**3GPP TSG-SA5 Meeting #131-e *S5-203023***

**Online, 25th May 2020 - 3rd Jun 2020**

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| *CR-Form-v12.0* |
| **CHANGE REQUEST** |
|  |
|  | **32.423** | **CR** | **0113** | **rev** | **-** | **Current version:** | **16.0.0** |  |
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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:***  | Rel-16 CR TS 32.423 Adding SINR measurement in M1 for Immediate MDT |
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| ***Source to WG:*** | China Telecommunications, Huawei |
| ***Source to TSG:*** | S5 |
|  |  |
| ***Work item code:*** | TEI16 |  | ***Date:*** | 2020-05-12 |
|  |  |  |  |  |
| ***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:*** | MDT data are of great importance for RF optimization, and SINR which represents the signalling quality is commonly used in network optimization in LTE. However, in TS 32.423, the SINR measurement in M1 for Immediate MDT is absent in LTE and NR. And from another perspective, corresponding measurements are included in M1 in UMTS (see TS 32.422 clause 5.10.3 and TS 32.423 clause 4.17.1). It is better to align with UMTS.It is therefore proposed to add SINR measurement in M1 for Immediate MDT in LTE and NR. |
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| ***Summary of change:*** | Update the M1 measurement in LTE and NR by adding SINR for Immediate MDT. |
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| ***Consequences if not approved:*** | Misaligned and insufficient measurements cause confusion and low network optimization efficiency. |
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| ***Clauses affected:*** | 2, 4.16.1, 4.34.1 |
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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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| **Start of changes** |

# 2 References

The following documents contain provisions, which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TS 32.101: "Telecommunication management; Principles and high level requirements".

[2] 3GPP TS 32.421: "Telecommunication management; Subscriber and equipment trace: Trace concepts and requirements."

[3] 3GPP TS 32.422: "Telecommunication management; Subscriber and equipment trace: Trace control and configuration management ".

[4] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[5] W3C Recommendation "Extensible Markup Language (XML) 1.0" (Second Edition, 6 October 2000) http://www.w3.org/TR/2000/REC-xml-20001006

[6] W3C Recommendation "Namespaces in XML" (14 January 1999)
http://www.w3.org/TR/1999/REC-xml-names-19990114

[7] W3C Recommendation "XML Schema Part 0: Primer" (2 May 2001)
http://www.w3.org/TR/2001/REC-xmlschema-0-20010502

[8] W3C Recommendation "XML Schema Part 1: Structures" (2 May 2001)
http://www.w3.org/TR/2001/REC-xmlschema-1-20010502

[9] W3C Recommendation "XML Schema Part 2: Datatypes" (2 May 2001)
http://www.w3.org/TR/2001/REC-xmlschema-2-20010502

[10] International Standard ISO 8601: 1988 (E) "Representations of dates and times" (1988-06-15)
http://www.iso.ch/markete/8601.pdf

[11] 3GPP TS 32.300: "Telecommunication management; Configuration Management (CM); Name convention for Managed Objects".

[12] 3GPP TS 32.622: "Telecommunication management; Configuration Management (CM); Generic network resources Integration Reference Point (IRP): Network Resource Model (NRM)".

[13] 3GPP TS 29.274: "3GPP Evolved Packet System (EPS); Evolved General Packet Radio Service (GPRS) Tunnelling Protocol for Control plane (GTPv2-C); Stage 3".

[14] 3GPP TS 29.212: "Policy and Charging Control (PCC);Reference points".

[15] 3GPP TS 29.273: "Evolved Packet System (EPS); 3GPP EPS AAA interfaces".

[16] 3GPP TS 36.413: "Evolved Universal Terrestrial Radio Access Network (E-UTRAN); S1 Application Protocol (S1AP)".

[17] 3GPP TS 36.423 "Evolved Universal Terrestrial Radio Access Network (E-UTRAN); X2 Application Protocol (X2AP)".

[18] 3GPP TS 23.501: "System Architecture for the 5G System; Stage 2".

[19] 3GPP TS 23.502: "Procedures for the 5G System; Stage 2"

[20] 3GPP TS 38.300: "NR and NG-RAN Overall Description; Stage 2".

[21] 3GPP TS 38.331: "NR; Radio Resource Control (RRC); Protocol specification".

