3GPP TSG-RAN WG2 Meeting #110 R2-2005736

**Electronic, June 1 – June 12 2020**

Agenda Item: 8.6

Source: Session chair (CMCC)

Title: Report from SON/MDT session

Document for: Approval

Recording of voice or video at meetings is not used in 3GPP. This applies also to this e-Meeting. At this e-Meeting, no specific actions are taken to prevent the recording of web conferences. Companies that have concerns related to recordings, if any, may express those by email in the main meeting organizational thread [AT110][000]

**Organizational:**

1. LSs – contact companies should flag LSs that need presenting. Otherwise we will directly note them
2. Running CRs will be endorsed to be used as baseline and moved to email discussion. Further agreements will be captured on that baseline CR.
3. Only Email discussions and summary discussions will be treated during e-meetings (indicated clearly in the meeting notes)
4. All organization emails and notes will be shared over the following email discussion throughout the two meeting weeks:

* [AT110][800][SON/MDT] Organizational Hu

Scope:

* + - Share plans for the meetings and list of ongoing email discussions for the sessions related to SON/MDT
    - Share meetings notes and agreements for review and endorsement

## 6.12 SON/MDT support for NR

(NR\_SON\_MDT-Core; leading WG: RAN3; REL-16; started: Jun 19; target; Mar 20; WID: RP-191776). Documents in this agenda item will be handled in a break out session

Time budget: 1 TU

No new additional function will be treated this meeting except the request is from RAN3.

### 6.12.1 Organisational

Including incoming LSs

The following LSs have no action for RAN2 and are noted without presentation.

R2-2004303 Reply LS on QoS monitoring for URLLC (R3-201372; contact: Intel) RAN3 LS in Rel-16 NR\_SON\_MDT To:SA5, SA2 Cc:RAN2, SA1, CT4

R2-2004304 LS on removal of Management Based MDT Allowed IE for NR (R3-201437; contact: Qualcomm) RAN3 LS in Rel-16 NR\_SON\_MDT To:RAN2, SA5

R2-2004308 Reply to LS to SA5 on trace related configurations for NR MDT (S5-201424; contact: Ericsson) SA5 LS in Rel-17 To:RAN2

R2-2004309 LS on the status update of the SON support for NR works (S5-201525; contact: Intel) SA5 LS in Rel-16 To:RAN2, RAN3

R2-2004320 Reply LS on QoS Monitoring for URLLC (S2-2003468; contact: Huawei) SA2 LS in Rel-16 5G\_URLLC To:RAN3 Cc:SA5, RAN2

R2-2004327 Reply LS on the feasibility of Received Interference Power measurement (R1-2002932; contact: Huawei) RAN1 LS in Rel-16 NR\_SON\_MDT-Core To:RAN2

R2-2004331 Reply LS on the status update of the SON support for NR works (R3-202630; contact: CMCC) RAN3 LS in Rel-16 NR\_SON\_MDT To:SA5 Cc:RAN2

R2-2004379 Reply LS to LS on EN-DC related MDT configuration details (S5-202052; contact: Ericsson) SA5 LS in Rel-16 5GMDT To:RAN2 Cc:RAN3

The following two documents are not treated.

R2-2004729 [Draft] Response LS on the status update of the SON support for NR works Intel Corporation LS out Rel-16 NR\_SON\_MDT-Core To:SA5 Cc:RAN3

R2-2005454 [Draft] Reply LS on MDT Configuration CMCC LS out Rel-16 NR\_SON\_MDT-Core To:RAN3

The related issues included in the following LSs will be handled in 6.12.2

R2-2004334 LS on information needed for MRO in UE RLF Report (R3-202818; contact: Samsung) RAN3 LS in Rel-16 NR\_SON\_MDT-Core To:RAN2

R2-2004339 Propagation of immediate MDT configuration in case of Xn inter-RAT HO (R3-202868; contact: ZTE) RAN3 LS in Rel-16 NR\_SON\_MDT-Core To:RAN2

R2-2004340 LS on Logged MDT Status (R3-202869; contact: Ericsson) RAN3 LS in Rel-16 NR\_SON\_MDT-Core To:RAN2

The following two dicuments will be treated online:

