**3GPP TSG-RAN WG2 Meeting #121-e *R2-23xxxxx***

**Electronic, February 27th – March 3rd 2023**

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **38.331** | **CR** | **-** | **rev** | **-** | **Current version:** | **17.3.0** |  |
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| *For* [***HELP***](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:*** | Rel.17 SON/MDT RRC Corrections | | | | | | | | | |
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| ***Source to WG:*** | Ericsson | | | | | | | | | |
| ***Source to TSG:*** | R2 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_ENDC\_SON\_MDT\_enh-Core | | | | |  | ***Date:*** | | | 2023-03-10 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | F |  | | | | | ***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-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
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| ***Reason for change:*** | | 1. Changes to reflect agreements from RAN2#121: 2. Last change in R2-2301569 3. Proposal 2 in R2-2301580 4. Changes in R2-2301556 | | | | | | | | |
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| ***Summary of change:*** | | The following changes are introduced:   1. Changes in 5.7.10.4 as in the last change in R2-2301569. 2. Changes in 5.7.9.2, so that when PCell is changed and PSCell is released simultaneously, the UE needs logs the previous PCell and PSCell MHI 3. Changes in 5.5a.3.2 so that the UE is allowed to suspend measurement logging if the UE detected IDC problems on any inter-RAT frequency during the last logging interval   **Impact analysis**  **Impacted functionality:**  Logged MDT, MHI, Random Access report  **Inter-operability analysis:**  First changes:  No inter-operability impact because the changes only impact UE.  Second change:  If the change is implemented by the UE, and not by the network, there is no inter-operability issue  If the change is implemented by the network, and not by the UE, there is no inter-operability issue  Third change:  If the change is implemented by the UE, and not by the network, there is no inter-operability issue  If the change is implemented by the NW, and not by the UE, the UE may report polluted logged measurements to the network so that coverage optimization may not work properly. | | | | | | | | |
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| ***Consequences if not approved:*** | | Specification is not aligned with the agreements related to Rel.17 SON/MDT reached in RAN2#121 | | | | | | | | |
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| ***Clauses affected:*** | | 5.5a.3.2, 5.7.9.2, 5.7.10.4 | | | | | | | | |
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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:*** | |  | | | | | | | | |

FIRST CHANGE

#### 5.5a.3.2 Initiation

While T330 is running and SDT procedure is not ongoing, the UE shall:

1> if measurement logging is suspended:

2> if during the last logging interval the IDC problems detected by the UE is resolved, resume measurement logging;

1> if not suspended, perform the logging in accordance with the following:

2> if the *reportType* is set to *periodical* in the *VarLogMeasConfig*:

3> if the UE is in any cell selection state (as specified in TS 38.304 [20]):

4> perform the logging at regular time intervals, as defined by the *loggingInterval* in the *VarLogMeasConfig*;

3> if the UE is in camped normally state on an NR cell and if the RPLMN is included in *plmn-IdentityList* stored in *VarLogMeasReport*:

4> if areaConfiguration is not included in *VarLogMeasConfig*; or

4> if the serving cell is part of the area indicated by *areaConfig* in *areaConfiguration* in *VarLogMeasConfig*:

5> perform the logging at regular time intervals, as defined by the *loggingInterval* in the *VarLogMeasConfig*;

2> else if the *reportType* is set to *eventTriggered*, and *eventType* is set to *outOfCoverage*:

3> perform the logging at regular time intervals as defined by the *loggingInterval* in *VarLogMeasConfig* only when the UE is in any cell selection state;

3> upon transition from any cell selection state to camped normally state in NR:

4> if the RPLMN is included in *plmn-IdentityList* stored in *VarLogMeasReport*; and

4> if *areaConfiguration* is not included in *VarLogMeasConfig* or if the current camping cell is part of the area indicated by *areaConfig* of *areaConfiguration* in *VarLogMeasConfig*:

5> perform the logging;