[22] 3GPP TS 38.401: "NG-RAN; Architecture Description".

[23] 3GPP TS 38.413: "NG-RAN; NG Application Protocol (NGAP)".

[24] 3GPP TS 38.423: "NG-RAN; Xn Application Protocol (XnAP)".

[25] 3GPP TS 38.463: "NG-RAN; E1 Application Protocol (E1AP)".

[26] 3GPP TS 38.473: "NG-RAN; F1 Application Protocol (F1AP)".

[27] 3GPP TS 24.501: "Non-Access-Stratum (NAS) protocol for 5G System (5GS); Stage 3".

[28] 3GPP TS 36.331: "Evolved Universal Terrestrial Radio Access (E-UTRA); Radio Resource Control (RRC); Protocol specification".

[29] 3GPP TS 23.107: "Quality of Service (QoS) concept and architecture".

[30] 3GPP TS 25.331: "Radio Resource Control (RRC); Protocol specification".

[31] 3GPP TS 36.314: "Evolved Universal Terrestrial Radio Access (E-UTRA); Layer 2 - Measurements".

[32] 3GPP TS 37.320: "Universal Terrestrial Radio Access (UTRA) and Evolved Universal Terrestrial Radio Access (E-UTRA); Radio measurement collection for Minimization of Drive Tests (MDT); Overall description; Stage 2".

[33] 3GPP TS 36.213: "Evolved Universal Terrestrial Radio Access (E-UTRA); Physical layer procedures".

[34] 3GPP TS 36.133: "Evolved Universal Terrestrial Radio Access (E-UTRA); Requirements for support of radio resource management".

[35] 3GPP TS 38.314: "NR; layer 2 measurements ".

[36] 3GPP TS 28.552: "Management and orchestration; 5G performance measurements".

[37] 3GPP TS 38.213: "NR; Physical layer procedures for control".

[38] 3GPP TS 36.214: "Evolved Universal Terrestrial Radio Access (E-UTRA); Physical layer; Measurements".

[39] 3GPP TS 32.425: "Telecommunication management; Performance Management (PM); Performance measurements Evolved Universal Terrestrial Radio Access Network (E-UTRAN)".

[40] IETF RFC 6455: "The WebSocket Procotol".

[41] IETF RFC 7692: "Compression Extensions for WebSocket".

[X] 3GPP TS 38.215: "NR; Physical layer measurements".

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| **Next change** |

## 4.16 LTE MDT Trace Record Content

### 4.16.1 Trace Record for Immediate MDT measurements

The following table contains the Trace record description for LTE immediate MDT measurements.
The trace record is the same for management based activation and for signalling based activation.