R2-2005367 Corrections on MDT and SON in NR Huawei, Ericsson, HiSilicon CR Rel-16 38.331 16.0.0 1669 - F NR\_SON\_MDT-Core

=> Endorsed and used as baseline for further updating

R2-2005368 Corrections on MDT and SON Huawei, Ericsson, HiSilicon CR Rel-16 36.331 16.0.0 4323 - F NR\_SON\_MDT-Core

=> Endorsed and used as baseline for further updating

### 6.12.2 Essential input from RAN3

Focus on the request from R3-202818, R3-202869 and R3-202868. Discuss the TS changes to fulfill the agreements of RAN3. Discussion tdoc should be with an annex TP. For each company, only one contribution is allowed. Encourage interested companies combine and converge their work into one contribution.

R2-2004412 Discussion on RAN3 related concerns on MDT ZTE Corporation, Sanechips discussion Rel-16 NR\_SON\_MDT-Core

R2-2004413 Further Considerations and Modifications on MRO in UE RLF Report CATT, CMCC discussion Rel-16 NR\_SON\_MDT-Core

R2-2004503 TP on Management and signalling based MDT vivo draftCR Rel-16 37.320 16.0.0 NR\_SON\_MDT-Core

R2-2004716 On RAN3 related concerns Ericsson discussion

R2-2005197 Signaling based MDT priority in EN-DC Nokia, Nokia Shanghai Bell discussion Rel-16 NR\_SON\_MDT

R2-2005198 Draft LS on Signalling based MDT priority in DC Nokia, Nokia Shanghai Bell CR Rel-16 37.320 16.0.0 0084 - F NR\_SON\_MDT Withdrawn

R2-2005225 Draft LS on Signalling based MDT priority in DC Nokia, Nokia Shanghai Bell LS out Rel-16 NR\_SON\_MDT-Core To:RAN3, SA5

R2-2005369 Discussion on incoming RAN3 LSs Huawei, HiSilicon discussion Rel-16 NR\_SON\_MDT-Core

R2-2005455 Propagation of MDT configuration in case of Xn inter-RAT HO CMCC discussion Rel-16 NR\_SON\_MDT-Core

The following two documents will be treated online:

R2-2004724 [Post109bis-e][961][MDTSON] SON open issues (Ericsson) Ericsson discussion

Agreements:

1 For SSB based RA attempt based on contention free random-access resources contentionDetected-r16 is not included in PerRAInfoList-r16.

2 The UE does not include the dlRSRPAboveThreshold-r16 flag for SSB based CFRA if the CFRA is not associated to PDCCH ordered RA and the UE includes the dlRSRPAboveThreshold-r16 flag for SSB based CFRA if the CFRA is associated to PDCCH ordered RA.

3 The UE shall append the new EPLMNs to the PLMN entries in the plmn-IndentityList until the maximum number is reached and after this limit is reached the UE shall stop the recording of the RAReports until the existing contents of VarRAReport is fetched by the network or the 48 hour time window expires.

4 Add the possibility to include EUTRA CGI as the previousPCellID in NR RLF report

5 Change the field description of failedPCell-EUTRA to indicate that this field is used to encode the PCell in which RLF is detected or the source PCell of the failed handover.

6 Agree the following TP related to MHI.

1> Upon change of cell, consisting of PCell in RRC\_CONNECTED or serving cell in RRC\_IDLE or RRC\_INACTIVE (for NR cell) or in RRC\_IDLE (for E-UTRA cell), to another NR or E-UTRA cell, or when entering out of service.

We should refer to ‘any cell Selection’ or ‘camp on any cell’ in NR and or ‘any cell Selection in LTE’ or ‘camp on any cell’ instead “out of service“

Agreements

1 Add the possibility to include EUTRA CGI as the failedPCellID in NR RLF report.

2 Include reconnectedCellID in NR RLF report and add the possibility to include EUTRA CGI or NR CGI and the associated TAC as part of the reconnectedCellID.

3 Include timeUntilReconnection in NR RLF report which signifies the time interval between HOF/RLF and successful RRC re-connection.

4 Add the possibility to include NR CGI as the previousPCellID in LTE RLF report.

5 Add the possibility to include NR CGI as the failedPCellID in LTE RLF report.

6 Add the possibility to include EUTRA CGI (reconnectedEUTRA-CellId) or NR CGI (reconnectedNR-CellId) and the associated TAC of the cell in which the UE successfully performs reconnection after declaring RLF or HOF.