2> else if the *reportType* is set to *eventTriggered* and *eventType* is set to *eventL1*:

3> if the UE is in camped normally state on an NR cell and if the RPLMN is included in *plmn-IdentityList* stored in *VarLogMeasReport*:

4> if *areaConfiguration* is not included in *VarLogMeasConfig*; or

4> if the serving cell is part of the area indicated by *areaConfig* in *areaConfiguration* in *VarLogMeasConfig*;

5> perform the logging at regular time intervals as defined by the *loggingInterval* in *VarLogMeasConfig* only when the conditions indicated by the *eventL1* are met;

2> when performing the logging:

3> if *InterFreqTargetInfo* is configured and if the UE detected IDC problems on at least one of the frequencies included in *InterFreqTargetInfo* or any inter-RAT frequency during the last logging interval, or

3> if *InterFreqTargetInfo* is not configured and if the UE detected IDC problems during the last logging interval:

4> if *measResultServingCell* in the *VarLogMeasReport* is not empty:

5> include *inDeviceCoexDetected*;

5> suspend measurement logging from the next logging interval;

4> else:

5> suspend measurement logging;

3> set the *relativeTimeStamp* to indicate the elapsed time since the moment at which the logged measurement configuration was received;

3> if location information became available during the last logging interval, set the content of the *locationInfo* as in 5.3.3.7:

3> if the UE is in any cell selection state (as specified in TS 38.304 [20]):

4> set *anyCellSelectionDetected* to indicate the detection of no suitable or no acceptable cell found;

4> if the *reportType* is set to *eventTriggered* in the *VarLogMeasConfig*; and

4> if the RPLMN at the time of entering the any cell selection state is included in *plmn-IdentityList* stored in *VarLogMeasReport*; and

4> if *areaConfiguration* is not included in *VarLogMeasConfig* or if the last suitable cell that the UE was camping on is part of the area indicated by *areaConfig* of *areaConfiguration* in *VarLogMeasConfig*:

5> set the *servCellIdentity* to indicate global cell identity of the last suitable cell that the UE was camping on;

5> set the *measResultServingCell* to include the quantities of the last suitable cell the UE was camping on;

4> else if the *reportType* is set to *periodical* in the *VarLogMeasConfig*:

5> set the *servCellIdentity* to indicate global cell identity of the last logged cell that the UE was camping on;

5> set the *measResultServingCell* to include the quantities of the last logged cell the UE was camping on;

3> else:

4> set the *servCellIdentity* to indicate global cell identity of the cell the UE is camping on;

4> set the *measResultServingCell* to include the quantities of the cell the UE is camping on;

3> if available, set the *measResultNeighCells*, in order of decreasing ranking-criterion as used for cell re-selection, to include measurements of neighbouring cell that became available during the last logging interval and according to the following:

4> include measurement results for at most 6 neighbouring cells on the NR serving frequency and for at most 3 cells per NR neighbouring frequency and for the NR neighbouring frequencies in accordance with the following:

5> if *interFreqTargetInfo* is included in *VarLogMeasConfig*:

6> if *earlyMeasIndication* is included in *VarLogMeasConfig*;

7> include measurement results for NR neighbouring frequencies that are included in both *interFreqTargetInfo* and either in *measIdleCarrierListNR* (within the *VarMeasIdleConfig*) or *SIB4*;

6> else:

7> include measurement results for NR neighbouring frequencies that are included in both *interFreqTargetInfo* and *SIB4*;

5> else:

6> if *earlyMeasIndication* is included in *VarLogMeasConfig*;

7> include measurement results for NR neighbouring frequencies that are included in either *measIdleCarrierListNR* (within the *VarMeasIdleConfig*) or *SIB4*;

6> else:

7> include measurement results for NR neighbouring frequencies that are included in *SIB4*;

4> include measurement results for at most 3 neighbours per inter-RAT frequency in accordance with the following:

5> if *earlyMeasIndication* is included in *VarLogMeasConfig*:

6> include measurement results for inter-RAT neighbouring frequencies that are included in either *measIdleCarrierListEUTRA* (within the *VarMeasIdleConfig*) or *SIB5*;

5> else:

6> include measurement results for inter-RAT frequencies that are included in *SIB5*;

4> for each neighbour cell included, include the optional fields that are available;

NOTE 1: The UE includes the latest results of the available measurements as used for cell reselection evaluation in RRC\_IDLE or RRC\_INACTIVE, which are performed in accordance with the performance requirements as specified in TS 38.133 [14].