| **MDT measurement name** | **Measurement attribute name(s)** | **Measurement attribute definition** | **Notes** |
| --- | --- | --- | --- |
| M1 | RSRPs | List of RSRP values received in RRC measurement report. One value per measured cell. | TS 32.422 [3]TS 37.320 [32] |
| RSRQs | List of RSRQ values received in RRC measurement report. One value per measured cell. | TS 32.422 [3]TS 37.320 [32] |
| SINRs | List of SINR values received in RRC measurement report. One value per measured cell. | TS 32.422 [3]TS 36.214 [38] |
| PCIs | List of Physical Cell Identity of measured cells. The order of PCI values in the list should be the same as the corresponding measured values in the RSRPs and RSRQs attributes. | TS 36.331 [28] |
| Triggering event | Event that triggered the M1 measurement report, used only in case of RRM configured measurements (events A1, A2, A3, A4, A5, A6, B1 or B2) | TS 32.422 [3]TS 37.320 [32] |
| M2 | PH distr  | Distribution of the power headroom samples reported by the UE during the collection period. The distribution is the interval of [40; -23] dB. | TS 36.213 [33]TS 32.422 [3]TS 37.320 [32] |
| M3 | RIP distr | Distribution of the measured Received Interference Power samples obtained during the collection period. The distribution is in the interval of [-126, -75] dBm. | TS 36.133 [34]TS 32.422 [3]TS 37.320 [32] |
| M4 | UL volumes | List of measured UL volumes in bytes per E-RAB. One value per E-RAB. | TS 32.422 [3]TS 37.320 [32] |
| DL volumes | List of measured DL volumes in bytes per E-RAB. One value per E-RAB. | TS 32.422 [3]TS 37.320 [32] |
| QCIs | List of QCIs of the E-RABs for which the volume and throughput measurements apply. The order of QCI values in the list should be the same as the corresponding measured values in the UL volumes and DL volumes attributes. | TS 32.422 [3]TS 37.320 [32] |
| M5 | UL Thp Time | Throughput time used for calculation of the uplink throughput (per UE). | TS 36.314 [31]TS 32.422 [3]TS 37.320 [32] |
| UL Thp Volume | Throughput volume used for calculation of the uplink throughput (per UE). | TS 36.314 [31]TS 32.422 [3]TS 37.320 [32] |
| UL LastTTI Volume | Volume transmitted in the last TTI and excluded from throughput calculation in the uplink. | TS 36.314 [31]TS 32.422 [3]TS 37.320 [32] |
| DL Thp Times | List of throughput times used for calculation of the downlink throughput (per E-RAB). One value per E-RAB. | TS 36.314 [31]TS 32.422 [3]TS 37.320 [32] |
| DL Thp Volumes | List of Throughput volumes used for calculation of the downlink throughput (per E-RAB). One value per E-RAB. | TS 36.314 [31]TS 32.422 [3]TS 37.320 [32] |
| QCIs | List of QCIs of the E-RABs for which the volume and throughput measurements apply. The order of QCI values in the list should be the same as the corresponding measured values in the DL Thp Volumes and DL Thp Times attributes. | TS 32.422 [3]TS 37.320 [32] |
| DL Thp Time UE | Throughput time used for calculation of the downlink throughput (per UE). | TS 36.314 [31]TS 32.422 [3]TS 37.320 [32] |
| DL Thp Volume UE | Throughput volume used for calculation of the downlink throughput (per UE). | TS 36.314 [31]TS 32.422 [3]TS 37.320 [32] |
| DL LastTTI Volume | Volume transmitted in the last TTI and excluded from the throughput calculation in the downlink (per UE). | TS 36.314 [31]TS 32.422 [3]TS 37.320 [32] |
| M6 | DL packet delay per QCI | L2 Packet Delay for OAM performance observability or for QoS verification of MDT (per QCI). | TS 36.314 [31]TS 37.320 [32] |
| UL packet delay per QCI | Excess Packet Delay Ratio in Layer PDCP for QoS verification of MDT (per QCI). | TS 36.314 [31]TS 37.320 [32] |
| M7 | DL packet loss rate per QCI | packets that are lost at Uu transmission, for OAM performance observability. | TS 36.314 [31]TS 37.320 [32] |
| UL packet loss rate per QCI | packets that are lost in the UL, for OAM performance observability or QoS verification of MDT. | TS 36.314 [31]TS 37.320 [32] |
| M8 | RSSI (WLAN, Bluetooth®) | RSSI measurement by UE. | TS 36.331 [28]TS 37.320 [32] |
| M9 | RTT (WLAN) | RTT measurement by UE. | TS 36.331 [28]TS 37.320 [32] |

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| **Next change** |

## 4.34 NR MDT Trace Record Content

### 4.34.1 Trace Record for Immediate MDT measurements

The following table contains the Trace record description for NR immediate MDT measurements.
The trace record is the same for management based activation and for signalling based activation.