7 Include timeUntilReconnection in LTE RLF report which signifies the time interval between HOF/RLF and successful RRC re-connection.

FFS:

The UE includes lbtFailure as a rlf-Cause. No further LBT failure specific measurements are added to the RLF report in rel-16. Waiting the progress [206]

Add the option of scg-lbtFailure as an option for failureType in SCGFailureInformationNR message of TS 36.331. Waiting the progress [206]

R2-2006006 Summary of AI 6.12.2 - Essential input from RAN3 Ericsson discussion

Agreements:

1 The management-based MDT configuration should not overwrite signaling based MDT configuration in all the single connection scenarios and EN-DC scenario. UE based soltuion is not supported in R16.

=> Inform RAN3 that ”The propagation of signaling based immediate MDT configuration for the case of Xn inter-RAT intra-system handover can be supported.” has no impact on RAN2 stage3 specs and SA5 should be consulted.

=> Draft LS to RAN3 about our progress on SON. (Ericsson)

* **[AT110-e][808] Reply LS to RAN3 (Ericsson)**

Scope: Inform RAN3 our progresses related to their incoming LSs

Intended outcome: Approved LS in R2-2005911

Deadline: Tuesday 2020-06-04 10:00 UTC

Status: will start after the first online session

### 6.12.3 TS37320 corrections

Each company, including the rapporteur, at most one contribution for this agenda. Encourage to contact 37.320 editor (Nokia) and WI rapporteur (CMCC) first. In general, the documents will be treated from guidance of them.

R2-2004414 Miscellaneous Corrections for 37.320 CATT discussion Rel-16 37.320 NR\_SON\_MDT-Core

R2-2004673 Handling of management-based MDT and signalling based MDT QUALCOMM Europe Inc. - Spain discussion Rel-16

R2-2004674 Remaining issues on L2 measurement QUALCOMM Europe Inc. - Spain discussion Rel-16

R2-2004713 Corrections to TS 37.320 Ericsson discussion

R2-2005370 Minor issues on TS 37.320 Huawei, HiSilicon discussion Rel-16 NR\_SON\_MDT-Core

R2-2005453 CR to 37.320 CMCC, Nokia, Nokia Shanghai Bell CR Rel-16 37.320 16.0.0 0085 - B NR\_SON\_MDT-Core

R2-2005467 Correction to TS 37.320 on MDT configuration ZTE Corporation, Sanechips discussion Rel-16 NR\_SON\_MDT-Core

Try to discuss this online:

R2-2006002 Summary of Corrections for 37.320

Cat-a Proposals:

1: Add following sensor configuration related description in section 5.1.1.1.1:

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

2: Change the description of Logged MDT configuration, measurement collection and reporting in section 5.1.1 as follows:

For Logged MDT, the configuration will always be done in cells of the same RAT type. However, measurements included in the logged MDT report comprises of measurements from the same RAT type (serving cell measurements, intra-frequency and inter-frequency neighboring cell measurements) and different RAT types (inter-RAT neighboring cell measurements).

3: Add following sentence about logged MDT configuration parameters in section 5.1.1.1.1 to configure prioritized frequencies:

- (optionally) configuration of the neighbouring frequency and cell related information, indicating the UE to prioritize the inclusion of such a neighbouring cell’s measurements inclusion in the logged MDT report.

4: Delete the frequency location related information of the RA resources in TS37.320 and referring to TS38.331 instead.

5: “Management based MDT should not overwrite signalling based MDT" applies to all scenarios involving signalling and management based logged MDT configurations and not only EN-DC (as currently in TS 37.320).

6: It is up to the network implementation to avoid signaling based MDT configuration being overwritten by management based MDT, based on MDT configuration information in gNB.

7: UE is agnostic to MDT priority, i.e. new MDT configuration always overwrites old MDT configuration.

8: Add the configuration of downlink pilot strength measurement for NR in 5.1.1.1.1 Configuration parameters

9: Add the RRCConnectionResumeComplete in 5.1.1.3.1 Availability Indicator.

10: Add the capability for support of UL PDCP delay measurement in EN-DC in 5.1.4 UE capabilities.

