 5G network for the SMF which related to one network slice (S-NSSAI) and is used to evaluate accessibility provided by the end-to-end network slice and network performance. It is obtained by the number of successful PDU session requests divided by the number of attempted PDU session requests. It is a percentage. The KPI type is RATIO.

c) 

d) NetworkSlice

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| **7th of changes** |

### 6.6.3 Successful rate of mobility registration updates of Single Network Slice

a) MobilityRegUpdateSR.

b) This KPI describes the successful rate of mobility registration updates in a network slice e at the AMF. This KPI is obtained by deviding the number of successful mobility registration updates at the AMFs by number of mobility registration update requests received by the AMFs of single network slice.

d) NetworkSlice

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| **8th of changes** |

### 6.7.1 NG-RAN data Energy Efficiency (EE)

#### 6.7.1.1 Definition

a) EEMN,DV.

b) A KPI that shows mobile network data energy efficiency in operational NG-RAN. Data Volume (DV) divided by Energy Consumption (EC) of the considered network elements. The unit of this KPI is bit/J.

c) EEMN,DV - for non-split gNBs;

 - for split-gNBs;

d) SubNetwork

e) The Data Volume (in kbits) is obtained by measuring amount of DL/UL PDCP SDU bits of the considered network elements over the measurement period. For split-gNBs, the Data Volume is calculated per Interface (F1-U, Xn-U, X2-U). The Energy Consumption (in kWh) is obtained by measuring the PEE.Energy of the considered network elements over the same period of time. The samples are aggregated at the NG-RAN node level. The 3GPP management system responsible for the management of the gNB (single or multiple vendor gNB) shall be able to collect PEE measurements data from all PNFs in the gNB, in the same way as the other PM measurements.

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| **End of changes** |