| **MDT measurement name** | **Measurement attribute name(s)** | **Measurement attribute definition** | **Notes** |
| --- | --- | --- | --- |
| M1 | RSRPs | List of RSRP values received in RRC measurement report. One value per measured cell. | TS 32.422 [3]TS 37.320 [32] |
| RSRQs | List of RSRQ values received in RRC measurement report. One value per measured cell. | TS 32.422 [3]TS 37.320 [32] |
| SINRs | List of SINR values received in RRC measurement report. One value per measured cell. | TS 38.215 [X]TS 32.422 [3] |
| PCIs | List of Physical Cell Identity of measured cells. The order of PCI values in the list should be the same as the corresponding measured values in the RSRPs and RSRQs attributes. | TS 38.331 [21] |
| Triggering event | Event that triggered the M1 measurement report, used only in case of RRM configured measurements (events A1, A2, A3, A4, A5, A6, B1 or B2) | TS 32.422 [3]TS 37.320 [32] |
| UE location | UE positioning information and sensors data | TS 38.331 [21] |
| M2 | PH distr  | Distribution of the power headroom samples reported by the UE during the collection period.  | TS 38.213 [37]TS 32.422 [3]TS 37.320 [32] |
| M3 (Not supported in rel. 16) |  |  |  |
| M4 | UL volumes | List of measured UL volumes in bytes per QoS level (per QCI in option 3 or mapped 5QI in other options). One value per QoS level. | TS 32.422 [3]TS 37.320 [32]TS 28.552 [36]TS 32.425 [39] |
| DL volumes | List of measured DL volumes in bytes per QoS level (per QCI in option 3 or mapped 5QI in other options). One value per QoS level. | TS 32.422 [3]TS 37.320 [32]TS 28.552 [36] |
| QoS level (QCI in option 3 or mapped 5QI in other options). | List of QoS levels of the DRBs for which the volume and throughput measurements apply. The order of QoS values in the list should be the same as the corresponding measured values in the UL volumes and DL volumes attributes. | TS 32.422 [3]TS 37.320 [32]TS 28.552 [36]TS 32.425 [39]TS 32.425 [39] |
| M5 | UL Thp Time | Throughput time used for calculation of the uplink throughput (per UE). | TS 38.314 [35]TS 32.422 [3]TS 37.320 [32] |
| UL Thp Volume | Throughput volume used for calculation of the uplink throughput (per UE). | TS 38.314 [35]TS 32.422 [3]TS 37.320 [32] |
| UL LastTTI Volume | Volume transmitted in the last TTI and excluded from throughput calculation in the uplink. | TS 38.314 [35]TS 32.422 [3]TS 37.320 [32] |
| DL Thp Times | List of throughput times used for calculation of the downlink throughput per QoS level (per QCI in option 3 or mapped 5QI in other options). One value per QoS level. | TS 38.314 [35]TS 32.422 [3]TS 37.320 [32]TS 32.425 [39] |
| DL Thp Volumes | List of throughput times used for calculation of the downlink throughput per QoS level (per QCI in option 3 or mapped 5QI in other options). One value per QoS level. | TS 38.314 [35]TS 32.422 [3]TS 37.320 [32]TS 32.425 [39] |
| QoS level (QCI in option 3 or mapped 5QI in other options). | List of QoS levels of the DRBs for which the volume and throughput measurements apply. The order of QoS values in the list should be the same as the corresponding measured values in the UL volumes and DL volumes attributes. | TS 32.422 [3]TS 37.320 [32]TS 28.552 [36]TS 32.425 [39] |
| DL Thp Time UE | Throughput time used for calculation of the downlink throughput (per UE). | TS 38.314 [35]TS 32.422 [3]TS 37.320 [32] |
| DL Thp Volume UE | Throughput volume used for calculation of the downlink throughput (per UE). | TS 38.314 [35]TS 32.422 [3]TS 37.320 [32] |
| DL LastTTI Volume | Volume transmitted in the last TTI and excluded from the throughput calculation in the downlink (per UE). | TS 38.314 [35]TS 32.422 [3]TS 37.320 [32] |
| M6 | DL packet delay per QoS level (per QCI in option 3 or mapped 5QI in other options). | L2 Packet Delay for OAM performance observability or for QoS verification of MDT (per QCI). | TS 37.320 [32]TS 28.552 [36]TS 32.425 [39] |
| UL packet delay per QoS level (per QCI in option 3 or mapped 5QI in other options). | Excess Packet Delay Ratio in Layer PDCP for QoS verification of MDT (per QoS). | TS 38.314 [W]TS 37.320 [32]TS 28.552 [36]TS 32.425 [39] |
| M7 | DL packet loss rate per QoS level (per QCI in option 3 or mapped 5QI in other options). | packets that are lost at Uu transmission, for OAM performance observability. | TS 37.320 [32]TS 28.552 [36]TS 32.425 [39] |
| UL packet loss rate per QoS level (per QCI in option 3 or mapped 5QI in other options). | packets that are lost in the UL, for OAM performance observability or QoS verification of MDT. | TS 38.314 [W]TS 37.320 [32]TS 28.552 [36]TS 32.425 [39] |
| M8 | RSSI (WLAN, Bluetooth®) | RSSI measurement by UE. | TS 37.320 [32] |
| M9 | RTT (WLAN) | RTT measurement by UE. | TS 37.320 [32] |

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| **end of changes** |