11: Align the description of event-triggered logging parameters in section 5.1.1.1.1 with stage 3.

Cat-b proposals:

Cat-b-proposal 1: Add one more condition, e.g. duration timer for logging stopped due to UE memory reserved for MDT is full for UE to delete logged MDT measurements after 48 hours.

Cat-b-proposal 2: Add RACH report and Mobility History report related information in TS37.320.

Cat-b-proposal 3: Modify the notes in TS 37.320:

From:

M5 ~ M7 do not apply to EN-DC SN terminated MCG/split bearers and MN terminated SCG/split bearers in Rel-16.

To:

M4 ~ M7 do not apply to EN-DC SN terminated MCG/split bearers and MN terminated SCG/split bearers in Rel-16.

Cat-b-proposal 4: When signalling based logged MDT is received when UE in RRC\_IANCTIVE, the NG-RAN only configure or propagate the logged MDT configuration received when the MDT configuration is valid according to the time duration and the time point the logged MDT configuration is received from CN.

Cat-b-proposal 5: The RAN node shall set the time duration to the remaining valid time (i.e. the time duration minus the time past from the time point the logged MDT configuration is received from CN) before configure or propagate the received signalling based logged MDT.

* **[AT110-e][886] Stage 2 corrections (CMCC, Nokia)**

Scope: discuss the not treated issues (actually no proposal treated online…) in R2-2006002

Intended outcome: Summary of the offline discussion with e.g.:

§  Set of proposals with full consensus, if any (agreeable over email)

§  Set of proposals to discuss in the follow up conference call

Deadline: Tuesday 2020-06-09 10:00 UTC

Status: will start after the first online session

### 6.12.4 ASN1 review

For RRC corrections: The proponent company, for accepted RIL issues, if needed, can provide a discussion doc, with an annex TP. Minor issues are expected to be resolved in RRC email discussions without any tdoc (before or during meeting). RRC Rapporteur (Huawei and Ericsson) will classify which RIL issues needs contributions (discussion + TP) based on the outcome of the email discussions related to RIL and SON issues. For those RIL issues that the RRC rapporteur thinks that a disc+TP paper is required then the original proponent of that issue can produce the corresponding contribution.

R2-2004409 [Z162-Z166] Correction to connection establishment failure report ZTE Corporation, Sanechips discussion Rel-16 NR\_SON\_MDT-Core Late

R2-2004410 [Z167][Z169] Correction to RLF report ZTE Corporation, Sanechips discussion Rel-16 NR\_SON\_MDT-Core

R2-2004411 [Z170-171][Z173] Correction to RACH report ZTE Corporation, Sanechips discussion Rel-16 NR\_SON\_MDT-Core

R2-2004417 Corrections on Sensor Measurement CATT discussion Rel-16 38.331 NR\_SON\_MDT-Core

R2-2004528 Corrections to RA/RLF Report\_S951\_S952 Samsung Electronics Co., Ltd discussion Rel-16 NR\_SON\_MDT-Core

R2-2004717 [E008] On adding LBTFailure as SCG Failure cause and RLF cause Ericsson discussion

R2-2004718 [E009] On EUTRA previousPCellID in NR RLF report Ericsson discussion

R2-2004719 [E012] On logging TAC in CEF report Ericsson discussion

R2-2004720 [E021] Any cell selection state related logging for OOC event Ericsson discussion

R2-2004721 [E028] On SON-MDT related UE capabilities addition Ericsson discussion

R2-2004722 [E200] On T312 expiry related RLF cause Ericsson discussion

R2-2004723 [E235] UE power savings impact on MDT Ericsson, CMCC, Samsung discussion

R2-2004733 Clarification to RA-report purposes Ericsson discussion

R2-2004884 [S953] Mobility state reporting in RRC connection re-establishment Samsung Electronics Co., Ltd discussion Rel-16 NR\_SON\_MDT-Core

R2-2004886 [S954] Logged MDT configuration in UE Inactive AS Context Samsung Electronics Co., Ltd discussion Rel-16 NR\_SON\_MDT-Core

R2-2004902 Text Proposal\_for\_RIL\_S481 Samsung Electronics Co., Ltd discussion Rel-16 NR\_SON\_MDT-Core