NOTE 2: For logging the measurements on frequencies (indicated in *measIdleCarrierListNR/ measIdleCarrierListEUTRA*) in the logged measurement, the *qualityThreshold* in *measIdleConfig* should not be applied, and how the UE logs the measurements on the frequencies is left to the UE implementation.

2> when the memory reserved for the logged measurement information becomes full, stop timer T330 and perform the same actions as performed upon expiry of T330, as specified in 5.5a.1.4.

NEXT CHANGE

#### 5.7.9.2 Initiation

If the UE supports storage of mobility history information, the UE shall:

1> If the UE supports PSCell mobility history information and upon addition of a PSCell:

2> include an entry in *visitedPSCellInfoList* in variable *VarMobilityHistoryReport* possibly after performing the following, if necessary:

3> if *visitedPSCellInfoListReport* is available in the *visitedCellInfoList* in variable *VarMobilityHistoryReport*:

4> for the oldest PCell entry in *visitedCellInfoList* including *visitedPSCellInfoListReport*;

5> remove the oldest entry in the *visitedPSCellInfoListReport*;

3> else:

4> remove the oldest entry in *visitedPSCellInfoList* in variable *VarMobilityHistoryReport*;

2> for the included entry:

3> set the field *timeSpent* of the entry according to following:

4> if this is the first PSCell entry for the current PCell since entering the current PCell in RRC\_CONNECTED:

5> include the entry as the time spent with no PSCell since entering the current PCell in RRC\_CONNECTED;

4> else:

5> include the time spent with no PSCell since last PSCell release since entering the current PCell in RRC\_CONNECTED;

1> If the UE supports PSCell mobility history information and upon change, or release of a PSCell while being connected to the current PCell:

2> include an entry in *visitedPSCellInfoList* of the variable *VarMobilityHistoryReport* possibly after performing the following, if necessary:

3> if *visitedPSCellInfoListReport* is available in the *visitedCellInfoList* in variable *VarMobilityHistoryReport*:

4> for the oldest PCell entry in *visitedCellInfoList* including *visitedPSCellInfoListReport*;

5> remove the oldest entry in the *visitedPSCellInfoListReport*;

3> else:

4> remove the oldest entry in *visitedPSCellInfoList* in variable *VarMobilityHistoryReport*;

2> for the included entry:

3> if the global cell identity of the previous PSCell is available:

4> include the global cell identity of that cell in the field *visitedCellId* of the entry;

3> else:

4> include the physical cell identity and carrier frequency of that cell in the field *visitedCellId* of the entry;

3> set the field *timeSpent* of the entry as the time spent in the previous PSCell while being connected to the current PCell;

1> Upon change of suitable cell, consisting of PCell in RRC\_CONNECTED (for NR or E-UTRA cell) or serving cell in RRC\_INACTIVE (for NR cell) or in RRC\_IDLE (for NR or E-UTRA cell), to another NR or E-UTRA cell, or when entering any cell selection' state from 'camped normally' state in NR or LTE or when entering 'any cell selection' state from a suitable cell in RRC\_CONNECTED state in NR or LTE:

2> include an entry in *visitedCellInfoList* of the variable *VarMobilityHistoryReport* possibly after removing the oldest entry, if necessary, according to following*:*

3> if the global cell identity of the previous PCell/serving cell is available:

