**3GPP TSG-****RAN2 Meeting #116-e E-meeting *R2-21xx***

**Online, November 1-12 2021**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
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|  |  | **CR** | **<CR#>** | **rev** | **<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 | **X** | Radio Access Network | **X** | Core Network |  |

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| ***Title:***  | Introduction of event-based trigger for LTE MDT logging |
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| ***Source to WG:*** | KDDI Corporation, CMCC, Telecom Italia, Samsung, Ericsson, China Unicom, [Huawei, HiSilicon]?, Qualcomm Inc. |
| ***Source to TSG:*** | R2 |
|  |  |
| ***Work item code:*** | TEI17 |  | ***Date:*** | 2021-10-xx |
|  |  |  |  |  |
| ***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 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-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)* |
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| ***Reason for change:*** | This CR is to introduce event-based trigger function for MDT logging for LTE. The function supports two types of event, outOfCoverage and eventL1 same as NR. |
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| ***Summary of change:*** | 5.1.1.1.1 Configuration parameters* Text procedure is updated to support event-based trigger for E-UTRAN

5.1.4 UE capabilities: new UE capability bits for event triggered logged MDT |
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| ***Consequences if not approved:*** | Event-based trigger function for MDT logging cannot be supported. |
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| ***Clauses affected:*** | 5.1.1.1.1, 5.1.4 |
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|  | **Y** | **N** |  |  |
| ***Other specs*** | **X** |  |  Other core specifications  | TS 36.331 CR xxx TS 36.306 CR xxx |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

*First Modified Subclause*

##### 5.1.1.1.1 Configuration parameters

The logged measurement configuration consists of:

- configuration of downlink pilot strength measurements logging for (E-)UTRA and NR.

- configuration of MBSFN measurement logging for E-UTRA.

- configuration of the triggering of logging events:

- for (E-)UTRAN:

- periodic measurement trigger is supported, for which the logging interval is configurable. The parameter specifies the periodicity for storing MDT measurement results. It should be configured in seconds in multiples of the applied IDLE mode DRX, i.e. multiples of 1.28s which is either a factor or multiple of the IDLE mode DRX. The UE behaviour is unspecified when the UE is configured with a DRX cycle larger than the logging interval.

- for NR:

- periodic measurement trigger is supported, for which the logging interval is configurable. The parameter specifies the periodicity for storing MDT measurement results.

 - for (E-)UTRAN and NR:

- event-based trigger is supported, for which the logging interval is configurable, which determines periodical logging of available data (e.g. time stamp, location information), and the following two types of events are supported:

- measurement quantity-based event L1, for which the event threshold, hysteresis, and time to trigger are configurable. If the configured time to trigger is not a multiple of the DRX cycle, then the UE uses the next multiple of DRX cycle duration that is larger than the time to trigger for evaluating the event L1;

- out-of-coverage detection trigger.

NOTE: The logging configuration for event-based and periodical DL pilot strength logged measurements can be configured independently. Only one type of event can be configured to the UE.

- configuration of the logging duration. This configuration parameter defines a timer activated at the moment of configuration, that continues independent of state changes, RAT or RPLMN change. When the timer expires the logging is stopped and the configuration is cleared (except for the parameters that are required for further reporting e.g. network absolute time stamp, trace reference, trace recording session reference and TCE Id).

- network absolute time stamp to be used as a time reference to UE.

- Trace Reference parameter as indicated by the OAM configuration as specified in TS 32.422 [6].

- Trace Recording Session Reference as indicated by the OAM configuration as specified in TS 32.422 [6].

- TCE Id as indicated by the OAM configuration as specified in TS 32.422 [6].

- (optionally) MDT PLMN List, indicating the PLMNs where measurement collection and log reporting is allowed. It is either the Management Based MDT PLMN List or the Signalling Based MDT PLMN List, depending on how the Logged MDT task was initiated (see 5.1.3).

- (optionally) configuration of a logging area. A UE will log measurements as long as it is within the configured logging area. The scope of the logging area may consist of one of:

- a list of up to 32 global cell identities. If this list is configured, the UE will only log measurements when camping in any of these cells

- a list of up to 8 TAs or 8 LAs or 8 RAs. If this list is configured, the UE will only log measurements when camping in any cell belonging to the preconfigured TA/LA/RAs.

- The configured logging area can span PLMNs in the MDT PLMN List. If no area is configured, the UE will log measurements throughout the PLMNs of the MDT PLMN list.

- (optionally) for NR, configuration of a list of neighbouring frequencies and/or cells, indicating the UE to include neighbouring cell's measurements as indicated in the list in the logged MDT report.

- (optionally) for E-UTRA, configuration of target MBSFN area(s) for MBSFN measurement logging. If target MBSFN area(s) is configured, UE applies it in addition to other restrictions such as the logging area. The UE will log measurements as long as it receives MBMS service from an indicated target MBSFN area and is within the configured logging area. The target MBSFN area(s) is defined by a list of up to 8 entries, where each entry indicates a carrier frequency and optionally indicates a specific MBSFN area on a carrier frequency.

- (optionally) configuration of the WLAN access point names, indicating the UE to attempt to obtain WLAN measurements associated to these access points.

- (optionally) configuration of the Bluetooth beacon names, indicating the UE to attempt to obtain Bluetooth measurements associated to these beacons.

- (optionally) for NR, configuration of the sensor names, indicating the UE to attempt to obtain sensor measurements.

*Next Modified Subclause*

### 5.1.4 UE capabilities

MDT relevant UE capabilities are component of radio access UE capabilities. Thus, the procedures used for handling UE radio capabilities over (E-)UTRAN and NR apply.

For (E-)UTRAN:

- The UE indicates one capability bit for support for Logged MDT, which indicates that the UE supports logging of downlink pilot strength measurements. The UE may also indicate capability bits for support for event triggered Logged MDT. The UE may also indicate capability for stand-alone GNSS positioning.

- The E-UTRA UE may indicate a capability for RX-TX time difference measurement for E-CID positioning for MDT.

- The E-UTRA UE may indicate a capability for support of logging of MBSFN measurements.

- The E-UTRA UE may indicate a capability for support of UL PDCP delay measurement when the UE is not configured with MR-DC.

- The E-UTRA UE may indicate a capability for support of UL PDCP Packet Average Delay measurement when the UE is configured with EN-DC.

- The E-UTRA UE may indicate a capability for support of Bluetooth measurements in RRC idle mode.

- The E-UTRA UE may indicate a capability for support of WLAN measurements in RRC idle mode.

- The E-UTRA UE may indicate a capability for support of Bluetooth measurements in RRC connected mode.

- The E-UTRA UE may indicate a capability for support of WLAN measurements in RRC connected mode.

- For UMTS support of the Accessibility measurements is an optional UE feature.

For NR:

- The UE indicates one capability bit for support for Logged MDT in RRC idle and inactive mode, to indicate that the UE supports logging of downlink pilot strength measurements, periodical logging and event-triggered logging.

- The UE may indicate capability for stand-alone GNSS positioning.

- The NR UE may indicate a capability for support of UL PDCP delay measurement.

- The NR UE may indicate a capability for support of Bluetooth measurements in RRC idle and inactive mode.

- The NR UE may indicate a capability for support of WLAN measurements in RRC idle and inactive mode.

- The NR UE may indicate a capability for support of Bluetooth measurements in RRC connected state.

- The NR UE may indicate a capability for support of WLAN measurements in RRC connected state.

- The NR UE may indicate a capability for support of barometer measurements.

- The NR UE may indicate a capability for support of orientation measurements.

- The NR UE may indicate a capability for support of speed measurements.

*End of Changes*