R2-2005372 [H363] Discussion on UE logging of a MDT entry Huawei, HiSilicon discussion Rel-16 NR\_SON\_MDT-Core

R2-2005373 [H365] Discussion on conditions for RLF report Huawei, HiSilicon discussion Rel-16 NR\_SON\_MDT-Core

R2-2005374 [H366] Discussion on processing delay requirements Huawei, HiSilicon discussion Rel-16 NR\_SON\_MDT-Core

R2-2005375 [H367] Discussion on failedPcellId-EUTRA Huawei, HiSilicon discussion Rel-16 NR\_SON\_MDT-Core

R2-2005376 [H368] Discussion on measResult-RLF-Report-EUTRA Huawei, HiSilicon discussion Rel-16 NR\_SON\_MDT-Core

R2-2005377 [H369][H370] Discussion on corrections of TAC Huawei, HiSilicon discussion Rel-16 NR\_SON\_MDT-Core

R2-2005378 [H371] Discussion on applying the field interFreqTargetList Huawei, HiSilicon discussion Rel-16 NR\_SON\_MDT-Core

R2-2005416 Correction on MDT Configuration [S959] Samsung discussion NR\_SON\_MDT-Core

R2-2005468 TP on cat-a proposal2/3 of SON emailDisc[961] ZTE Corporation, Sanechips discussion Rel-16 NR\_SON\_MDT-Core Late

R2-2005469 [Z168][Z172] Alignment of RA informatiom ZTE Corporation, Sanechips discussion Rel-16 NR\_SON\_MDT-Core

R2-2004416 [C210] Discussion on Field Description of timeConnFailure in RLF Report CATT discussion Rel-16 38.331 NR\_SON\_MDT-Core

The following two documents will be treated:

R2-2005371 Summary of [Post109bis-e][960] ASN1 RIL discussion Huawei discussion Rel-16 NR\_SON\_MDT-Core Late

=> Agree on the status change of RILs (i.e. Category, Status) in conclusion parts in section 2 in R2-2005371

Agreements:

1 Introduce new IE ueMeasurementsAvailable-r16 to contain flags.

2 For numberOfConnFail , This field is used to indicate the latest number of consecutive failed RRCSetup or RRCResume procedures in the same cell independent of RRC state transition.

4. Add the nonCriticalExtension and laterNonCriticalExtension fields to the LoggedMeasurementConfiguration message.

5. The proposed TP in section 5.1 and 5.2 is to be implemented in the CR, and any update can be discussed during CR discussion (e.g. R2-2005469).

6. For the reference of TS 36.133, it is suggested to keep the current 36.133 (no extra change).

As below, here are some proposals as there were no consensuses or were not enough time in the relevant discussions, so it is proposed RAN2 to make decisions:

Proposal 3: Regarding how to determine whether a cell is part of the area Indicated by AreaConfiguration, one solution is:

consider only first PLMN-Identity in first PLMN-IdentityInfo of the PLMN-IdentityInfoList, and cellIdentity corresponding to the first PLMN-IdentityInfo.

Proposal 4: It is proposed to postpone any change to LTE-5GC to later release, and remove 5GC identities in the filed CGI-InfoEUTRALogging.

Proposal 5: For location reporting, change the wording “attempt to have…” to “include available…”. Detailed changes are listed in section 2.6.5.

3. Option2: Add an extra availability indicator for Sensor measurements results in RRCReestablishmentComplete, RRCReconfigurationComplete, RRCResumeComplete, RRCSetupComplete, UEInformationResponse message to align with Bluetooth/WLAN measurements results.

4 Upon setup failure or resume failure, UE sets the plmn-Identity to RPLMN if available.

R2-2006015 Summary on ASN1 review Huawei

Agreeable proposals:

1: Modify “if the UE has connection establishment failure informaton available in VarConnEstFailReport” in 5.3.3.7 and 5.3.13.5 to as ““if the UE has connection establishment failure information or resume failure information available in VarConnEstFailReport”. ([1], ZTE, [Z162-Z166])

2: Update the field description of to numberOfConnFail to “the latest number of consecutive failed connection establishment or resume attempt in the same cell.’’ ([1], ZTE, [Z162-Z166])

In the procedural text, set the measResultFailedCell to also include tracking area code. ([8], Ericsson, [E012])