4> include the global cell identity of that cell in the field *visitedCellId* of the entry;

3> else:

4> include the physical cell identity and carrier frequency of that cell in the field *visitedCellId* of the entry;

3> set the field *timeSpent* of the entry as the time spent in the previous PCell/serving cell;

3> if the UE supports PSCell mobility history information and if the UE continues to be connected to the same PSCell during the change of the PCell in RRC\_CONNECTED; or

3> if the UE supports PSCell mobility history information and if the UE changes PSCell, or attempts to change PSCell but fails, at the same time as the change of the PCell in RRC\_CONNECTED; or

3> if the UE supports PSCell mobility history information and if the PSCell is released at the same time as the change of the PCell in RRC\_CONNECTED:

4> include an entry in *visitedPSCellInfoList* of the variable *VarMobilityHistoryReport* possibly after performing the following, if necessary:

5> if *visitedPSCellInfoListReport* is available in the *visitedCellInfoList* in variable *VarMobilityHistoryReport*:

6> for the oldest PCell entry in *visitedCellInfoList* including *visitedPSCellInfoListReport*;

7> remove the oldest entry in the *visitedPSCellInfoListReport*;

5> else:

6> remove the oldest entry in *visitedPSCellInfoList* in variable *VarMobilityHistoryReport*;

4> for the included entry:

5> if the global cell identity of the PSCell (in case the UE continues to be connected to the same PSCell) or the previous PSCell (in case the UE changes PSCell, or attempts to change PSCell but fails, or in case PSCell is released) is available:

6> include the global cell identity of that cell in the field *visitedCellId* of the entry;

5> else:

6> include the physical cell identity and carrier frequency of that cell in the field *visitedCellId* of the entry;

5> set the field *timeSpent* of the entry as the time spent in the PSCell, while being connected to previous PCell;

3> if the UE supports PSCell mobility history information and if the UE was not configured with a PSCell at the time of change of PCell in RRC\_CONNECTED:

4> include an entry in *visitedPSCellInfoList* after performing the following, if necessary;

5> if *visitedPSCellInfoListReport* is available in the *visitedCellInfoList* in variable *VarMobilityHistoryReport*:

6> for the oldest PCell entry in *visitedCellInfoList* including *visitedPSCellInfoListReport*;

7> remove the oldest entry in the *visitedPSCellInfoListReport*;

5> else:

6> remove the oldest entry in *visitedPSCellInfoList* in variable *VarMobilityHistoryReport*;

4> for the included entry:

5> set the field *timeSpent* of the entry as the time without PSCell according to the following:

6> if the UE experienced a PSCell release since entering the previous PCell in RRC\_CONNECTED:

7> include the time spent with no PSCell since last PSCell release since entering the previous PCell in RRC\_CONNECTED;

6> else:

7> include the time spent with no PSCell since entering the previous PCell in RRC\_CONNECTED;

3> if the UE supports PSCell mobility history information and if *visitedPSCellInfoList* exists in *VarMobilityHistoryReport*:

4> include *visitedPSCellInfoList* in *VarMobilityHistoryReport* in the *visitedPSCellInfoListReport* within the entry of the *visitedCellInfoList* associated to the latest PCell entry;

4> remove *visitedPSCellInfoList* from the variable *VarMobilityHistoryReport*;

1> if the UE supports PSCell mobility history information and upon entering 'camped normally' state in NR (in RRC\_IDLE or RRC\_INACTIVE) or E-UTRA (in RRC\_IDLE) while previously in RRC\_CONNECTED state NR or LTE while not connected to a PSCell:

2> include an entry in *visitedPSCellInfoList* after performing the following, if necessary;

3> if *visitedPSCellInfoListReport* is available in the *visitedCellInfoList* in variable *VarMobilityHistoryReport*:

4> for the oldest PCell entry in *visitedCellInfoList* including *visitedPSCellInfoListReport*;

5> remove the oldest entry in the *visitedPSCellInfoListReport*;

3> else:

4> remove the oldest entry in *visitedPSCellInfoList* in variable *VarMobilityHistoryReport*;

2> for the included entry:

3> set the field *timeSpent* of the entry as the time without PSCell according to the following:

4> if the UE experienced a PSCell release since entering the current PCell in RRC\_CONNECTED:

5> include the time spent with no PSCell since last PSCell release after entering the current PCell in RRC\_CONNECTED;

4> else:

5> include the time spent with no PSCell since entering the current PCell in RRC\_CONNECTED;

1> upon entering 'camped normally' state in NR (in RRC\_IDLE or RRC\_INACTIVE) or E-UTRA (in RRC\_IDLE) while previously in 'any cell selection' state or 'camped on any cell' state in NR or LTE:

2> include an entry in variable *VarMobilityHistoryReport* possibly after removing the oldest entry, if necessary, according to following:

3> set the field *timeSpent* of the entry as the time spent in 'any cell selection' state and/or 'camped on any cell' state in NR or LTE.

NEXT CHANGE

#### 5.7.10.4 Actions upon successful completion of a random-access procedure or on completion of a request of on-demand system information

Upon successfully performing random-access procedure initialized with 4-step or 2-step RA type, or upon failed or successfully completed on-demand system information acquisition procedure in RRC\_IDLE or RRC\_INACTIVE state, the UE shall:

1> if the RPLMN or the PLMN selected by upper layers (see TS24.501 [23]) from the PLMN(s) included in the *plmn-IdentityList* in *SIB1* is not included in *plmn-IdentityList* stored in a non-empty *VarRA-Report*:

2> clear the information included in *VarRA-Report*;

1> if the number of *RA-Report* entries stored in the *ra-ReportList* in *VarRA-Report* is less than *maxRAReport*:

2> if the number of PLMN entries in *plmn-IdentityList* stored in *VarRA-Report* is less than *maxPLMN*; or

2> if the number of PLMN entries in *plmn-IdentityList* stored in *VarRA-Report* is equal to *maxPLMN* and the list of EPLMNs is subset of or equal to the *plmn-IdentityList* stored in *VarRA-Report*:

3> append the following contents associated to the successfully completed random-access procedure or the failed or successfully completed on-demand system information acquisition procedure as a new entry in the *VarRA-Report*:

4> if the list of EPLMNs has been stored by the UE:

5> set the *plmn-IdentityList* to include the list of EPLMNs stored by the UE (i.e. includes the RPLMN) without exceeding the limit of *maxPLMN*;

4> else:

5> set the *plmn-Identity*, in *plmn-IdentityList*, to the PLMN selected by upper layers (see TS 24.501 [23]) from the PLMN(s) included in the *plmn-IdentityInfoList* in SIB1;

4> set the *cellId* to the global cell identity and the tracking area code, if available, otherwise to the physical cell identity and carrier frequency of the cell in which the corresponding random-access preamble was transmitted;

4> if the UE supports spCell ID indication:

5> if the corresponding random-access procedure was performed on an SCell of MCG:

6> set the *spCellId* to the global cell identity of the PCell;

5> if the corresponding random-access procedure was performed on an SCell of SCG; or

5> if the corresponding random-access procedure was performed on PSCell:

6> set the *spCellId* to the global cell identity of the PSCell, if available, otherwise, set the *spCellId* to the global cell identity of the PCell;

4> set the *raPurpose* to include the purpose of triggering the random-access procedure;

4> set the *ra-InformationCommon* as specified in clause 5.7.10.5.

The UE may discard the random access report information, i.e. release the UE variable *VarRA-Report*, 48 hours after the last successful random access procedure or the failed or successfully completed on-demand system information acquisition procedure related information is added to the *VarRA-Report*.

NOTE 1: The UE does not log the RA information in the RA report if the triggering event of the random access is consistent UL LBT on SpCell as specified in TS 38.321 [6].

End of CHANGE