3: For the case UE declares radio link failure due to the random access problem indication from MCG MAC: if the random access procedure was initiated for beam failure recovery, rlf-Cause is set to beamFailureRecoveryFailure, otherwise rlf-Cause is set to randomAccessProblem. ([5], Samsung, [S951])

4 Based on the outcome of email discussion Post109bis-e#961 [1], it was agreed to include previousPCellID in the NR RLF report. This contribution provides the text proposal for the same. ([7], Ericsson, [E009])

5 It is suggested to add the following text regarding UE including failedPCellId-EUTRA in LTE RLF report: 3> set failedPCellId-EUTRA to the PCell in which RLF is detected or the target PCell of the failed handover stored in VarRLF-Report of TS 36.331 [10]; ([21], Huawei, [H367])

6 The UE should set the measResult-RLF-Report-EUTRA in rlf-Report for LTE RLF report purpose ([22], Huawei, [H368])

7 Add an extra availability indicator for Sensor measurements results in RRCReestablishmentComplete, RRCReconfigurationComplete, RRCResumeComplete, RRCSetupComplete, UEInformationResponse messages to align with Bluetooth/WLAN measurements results. ([4], CATT)

8 TP for 38.331 on UE capabilities. ([10], Ericsson, [E028])

It is suggested to add Optional for trackingAreaCode-r16 in CGI-Info-Logging-r16. ([23], Huawei, [H369])

* **[AT110-e][888] RRC correction (Huawei, Ericsson)**

Scope: discuss the not treated issues in R2-2006015, R2-2005371 and R2-2004416

Intended outcome: Summary of the offline discussion with e.g.:

§  Set of proposals with full consensus, if any (agreeable over email)

§  Set of proposals to discuss in the follow up conference call

Deadline: Tuesday 2020-06-09 10:00 UTC

Status: will start after the first online session

### 6.12.5 TS 38314 corrections

Discussion tdoc should be with an annex TP. For each company, only one contribution is allowed

R2-2004415 Consideration on UL Packet Delay CATT discussion Rel-16 38.314 NR\_SON\_MDT-Core

R2-2004714 Corrections to TS 38.314 Ericsson discussion

R2-2004789 Remaining issues for Number of active UEs NTTDOCOMO, INC. discussion

R2-2005379 Minor issues on TS 38.314 Huawei, HiSilicon discussion Rel-16 NR\_SON\_MDT-Core

R2-2005433 Summary of AI 6.12.5 L2 measurements CMCC discussion Rel-16 NR\_SON\_MDT-Core Late

R2-2005434 draft TS 38.314 CMCC draft TS Rel-16 38.314 0.3.0 NR\_SON\_MDT-Core

R2-2005470 Remianing issues on L2 measurement ZTE Corporation, Sanechips discussion Rel-16 NR\_SON\_MDT-Core

R2-2005433 Summary of AI 6.12.5 L2 measurements

* [AT110-e][801] L2 measurements (CMCC)

Scope: Based on R2-2005433 and Progress related issues

Intended outcome: Summary of the offline discussion with e.g.:

§  Set of proposals with full consensus, if any (agreeable over email)

§  Set of proposals to discuss in the follow up conference call

Deadline: Wednesday 2020-06-04 10:00 UTC

Status: started

### 6.12.6 UE capabilities

No contribution is allowed for this agenda for any company except rapporteur,. The discussion will be based on rapporteur’s input.

R2-2004504 Running CR to 38.306 for NR\_SON\_MDT vivo, CMCC draftCR Rel-16 38.306 16.0.0 NR\_SON\_MDT-Core

R2-2004505 Running CR to 38.306 for NR\_SON\_MDT vivo, CMCC draftCR Rel-16 38.306 16.0.0 NR\_SON\_MDT-Core

R2-2005435 UE feature list introduction for NR SON/MDT WI CMCC CR Rel-16 38.822 15.0.1 0003 - B NR\_SON\_MDT-Core

* [AT110-e][802] UE capabilities (CMCC, vivo)

Scope: Based on the running 38.306CR and 38.822CR and agreements we made in RAN2#108 agreements on SON/MDT related agreements shall be strictly obeyed.

Intended outcome: Agreeable CRs

Deadline: Wednesday 2020-06-08 10:00 UTC

Status: started

Email discussions after the meeting: