**3GPP TSG RAN Meeting #94-e RP-21xxxx**

**Electronic Meeting, Dec 6 - 17, 2021**

## Status Report to TSG

**Agenda item:** **9.3.3.4**

|  |  |
| --- | --- |
| **WI / SI Name** | NR QoE management and optimizations for diverse services |
| included in this status report | Study Item: No | Core part: Yes | Performance part:No | Testing part:No |
| **Acronym** | NR\_QoE-Core |
| **Unique ID** | 860061 |
| **TSG Tdoc of latest approved WI/SI description (if any)** | RP-211406 |
| **Target Completion Date****(indicate if changed)** | Work Item: N/A | Core part: 03/2022 | Performance part: N/A | Testing part: N/A |
| **Overall Completion level** | Study Item:N/A | Core part: 60% | Performance Part: N/A | Testing part: N/A |

Note: Overall completion level percentage numbers should use one of the colors below:

* xx%: Normal progress, no RAN plenary action needed
* xx%: Progress behind schedule, may need RAN plenary intervention. If so, SR should clearly define requested action
* xx%: Progress critically behind, RAN plenary shall intervene. SR should define requested action

**Source:**

|  |  |
| --- | --- |
| **Leading WG** | RAN3 |
| **Rapporteur** | **Name** | Gen Cao |
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## 1 Work plan related evaluation

|  |  |
| --- | --- |
| **Do you want to modify the time budget for this WI/SI compared to what was endorsed at the last RAN meeting?** | No |

*If you answered No: Then please remove the Excel file from the zip file of this status report.*

*If you answered Yes: Then please fill out the attached Excel template to request a modification of the time budgets for your WI /SI. The Excel table has to be filled out for all affected RAN WGs and up to the target date of the WI/SI. The basis are the endorsed time budgets of the last RAN meeting. Please highlight all changes of the values.
 One time unit (TU) corresponds to ~ 2 hours in the meeting.
 If this status report covers a WI with Core and Performance part, then please have one line for each in the attached Excel table.
 Note: If no Excel table is attached, then this means no time budget change.*

**Additional explanations/motivations for the time budget changes in the attached Excel table:**

## 2. Detailed progress in RAN WGs since last TSG meeting (for all involved WGs)

 NOTE: Agreements and Open issues impacted cross-TSG aspects shall be explicitly highlighted

## 2.1 RAN1

#### 2.1.1 Agreements

#### 2.1.2 Remaining Open issues

## 2.2 RAN2

#### 2.2.1 Agreements

**RAN2#113b-e (April 2021)**

* **Configuration architecture general aspect**

 - Configure QoE measurements for NR in RRCReconfiguration.

 - Add configuration of QoE measurements in OtherConfig in RRCReconfiguration.

 - Add the configuration of QoE measurements by means of list to enable configuration of multiple simultaneous measurements.

 - R2 assumes that for RRC an ID is required to identify a measurement.

 - Define SRB4 for transmission of QoE reports in NR.

 - Define an RRC message MeasReportAppLayer for the transmission of QoE reports in NR.

 - RAN2 assumes that QoE support for NR includes (as the LTE framework): activation by Trace Function, both signalling and management-based configuration and RRC procedures supporting AppLayer config and report.

 - From RAN2 point of view, the UE shall follow gNB commands and, NG-RAN can in principle release by RRC the application layer measurement configuration towards the UE at any time, e.g. if required due to load or other reasons (Note that other WGs are responsible to define the normal system procedures for release and which nodes are responsible etc).

 - The UE Inactive AS context includes the UE AS configuration for the QoE (it is not released when UE goes to Inactive).

* **Start and Stop**

 - “QoE pause” indication from the network is used to temporarily stop QoE reports from being sent from the UE to the network. Application layer behaviour upon UE receiving “pause/resume” indications is out of RAN2 scope.

 - The following are options considered by RAN2 for QoE report handling during RAN overload via “QoE report pause indication”:

Option 1: Application layer is responsible for storing QoE reports when the UE receives QoE pause indication.

Option 2: AS layer is responsible for storing QoE reports when the UE receives QoE pause indication.

Option 3: The QoE container received from application layer is discarded during pause.

* **Support for Mobility**

None

* **Radio-related measurements and information for QoE**

None

* **RAN visible QoE**

None

**RAN2#114-e (May 2021)**

* **Configuration architecture general aspect**

 - gNB can release a list of QoE measurement configurations in one RRCReconfiguration message.

 - If a QoE measurement configuration is released, RRC layer informs the upper layer to release the QoE measurement configuration. This could be revisited based on other issues’ progress.

 - If the UE enters IDLE state, UE should release all of the QoE measurement configurations.

 - QoE configuration and report are encapsulated in a transparent container in the RRC messages.

 - At lease service type and RRC level ID (Reference ID or shorten ID) together with corresponding QMC configuration container should be included for each QoE configuration in RRCReconfiguration message when the network setups QoE measurement to the UE.

 - At least RRC level ID (Reference ID or shorten ID) together with corresponding QMC report container should be included in MeasReportAppLayer message for each QoE report.

 - RAN2 confirms logged MDT framework for QoE data retrieval and reporting is not supported in Rel-17.

* **Start and Stop**

 - At reception of QoE release, the UE shall discard any unsent QoE reports corresponding to the released QoE configuration.

* **Support for Mobility**

None

* **Radio-related measurements and information for QoE**

None

* **RAN visible QoE**

None

**RAN2#115-e (Aug. 2021)**

* **Configuration architecture general aspect**

- It is the RAN2 understanding the RRC ID, MeasConfigAppLayerId, is sufficient to identify the QoE configuration between UE and gNB.

 - RAN2 assumes that gNB keeps the mapping between MeasConfigAppLayerId and QoE Reference. The mapping is sent to the target gNB as part of QoE configuration and information at handover.

 - Confirm that RAN2 deprioritizes QoE measurement in RRC\_IDLE/RRC\_INACTIVE in Rel-17.

* **Start and Stop**

 No contributions were treated in this RAN2 meeting.

* **Support for Mobility**

 - RAN2 assumes that all QoE mobility related agreements made by RAN2 are applicable at least to signalling based QoE.

 - Area scope parameter is not introduced in RRC procedures supporting QoE.

 - When the UE resumes the connection in a gNB supporting QoE, the target gNB should explicitly indicate which QoE measurement configurations should be kept by the UE during RRC resume procedure, e.g. in RRCResume message. The UE shall release all QoE measurement configurations not indicated by the gNB for restoration.

 - During the handover to target gNB which supports QoE, the target gNB decides which QoE configurations to keep and which to release during a handover, e.g. based on QoE configuration information received from the source gNB in Xn/Ng signalling (exact information is up to RAN3) including the RRC container.

 - The UE discards the reports received from application layer in case it has no associated QoE configuration configured.

 - In case the UE resumes the connection in a gNB not supporting QoE, the UE should release all QoE measurement configurations.

* **Radio-related measurements and information for QoE**

None

* **RAN visible QoE**

None

**RAN2#116-e (Nov. 2021)**

* **Configuration architecture general aspect**

- Forward the measConfigAppLayerId from the AS layer to the application layer together with the QoE configuration.

- Forward the measConfigAppLayerId from the application layer to the AS layer together with the QoE report.

- Support RRC segmentation for the Reporting

- Reply to SA4 that the size limitation of the QoE report has chanegd. RAN2 has agreed to optionally support RRC segmentation for transmission of QoE reports, and we indicate the new limits

- Size limit of QoE configuration = size of one PDCP SDU.

- Inform CT1 and SA4 of these agreements and ask them to specify the measConfigAppLayerId (e.g. in AT command). Can also discuss whether we need to have an action related to size limitation (whether to inform application of the size that is supported).

* **Start and Stop**

- We go with selective pause resume (with the understanding that we will not work further on the information the gNB may use for election).

* **Support for Mobility**

- An LS will be sent to SA4 on the requirements related to mobility.

* **Radio-related measurements and information for QoE**

None

* **RAN visible QoE**

RAN2 assumes that RAN2 is responsible to define the procedure to support RVQOE configuration and reporting, and leave the definition of RAN QoE metrics and what should be included in RVQOE configuration and report to other WGs, e.g. RAN3, SA4.

RAN2 confirms the following is feasible from RAN2 point of view.

- It is feasible to configure RVQOE using explicit RRC IEs

- Multiple simultaneous QoE measurements can be supported for RVQOE. Each RVQOE measurement configuration is identified by the MeasConfigAppLayerId (or change to another generic term) corresponding to the regular QoE configuration.

- UE RRC layer forwards the received RVQOE configuration to the upper (application) layer, indicating the service type.

- RAN configures the required RVQOE metrics in the RVQOE configuration for UE to report.

#### 2.2.2 Remaining Open issues

For Configuration:

- FFS if to allow multiple QoE reports in the same RRC message, but leave it to UE.

- FFS how the indication that gNB indicate which QoE measurement configurations should be kept by the UE during RRC resume procedure looks like, e.g. granularity per QoE configuration or common for all QoE configurations.

- FFS on the maximum number of simultaneous QoE configurations in the UE (depend on RAN2).

- FFS whether it is optional or cond. mandatory for UE that support QoE (can continue discuss in this meeting).

For Mobility:

- FFS whether the gNB needs to know the QoE configurations for which there are ongoing QoE sessions, e.g. to enable QoE configuration handling upon mobility (pending SA4 reply on the ongoing QoE measurement session continuity requirement).

## 2.3 RAN3

#### 2.3.1 Agreements

**RAN3#112-e (May 2021)**

* **QoE measurement Configuration and Reporting**

 - Liaise SA5 on the support of (de)activation of NR QoE, including concerns on whether current Trace Function could support QoE mechanism, decoupling of deactivation, failure handling and QoE Reference

 - Introduce a new IE "QoE Reference" explicitly over interfaces at least for s-based, whether it can be applied to m-based and whether it is per service type or per slice depends on feedback from SA5

 - Introduce the following additional new IEs:

- a list of UE Application layer measurement configuration IE for each service type.

- inside each UE Application layer measurement configuration IE:

- Container.

- a numerated IE indicating service type (e.g., Streaming services, MTSI services, VR, MBMS, XR).

- Area scope (a list of cells/TA/TAI/PLMN).

* **Support for Mobility**

 - Include signaling based QoE measurement configuration in handover preparation messages i.e. in XnAP: HANDOVER REQUEST, NGAP: HANDOVER REQUEST.

 - Signaling based QoE measurement configuration is stored in NG-RAN when UE enters RRC\_INACTIVE and is propagated to new serving NG-RAN using Retrieve UE context procedure when UE resumes RRC connection in another NG-RAN i.e. include signaling based QoE configuration in RETRIEVE UE CONTEXT RESPONSE in XnAP.

 - Include multiple sets of signaling-based QoE measurements configuration in Xn/NG: HANDOVER REQUEST and Xn: RETRIEVE UE CONTEXT RESPONSE.

 - Management based QoE should not override an existing signaling based QoE configuration.

 - Option 1 is agreed by RAN3 on area handling for QoE i.e. the network is responsible for keeping track of whether the UE is inside or outside the area and the network configures/releases configuration accordingly. Send LS to RAN2 and SA4 informing RAN3 agreements.

 - Upon the reception of QoE configuration on a non-supporting node, the target node should not set up any QoE session with MCE and should not initiate any QoE measurement collection.

 - Liaise SA4 to check if QoE requirement for ongoing session continuity is also applicable for NR QMC and in case QoE configuration release is received during an ongoing session.

* **Per slice QoE measurement**

None

* **RAN visible QoE**

 - The service types supported in the Rel17 RAN-visible QoE framework are DASH streaming and VR.

 - WA: The following metrics, pertaining to DASH streaming and VR services, should be supported in the Rel17 RVQOE framework:

- Buffer Level

- Average Throughput

- Playout Delay

 - LS to other WGs, based on the resolution of the WA above, is expected at the next RAN3 meeting.

 - The following is supported within the RVQOE framework:

- RAN-visible QoE metrics: a subset of legacy QoE metrics data collected from UE, which are useful for RAN.

- RAN-visible QoE values: a set of values derived from QoE metrics data through a model/function defined in collaboration with SA4 (pending SA4).

 - WA: The RAN generates the RVQOE measurement configuration

 - The UE is assumed to indicate to the RAN its capability with respect to providing RVQOE metrics (LS to RAN2 seems needed).

 - WA: RVQOE collection can be configured only if QoE measurements are configured for the same service type.

 - Together with the QoE measurements, the RVQOE is supported in the following aspects:

- Activation, and deactivation procedures

- WA: Multiple simultaneous QoE measurements

 - WA: the ID used to identify QoE measurements is reused for identifying the RVQOE measurements.

 - WA: the RVQOE report is provided inside a dedicated IE, outside the QoE report container.

 - Whether transfer of RVQOE configuration to the target be supported will be discussed after the basic solution for mobility has been defined.

 - Whether the RVQOE report can be signaled from the target to the source at handover will be discussed after the basic solution for mobility has been defined.

 - WA: gNB-CU may signal RVQoE report to gNB-DU over F1

* **Alignment of Radio-Related Measurement and QoE Measurements**

 - Immediate MDT is taken as baseline for the collection of Radio-related Measurements to assist QoE analysis.

 - Existing measurements specified for immediate MDT can be used for Radio-related measurements for QoE analysis.

 - New radio-related measurements, if any, should be defined in the SON/MDT WI.

 - Radio-related measurement and QoE measurement can be configured simultaneously by OAM for the alignment.

 - OAM (e.g. TCE or MCE) is responsible for correlation.

* **LSs out**

 - LS on how to support the (de)activation and failure handling of NR QMC (to: SA5; cc: SA2)

 - LS on the mapping between service types and slice at application (to: SA4,CT1,SA5; cc: RAN2, SA2)

 - LS on the area handling for QoE during mobility (to: RAN2,SA4; cc: SA5)

 - LS on the QoE requirement for ongoing session continuity (to: SA4; cc: SA5,RAN2)

**RAN3#113-e (Aug 2021)**

* **QoE measurement Configuration and Reporting**

 - Wait the reply LS from SA5, before we make decision on whether to reuse Trace or not.

 - In NGAP, at least INITIAL CONTEXT SETUP REQUEST, along with HANDOVER REQUEST should be enhanced for NR QoE.

 - Agree on supported service types for NR QoE management in Rel-17: Streaming services, MTSI service, VR.

 - Wait for SA5’s feedback: 1) introduction of QoE Reference for each service type of QoE measurement (i.e. support multi service QoE measurements in one message); 2) a separate and single MCE address is used for the QoE measurements of all service type in one message.

 - Slice scope is a list of S-NSSAI.

 - To include slice scope outside the configuration container over NG.

 - Slice related identifier should be included in the QoE measurement report from UE.

 - No additional requirements on QoE measurement to support roaming UEs.

* **Support for Mobility**

 - Include signaling based QoE measurement configuration in handover preparation messages i.e. in XnAP: HANDOVER REQUEST, NGAP: at least HANDOVER REQUEST.

 - Signalling based QoE can override an existing management based QoE configuration.

* **Per slice QoE measurement**
* **RAN visible QoE**

 - RAN visible QoE measurement activation, UE AS indicates to UE APP that RAN visible QoE measurement has been triggered, potentially with RAN visible QoE metrics needed to be collected at UE APP as requested by RAN.

 - RAN visible QoE measurement deactivation, UE AS indicates to UE APP that RAN visible QoE measurement has been terminated, and then UE APP stops to provide RVQoE measurement results to UE AS.

 - Turn into an agreement the WA that the RAN generates the RVQoE measurement configuration.

 - Turn into an agreement the WA that the ID used to identify QoE measurements is reused for identifying the RVQoE measurements.

 - Turn into an agreement the WA stating that RVQoE collection can be configured only if QoE measurements are configured for the same service type.

 - Turn into an agreement the WA stating that multiple simultaneous RVQoE measurements are supported.

 - The RVQoE configuration can be configured flexibly (i.e., it is not fixed).

 - The RVQoE configuration sent to UE should contain:

• Metrics to be reported, as a mandatory IE.

 - The decision about the final list is expected at the next meeting.

 - Turn into an agreement the WA stating that the RVQoE report is provided inside a dedicated IE, outside the QoE report container.

 - The RAN decides whether RVQOE measurement collection and reporting is activated.

 - The gNB-CU may signal RVQoE report to gNB-DU over F1.

* **Alignment of Radio-Related Measurement and QoE Measurements**

 - Postpone the discussion on alignment for the case that MDT is configured before QoE configuration till clarification is received from SA5 on QoE activation/deactivation procedure (i.e., whether to reuse trace function for QoE and if multiple trace sessions can be supported).

 - An indicator is required in the QoE configuration to NG-RAN to inform whether it should perform MDT and QoE measurements in a time-aligned manner. FFS whether an explicit or implicit indicator.

 - WA: NG-RAN should include Trace Reference and Trace Recording Session Reference in the QoE report sent to MCE

 - WA: NG-RAN should NOT include the Trace Reference and Trace Recording Session Reference in the QoE configuration sent to UE

 - NG-RAN can include session start and session end time stamp information related to MDT and QoE reports autonomously (e.g., using the same clock for MDT and QoE )to assist the correlation entity.

 - QoE and related MDT report can be sent to the same collection entity.

* **LSs out**

 - LS on RAN3 agreements for NR QoE (to: RAN2, SA4, SA5)

**RAN3#114-e (Nov 2021)**

* **QoE measurement Configuration and Reporting**

 - Function separation between QMC and Trace.

 - Decouple QMC framework from Trace framework. Define new IEs named ‘QMC Activation IE’ and ‘QMC Deactivation IE’ to support the activation and deactivation of NR QoE. The specific solution can be described as:

Include QMC Activation IE inside the following messages over NGAP:

- INITIAL CONTEXT SETUP REQUEST

- UE CONTEXT MODIFICATION REQUEST

- HANDOVER REQUEST

- HANDOVER REQUIRED

Include QMC Deactivation IE inside the following message over NGAP:

- UE CONTEXT MODIFICATION REQUEST

 - MBS and XR would not be supported in R17.

 - Agree to include a list of QoE Reference in deactivation message

 - There is no need to introduce QoE measurement configuration modification procedure over NG

 - MCE IP address is configured per QoE measurement/per QoE reference

 - There is no need to introduce measurement configuration application layer ID info over NG during QoE activation

 - For legacy QoE measurement, RAN3 agree not to introduce criteria, e.g. time-based, threshold-based or, event-based, for RAN to trigger/stop the QoE measurement in R17.

 - RAN3 assumes that slice ID is included inside the transparent QoE reporting container, which is up to SA4’s decision. Send an LS to SA4 with the RAN3 assumption and asking SA4 to revert back once there is specification support for the same.

 - There is no need to include slice ID as an explicit IE over Uu outside the QoE configuration and reporting container for legacy QoE.

 - WA: RAN3 will not pursue prioritization mechanism of different service types or slices for the UE to send pending QoE reports after RAN overload is solved.

 - There is no need for prioritization mechanism configured by OAM over NG to guide RAN behavior to release or pause in case of RAN overload situation.

* **Support for Mobility**

 - For a service type, in Rel17, a UE can be simultaneously configured with multiple s- and/or m-based configurations, as long as the maximum number of simultaneous configurations at a UE is not exceeded.

 - The network can replace a configuration with another one of m- or s-based configuration by deactivating an existing measurement and configuring another measurement of the same configuration type.

 - RAN3 assumes that the OAM will never provide the same QoE Reference to different QoE configurations irrespective of QoE type.

 - A UE should continue an ongoing measurement once it leaves the Area, unless the network indicates to the UE to release the QoE configuration.

 - The following information about an m-based measurement configuration should be explicitly passed to the target during handover:

- The Measurement Configuration Application Layer ID corresponding to the QoE Reference.

- MDT Alignment info.

- MCE IP address.

- WA: Measurement status.

 - For m-based QoE, the QoE configuration container (XML file) is not included in NGAP and XnAP handover messages.

 - The following information is explicitly passed to the target at handover:

- QoE reference.

- MCE IP address.

- The Measurement Configuration Application Layer ID corresponding to the QoE Reference.

- WA: Measurement status.

- MDT Alignment info.

- Area Scope.

- Slice list.

 - For both s- and m-based QoE, the QMC Information IE (which does not include the QoE configuration container) is explicitly included in the XnAP RETRIEVE UE CONTEXT RESPONSE.

 - In case of mobility to a target node not supporting QoE, the target node can release the QoE configuration.

* **RAN visible QoE**

 - Interaction latency or comparable quality viewport switching latency metric is NOT considered as a RAN visible QoE metric in Rel-17

 - Buffer level is confirmed as a RAN visible QoE metric for DASH and VR service types

 - Playout delay for media startup is confirmed as a RAN visible QoE metric for DASH and VR service types.

 - In split gNB architecture, gNB-CU should generate the RAN visible QoE configuration.

 - RAN Visible QoE and legacy QoE can be configured together or separately. In case RAN visible QoE is configured separately, it can be configured only after configuring legacy QoE.

 - NG-RAN can release a list of RAN visible QoE configurations while not releasing the corresponding legacy QoE configurations.

 - If the legacy QoE configuration is released, the corresponding RAN visible QoE configuration is released as well.

 - RAN visible QoE configuration can include at least the RAN visible QoE metrics to be reported, service type and a measurement ID for the RAN visible QoE. Whether existing IEs can be reused for service type and measurement ID and the signaling design is up to RAN2.

 - There is no need to consider Start Time, Duration and Sample Percentage in the RAN Visible QoE configuration in Rel-17.

 - RAN3 should discuss whether the existing identified RAN visible QoE metrics (or values if agreed) justifies the need of a separate reporting periodicity for RAN visible QoE.

 - RAN3’s decision on whether to have a different reporting periodicity for RAN visible QoE is independent of RAN2’s decision on which SRB to use for RAN visible QoE

 - Send an LS to SA4 checking the feasibility of supporting a different reporting periodicity for RAN visible QoE metrics, from the application perspective.

 - NG-RAN can configure RAN visible QoE for only a subset of those metrics which are already configured as part of legacy QoE configuration.

 - The OAM sends a list of the available RAN visible QoE metrics to the RAN node, outside the legacy QoE configuration container.

 - The details of alignment between radio-related measurements and RVQoE measurements can be discussed in RAN3#114-bis-e.

 - Introduce a new class-1 message for QoE information transfer over F1.

 - WA: If the legacy QoE configuration is paused/resumed, the corresponding RVQOE configuration is paused/resumed as well

 - WA: Include PDU or QoS related information in RVQoE report

 **Alignment of Radio-Related Measurement and QoE Measurements**

 - For alignment of MDT and QoE measurement reporting, OAM may activate/deactivate appropriately.

 - No RAN3 specification impact is needed in Rel-17 to ensure that the duration of QoE associated MDT covers all the QoE sessions if multiple QoE session configured.

 - In case of aligned MDT/QMC (s-based activation), OAM includes Trace Reference and Trace Recording Session Reference of the MDT configuration in the QMC configuration sent to NG-RAN.

 - In case of aligned MDT/QMC (m-based activation), OAM includes Trace Reference of the MDT configuration in the QMC configuration sent to NG-RAN.

 - (WA turned into agreement) In case of aligned MDT/QMC, NG-RAN includes Trace Reference and Trace Recording Session Reference in the QoE report sent to MCE.

 - The gNB does NOT include QoE reference in MDT report sent to the TCE.

 - If RAN nodes are responsible for passing the mapping relation between QoE and MDT during mobility, NG-RAN node does not include the Trace Reference and Trace Recording Session Reference of the MDT session in QoE configuration sent to UE.

 - An indicator (whether Trace Reference and Trace Recording Session Reference is FFS) is required in the QoE configuration to NG-RAN to inform whether it should forward the QoE report to MCE along with the MDT related trace details.

 - To enable time alignment between an already ongoing Immediate MDT and a QoE measurement started later, the start time and end time of the QoE measurement, in addition to the Trace Reference and Trace Recording Session ID, needs to be added to the QoE measurement report at the NG-RAN node.

 - Rel-17 NR QMC to support the following activation scenario: S-based QoE and s-based MDT, M-based QoE and m-based MDT.

 - The alignment of RVQoE and MDT measurements reuses the solution for the alignment of legacy QoE and MDT measurements. RAN node can reuse RRM measurements as well.

 - MDT/QMC alignment in split architecture scenarios should be considered.

* **LSs out**

 - LS to SA4 on the support of including slice ID in the QoE reporting container.

 - LS to RAN2 on agreements on RAN visible QoE

 - Send an LS to SA4/CT1 informing about our agreements on RAN visible QoE metrics requesting them to provide the necessary specification support (to be sent at RAN3#114bis-e).

#### 2.3.2 Remaining Open issues

**Cross-TSG aspects:**

* SA5: Extend stage 2 to cover NR QMC, including signalling based activation
* SA4: Include slice ID in the QoE report container.
* SA4/CT1: Specification support for RAN visible QoE metrics.

**Other aspects:**

* UE RAN capability with respect to providing RVQOE metrics, as per LS sent to RAN2

 - FFS on whether NGAP HANDOVER REQUIRED in NGAP should be enhanced for NR QoE.

 - FFS on other messages, e.g. UE CONTEXT MODIFICATION REQUEST, to be enhanced for activation/deactivation of NR QoE

 - FFS: RVQoE and legacy QOE can be reported separately.

 - FFS on the RVQoE report can be signalled from the target to the source node after a successful handover.

 - FFS on the RVQoE configuration is propagated from the source to target node upon mobility in RRC\_CONNECTED and during context retrieval upon resumption from RRC\_INACTIVE. The target/new RAN node may assemble a different RVQoE configuration.

 - FFS whether UE should reports the time elapsed between generating the QoE report and the time of reporting the QoE report i.e., when reporting is resumed, in case of alignment between MDT and a paused QoE.

 - FFS whether any enhancements for MDT/QMC alignment in split architecture scenarios should be considered.

 - FFS whether UE start/stop time of QoE is needed for MDT/QMC correlation?

 - FFS: NG-RAN can include session start and session end time stamp information related to MDT and QoE reports autonomously, using the same clock for MDT and QoE to assist the correlation entity. Session start and session end time indication needed from the UE?

 - Whether slice ID should be configured as an explicit IE to UE over Uu, at least for RAN visible QoE metric configuration.

 - Whether to extend some NG messages, e.g. NGAP INITIAL UE MESSAGE, with a new QoE Measurement Capabilities IE including a UE Application Layer Measurement Capability and a Max Number of UE Application Layer Measurements.

## 2.4 RAN4

#### 2.4.1 Agreements

#### 2.4.2 Remaining Open issues

## 2.5 RAN5

#### 2.5.1 Agreements

#### 2.5.2 Remaining Open issues

## 2.6 RAN6

#### 2.6.1 Agreements

#### 2.6.2 Remaining Open issues

## 3. Detailed progress in SA/CT WGs since last TSG meeting (for all involved WGs)

NOTE: This section only needs to be filled in for WI/SIs where there is a corresponding relevant WI/SI in SA/CT.

## 3.1 SA4

#### 3.1.1 Agreements with cross-TSG impacts

#### 3.1.2 Remaining Open issues with cross-TSG impacts

NOTE: This section should also flag any critical dependencies that need TSG attention.

## 4. References

NOTE: This can be e.g. a list of all related Tdocs in the affected WGs since last TSG, references to LSs, produced TRs/TSs, the work/study item description or status reports of previous TSGs.

**RAN2#113b-e**

1. R2-2102633 Conclusion of NR QoE Management and Optimizations for Diverse Services SI in RAN3 (R3-211234; contact: China Unicom)
2. R2-2102643 Reply LS on QoE Measurement Collection for LTE (RP-210922; contact: Ericsson)
3. R2-2102760 Workplan for Rel-17 NR QoE in RAN2
4. R2-2102958 QoE measurement configuration and reporting
5. R2-2102963 QoE configuraiton and reporting general aspects
6. R2-2102967 Stop and start of QoE measurement reporting
7. R2-2103049 Configuration and reporting of QoE measurements
8. R2-2103050 Pause and resume of QoE measurements
9. R2-2103146 Discussion on QoE measurement pausing and resuming
10. R2-2103147 Discussion on QoE measurement collection in NR
11. R2-2103290 LS reply on QoE Measurement Collection
12. R2-2103377 QoE measurement configuration and reporting
13. R2-2103378 QoE measurement handling
14. R2-2103425 QoE measurements in NR
15. R2-2103555 Considerations on QoE scope
16. R2-2103556 QoE reporting control by RAN awareness on QoE parameter
17. R2-2103692 Configuration and reporting for NR QoE measurement
18. R2-2103693 Start and stop for NR QoE measurement
19. R2-2103835 Discussions on the QoE SI Metrics and Collection Procedures
20. R2-2103910 Discussion on QoE measurement configuration and reporting
21. R2-2103911 QoE measurement handling at RAN overload
22. R2-2103934 General framework for QoE measurements
23. R2-2104034 Discussion on NR QoE configuration
24. R2-2104035 Discussion on QoE collection start and stop
25. R2-2104082 Issues for NR QoE measurement
26. R2-2104270 Discussion on NR QoE Configuration
27. R2-2104271 Discussion on pause/resume NR QoE reporting
28. R2-2104627 Report of offline discussion: [AT113bis-e][037][eQoE] Pause Resume
29. R2-2104628 [DRAFT] LS on QoE handling during RAN

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1. R2-2104992 QoE pause and resume handling
2. R2-2104994 QoE confiugration and reporting
3. R2-2105214 Further discussion on QoE measurement collection in NR standalone
4. R2-2105215 QoE report handling during RAN overload
5. R2-2105336 Discussion on QoE measurement configuration
6. R2-2105337 Discussion on start and stop of QoE measurement
7. R2-2105479 QoE configuration and general ascpects
8. R2-2105525 Discussion on QoE measurement pausing and resuming
9. R2-2105526 Discussion on QoE measurement collection in NR
10. R2-2105580 Discussion on QoE measurement configuration and reporting
11. R2-2105581 QoE measurement handling at RAN overload
12. R2-2105646 Discussion on NR QoE
13. R2-2105893 Configuration and reporting of QoE measurements
14. R2-2105894 Pause and resume of QoE measurements
15. R2-2105895 Running RRC CR for QoE measurements
16. R2-2105920 QoE reporting control
17. R2-2106061 Harmonised general framework for QoE measurements
18. R2-2106159 Discussion on QoE collection start and stop
19. R2-2106167 Discussion on NR QoE configuration
20. R2-2106220 Further discussion on configuration and reporting
21. R2-2106222 Further discussion on start and stop
22. R2-2106346 Stop and start for QoE measurement reporting
23. R2-2106348 QoE measurement configuration
24. R2-2106402 Issues for NR QoE measurement
25. R2-2106431 Discussion on pause/resume NR QoE reporting
26. R2-2106432 Discussion on NR QoE configuration
27. R2-2106653 Configuration Reporting General
28. R2-2106654 QoE configuration and reporting related issues
29. R2-2106661 Report from email discussion [AT114-e][027][QoE] Start and Stop (Lenovo)
30. R2-2106683 Running RRC CR for QoE measurements
31. R2-2106684 Running stage-2 CR for QoE measurements
32. R2-2106761 Report from email discussion [AT114-e][027][QoE] Start and Stop (Lenovo)
33. R2-2106762 Draft LS on QoE report handling at QoE pause
34. R2-2106775 LS on QoE report handling at QoE pause
35. R2-2106776 QoE configuration and reporting related issues
36. R2-2106776   LS on QoE configuration and reporting related issues
37. R2-2106775   LS on QoE report handling at QoE pause

**RAN2#115-e**

1. R2-2106938 LS on the mapping between service types and slice at application (R3-212904; contact: Qualcomm) RAN3 LS in Rel-17 NR\_QoE To:SA4, CT1, SA5 Cc:RAN2, SA2
2. R2-2106945 LS on requirement for configuration changes of ongoing QMC sessions (R3-212953; contact: Qualcomm) RAN3 LS in Rel-17 NR\_QoE To:SA4 Cc:SA5, RAN2
3. R2-2106949 LS on the area handling for QoE during mobility (R3-212976; contact: Qualcomm) RAN3 LS in Rel-17 NR\_QoE To:RAN2, SA4 Cc:SA5
4. R2-2108108 Running RRC CR for QoE measurements Ericsson draftCR Rel-17 38.331 16.5.0 B NR\_QoE-Core
5. R2-2108209 38.300 running CR for introduction of QoE measurements in NR Huawei, China Unicom, HiSilicon draftCR Rel-17 38.300 16.6.0 NR\_QoE-Core
6. R2-2107099 General aspects in QoE Samsung discussion Rel-17
7. R2-2107380 Discussion on NR QoE configuration CATT discussion NR\_QoE-Core
8. R2-2107396 Further discussion on QoE measurement collection in NR OPPO discussion Rel-17 NR\_QoE-Core
9. R2-2107513 QoE handling in RAN Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_QoE-Core R2-2105479
10. R2-2107816 Left issues for QoE configuration and reporting Qualcomm Incorporated discussion NR\_QoE-Core
11. R2-2108109 Configuration and reporting of QoE measurements Ericsson discussion Rel-17 NR\_QoE-Core
12. R2-2108197 Discussion on QoE measurement and configuration China Unicom, China Southern Power Grid discussion Rel-17 NR\_QoE-Core
13. R2-2108206 Discussion on QoE measurement configuration and reporting Huawei, HiSilicon discussion Rel-17 NR\_QoE-Core
14. R2-2108207 QoE handling during UE mobility Huawei, HiSilicon discussion Rel-17 NR\_QoE-Core
15. R2-2108227 Discussion on NR QoE configuration ZTE Corporation, Sanechips discussion Rel-17
16. R2-2108514 More considerations on configuration and reporting CMCC discussion Rel-17
17. R2-2108594 Discussion on QoE measurement configuration vivo discussion Rel-17 NR\_QoE-Core
18. R2-2109036 [Pre115-e][008][QoE] Summary Support for Mobility Huawei, HiSilicon discussion Rel-17 NR\_QoE-Core
19. R2-2107100 Pause and resume in QoE Samsung discussion Rel-17
20. R2-2107101 Storing QoE reports in AS at pause Samsung discussion Rel-17
21. R2-2107381 Activation and deactivation for QoE collection CATT discussion NR\_QoE-Core
22. R2-2107382 Discussion on QoE collection start and stop CATT discussion NR\_QoE-Core
23. R2-2107397 Discussion on QoE measurement pausing and resuming OPPO discussion Rel-17 NR\_QoE-Core
24. R2-2107514 RAN control on QoE reporting Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_QoE-Core
25. R2-2107515 QoE pausing Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_QoE-Core R2-2105920
26. R2-2107615 Pause/Resume functionality Apple discussion Rel-17 DUMMY
27. R2-2107817 Left issues for QoE pause and resume procedure Qualcomm Incorporated discussion NR\_QoE-Core
28. R2-2107852 Discussion on the partial QoE reporting and buffering at RAN overload ITRI discussion NR\_QoE-Core
29. R2-2107882 Stop and start for QoE measurement reporting LG Electronics Inc. discussion Rel-17
30. R2-2108213 Discussion on pause and resume mechanism China Unicom, China Southern Power Grid discussion Rel-17 NR\_QoE-Core
31. R2-2108226 Discussion on NR QoE start and stop ZTE Corporation, Sanechips discussion Rel-17
32. R2-2108515 More considerations on start and stop CMCC discussion Rel-17
33. R2-2107818 Support of RAN visible QoE Qualcomm Incorporated discussion NR\_QoE-Core
34. R2-2108110 Mobility Support for NR QoE Management Ericsson discussion Rel-17 NR\_QoE-Core
35. R2-2108111 [Draft] Support for Session Start and Session End Indication Ericsson LS out Rel-17 NR\_QoE-Core To:CT1
36. R2-2108208 Initial thoughts on non-RAN2 led objectives Huawei, HiSilicon discussion Rel-17 NR\_QoE-Core
37. R2-2108228 Discussion on NR QoEcontinuity in handover ZTE Corporation, Sanechips discussion Rel-17
38. R2-2108595 Discussion on QoE continuity during mobility vivo discussion Rel-17 NR\_QoE-Core
39. R2-2109038 [Pre115-e][007][QoE] Summary 8.14.2.1 Excluding Mobility Ericsson discussion Rel-17 NR\_QoE-Core
40. R2-2109200 QoE Reference and maximum number of QoE configurations in RRC RAN2 LSout
41. R2-2109105 Report of offline: [AT115-e][046][QoE] Mobility (Huawei) Huawei

**RAN2#116-e**

1. R2-2109348 Reply LS on QoE configuration and reporting related issues (R3-214471; contact: CMCC) RAN3 LS in Rel-17 NR\_QoE-Core To:RAN2
2. R2-2109351 LS on RAN3 agreements for NR QoE (R3-214477; contact: China Unicom) RAN3 LS in Rel-17 NR\_QoE-Core To:RAN2, SA4, SA5
3. R2-2109372 Reply LS on the mapping between service types and slice at application (S2-2106537; contact: Qualcomm) SA2 LS in Rel-17 NR\_slice-Core To:RAN3 Cc:SA4, CT1, SA5, RAN2
4. R2-2109382 Reply LS on the mapping between service types and slice at application (S4-211225; contact: Qualcomm) SA4 LS in Rel-17 NR\_QoE To:RAN3 Cc:CT1, SA4, RAN2, SA2
5. R2-2109383 LS on TS 28.404/TS 28.405 Clarification (S4-211234; contact: Qualcomm) SA4 LS in Rel-17 NR\_QoE-Core To:SA5 Cc:RAN2
6. R2-2109384 LS Reply on requirement for configuration changes of ongoing QMC sessions (S4-211248; contact: Huawei) SA4 LS in Rel-17 NR\_QoE To:RAN3 Cc:SA5, RAN2
7. R2-2109385 LS Reply on QoE report handling at QoE pause (S4-211290; contact: Huawei) SA4 LS in Rel-17 NR\_QoE-Core To:RAN2, SA5 Cc:SA3
8. R2-2109386 Reply LS on QoE configuration and reporting related issues (S4-211291; contact: Huawei) SA4 LS in Rel-17 NR\_QoE-Core To:RAN2 Cc:RAN3, SA5
9. R2-2109389 Reply LS on QoE report handling at QoE pause (S5-214519; contact: Huawei) SA5 LS in Rel-17 NR\_QoE-Core To:RAN2, SA4 Cc:SA3
10. R2-2109390 Reply LS on QoE configuration and reporting related issues (S5-214520; contact: Huawei) SA5 LS in Rel-17 NR\_QoE-Core To:RAN2 Cc:SA4, RAN3
11. R2-2111225 Reply LS on QoE Reference and maximum number of QoE configurations in RRC (S5-215213; contact: Huawei) SA5 LS in Rel-17 eQoE To:RAN2, RAN3 Cc:SA4
12. R2-2109865 Running RRC CR for QoE measurements Ericsson draftCR Rel-17 38.331 16.6.0 B NR\_QoE-Core
13. R2-2111064 Running CR of UE capability for NR QoE CMCC draftCR Rel-17 38.306 16.6.0 NR\_QoE
14. R2-2111162 38.300 running CR for Introduction of QoE measurements in NR China Unicom, Huawei, HiSilicon draftCR Rel-17 38.300 16.7.0 B NR\_QoE-Core
15. R2-2109565 QoE configuration, reporting and mobility Qualcomm Incorporated discussion NR\_QoE-Core
16. R2-2109662 QoE measurement configuration and general aspects Intel Corporation discussion Rel-17 NR\_QoE-Core
17. R2-2109832 Further discussion on transmission of QoE reports Lenovo, Motorola Mobility discussion Rel-17 NR\_QoE-Core
18. R2-2109866 Configuration and reporting of QoE measurements Ericsson discussion Rel-17 NR\_QoE-Core
19. R2-2109867 QoE measurements at handover, resume and re-establishment Ericsson, China Unicom discussion Rel-17 NR\_QoE-Core
20. R2-2109984 Discussion on QoE configuration vivo discussion Rel-17 NR\_QoE-Core
21. R2-2110073 Supporting mobility for NR QoE Apple discussion Rel-17 NR\_QoE-Core
22. R2-2110099 Discussion on QoE measurement collection in NR OPPO discussion Rel-17 NR\_QoE-Core
23. R2-2110605 Discussion on QoE measurement configuration and reporting Huawei, HiSilicon discussion Rel-17 NR\_QoE-Core
24. R2-2110720 QoE configuration handling Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_QoE-Core R2-2107513
25. R2-2110991 Discussion on NR QoE configuration ZTE Corporation, Sanechips discussion Rel-17
26. R2-2110993 Discussion on NR QoE configuration CATT discussion NR\_QoE-Core
27. R2-2111062 Remaining issues on configuration and reporting CMCC discussion Rel-17
28. R2-2111132 QoE configuration in general aspects Samsung discussion Rel-17
29. R2-2111133 RRC segmentation for QoE configuration and report Samsung discussion Rel-17
30. R2-2111188 Discussion on NR QoE measurement and configurations China Unicom discussion NR\_QoE-Core
31. R2-2109567 QoE pause and resume handling Qualcomm Incorporated discussion NR\_QoE-Core
32. R2-2109574 Draft reply LS on QoE report handling at QoE pause Qualcomm Incorporated LS out NR\_QoE-Core To:SA4 Cc:SA5, RAN3
33. R2-2109833 Further discussion on QoE report handling at QoE pause Lenovo, Motorola Mobility discussion Rel-17 NR\_QoE-Core
34. R2-2109868 Pause and resume of QoE measurements Ericsson discussion Rel-17 NR\_QoE-Core
35. R2-2109985 Discussion on start and stop of QoE measurement vivo discussion Rel-17 NR\_QoE-Core
36. R2-2110075 Pause/Resume functionality Apple discussion Rel-17 NR\_QoE-Core
37. R2-2110100 [Draft] LS reply on further questions regarding QoE reporting handling at QoE pause OPPO LS out Rel-17 NR\_QoE-Core To:SA4
38. R2-2110101 Discussion on QoE measurement pausing and resuming OPPO discussion Rel-17 NR\_QoE-Core
39. R2-2110281 Discussion on the partial QoE reporting and buffering at RAN overload ITRI discussion NR\_QoE-Core R2-2107852
40. R2-2110382 QoE pause and resume procedure LG Electronics Inc. discussion Rel-17
41. R2-2110608 Discussion on SA4/SA5 reply for QoE pause Huawei, HiSilicon discussion Rel-17 NR\_QoE-Core
42. R2-2110721 QoE stop and pause Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_QoE-Core R2-2107515
43. R2-2110722 RAN control on QoE reporting Nokia, Nokia Shanghai Bell discussion Rel-17 NR\_QoE-Core R2-2107514
44. R2-2110989 Discussion on NR QoE start and stop ZTE Corporation, Sanechips discussion Rel-17
45. R2-2110990 Discussion on buffer for NR QoE start and stop ZTE Corporation, Sanechips discussion Rel-17
46. R2-2110996 Discussion on QoE collection start and stop CATT discussion NR\_QoE-Core
47. R2-2111131 Pause and resume in QoE Samsung discussion Rel-17
48. R2-2109568 Support of RAN visible QoE and per-slice QoE Qualcomm Incorporated discussion NR\_QoE-Core
49. R2-2109986 Discussion on other WI objectives vivo discussion Rel-17 NR\_QoE-Core
50. R2-2110074 RRC segmentation for NR QoE Apple discussion Rel-17 NR\_QoE-Core
51. R2-2110606 QoE handling during UE mobility Huawei, HiSilicon discussion Rel-17 NR\_QoE-Core
52. R2-2110607 RAN visible QoE Huawei, HiSilicon discussion Rel-17 NR\_QoE-Core
53. R2-2110609 Draft reply LS on QoE configuration and reporting related issues Huawei, HiSilicon LS out Rel-17 NR\_QoE-Core To:SA4, SA5 Cc:RAN3
54. R2-2111063 Discussion on UE capability for NR QoE CMCC discussion Rel-17
55. R2-2111191 Discussion on RAN visible of QoE China Unicom discussion NR\_QoE-Core
56. R2-2111633 Running RRC CR for QoE measurements Ericsson draftCR Rel-17 38.331 16.6.0 B NR\_QoE-Core
57. R2-2111634 38.300 running CR for introduction of QoE measurements in NR China Unicom, Huawei, HiSilicon draftCR Rel-17 38.300 16.7.0 NR\_QoE-Core
58. R2-2111603 LS on QoE visible QoE RAN2 LSout

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1. R3-211732 NR QoE configuration and reporting
2. R3-211733 (TP for 38.413 and 38.423) NR QoE configuration and reporting
3. R3-211734 Per slice QoE measurements
4. R3-211735 QoE measurement collection and reporting continuity in mobility scenarios
5. R3-211736 RAN visible QoE
6. R3-211737 Alignment of Radio-Related Measurement and QoE Measurements
7. R3-211835 Discussion on NR QoE configuration procedures
8. R3-211836 Discussion on NR QoE configuration details
9. R3-211837 Discussion on per-slice QoE measurement
10. R3-211838 Discussion on Measurement Collection and Continuity in Mobility
11. R3-211839 Discussion on relevant set of RAN-visible QoE parameters
12. R3-211840 Discussion on RAN visible QoE configuration and reporting
13. R3-211841 Discussion on Alignment of MDT and QoE Measurements
14. R3-211978 RAN3 impacts for supporting QoE Measurement Collection in NR
15. R3-211979 Support of NR QoE Measurement Collection
16. R3-211980 Support of NR QoE Measurement Collection
17. R3-211981 Discussion on RAN visible QoE
18. R3-211982 Discussion on the alignment of Radio-Related Measurement and QoE Measurement
19. R3-211985 Procedures for Configuration, Activation and Deactivation of QMC
20. R3-211986 QoE Configuration and Reporting
21. R3-211987 paper 3
22. R3-211988 QoE Mobility Support
23. R3-211989 RAN-visible QoE Services and Metrics
24. R3-211990 RAN-visible QoE - Configuration and Reporting
25. R3-211991 The Alignment of Radio-Related Measurements and QoE Measurements
26. R3-212322 Baseline and stage 2 aspects for NR QoE
27. R3-212323 Introduction of QoE Measurement Collection for NR
28. R3-212324 Principles for configuration of NR QoE measurements
29. R3-212325 Analysis of QoE metrics for use by the NG-RAN
30. R3-212326 On the alignment of QoE measurements and MDT measurements
31. R3-212380 paper 33
32. R3-212381 CR TS 38.413 QoE Configuration and Reporting - Signalling Design
33. R3-212394 Workplan for Rel-17 NR QoE in RAN3
34. R3-212434 Consideration on NR QoE activation procedure
35. R3-212435 Discussion on NR QoE Configuration
36. R3-212440 (TP for TS 38.300) Introduce NR QoE
37. R3-212441 Discussion on configuration details in NR standalone mode
38. R3-212442 (TP for TS 38.413) NR QOE configuration
39. R3-212443 (TP for TS 38.423) NR QOE configuration
40. R3-212445 Measurement Collection and Continuity in Intra-System Intra-RAT Mobility
41. R3-212448 Further consideration on RAN visible QoE
42. R3-212449 Alignment of MDT and QoE Measurements
43. R3-212452 (TP for 38.401) Alignment of MDT and QoE Measurements
44. R3-212453 (TP for 38.473) Alignment of MDT and QoE Measurements
45. R3-212455 (TP for 38.463) Alignment of MDT and QoE Measurements
46. R3-212496 Alignment of radio related measurement and QoE measurement
47. R3-212497 RAN visible QoE metrics
48. R3-212498 Per-slice QoE measurement
49. R3-212515 Further analysis on spec impacts of the potential solutions to QoE visibility
50. R3-212516 [Draft] LS on QoE visibility at RAN
51. R3-212517 Further analysis on spec impacts of the potential solutions to RAN assitsted measurement
52. R3-212518 Further analysis on spec impacts of the potential solutions to QoE measurement per slice
53. R3-212519 Further analysis on spec impacts on configuration and reporting
54. R3-212520 CR to 38.413 on Introduction of QoE measurement
55. R3-212521 Further analysis on spec impacts on RAN intervention of QoE measurement
56. R3-212591 On per-slice QoE measurement
57. R3-212970 LS on how to support the (de)activation and failure handling of NR QMC
58. R3-212904 LS on the mapping between service types and slice at application
59. R3-212976 LS on the area handling for QoE during mobility
60. R3-212953 LS on the QoE requirement for ongoing session continuity

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1. R3-212953 LS on the QoE requirement for ongoing session continuity
2. R3-213316 CR TS 38.423 Mobility Support for NR QoE Measurement Collection
3. R3-213317 QoE Configuration and Reporting
4. R3-213318 CR TS 38.413 QoE Configuration and Reporting - Signalling Design
5. R3-213319 QoE Mobility Support
6. R3-213320 RAN-visible QoE Metrics
7. R3-213321 RAN-visible QoE Configuration and Reporting
8. R3-213322 The Alignment of Radio-Related Measurements and QoE Measurements
9. R3-213489 QoE Configuration and Reporting
10. R3-213490 QoE measurement in mobility scenarios
11. R3-213491 RAN visible QoE configuration and reporting
12. R3-213492 Updated Workplan for Rel-17 NR QoE
13. R3-213493 38300 running CR for NR QoE\_
14. R3-213654 QoE configuration and reporting
15. R3-213655 QoE measurement collection and reporting continuity in mobility scenarios
16. R3-213656 Support for RAN Visible QoE
17. R3-213657 Alignment of Radio-Related Measurement and QoE Measurements
18. R3-213681 Discussion on stage 2 description for NR QMC
19. R3-213682 Introduction of QoE Measurement Collection for NR
20. R3-213683 Choices for configuration of NR QoE measurements
21. R3-213684 Open issues on mobility
22. R3-213685 Analysis of metrics for RAN visible QoE
23. R3-213686 Remaining open issues for alignment of radio-related measurements and QoE measurements
24. R3-213791 Discussion on Measurement Collection and Continuity in Intra-System Intra-RAT Mobility
25. R3-213944 Discussion on NR QoE configuration procedures
26. R3-213945 Introduction of NR QoE measurements on Xn interface
27. R3-213946 Discussion on NR QoE configuration details
28. R3-213947 Discussion on Measurement Collection and Continuity in Intra-System Intra-RAT Mobility
29. R3-213948 Discussion on RAN visible QoE configuration and reporting
30. R3-213949 [Draft]LS on the configuration and report of the RAN-visible QoE
31. R3-213950 Discussion on Alignment of MDT and QoE Measurements
32. R3-213964 Further discussion on QoE Measurement Collection in NR
33. R3-213965 (CR for TS 38.413) Support of NR QoE
34. R3-213966 (CR for TS38.423) Support of NR QoE
35. R3-213967 Discussion on RAN visible QoE
36. R3-213968 (CR for TS38.473) Support of QoE information transfer
37. R3-213969 Discussion on the alignment of Radio-Related Measurement and QoE Measurement
38. R3-214040 Further consideration on NR QoE (de)activation procedure
39. R3-214041 (TP for TS 38.300) Introduce NR QoE
40. R3-214042 (TP for TS 38.413) NR QOE configuration
41. R3-214043 (TP for TS 38.423) NR QOE configuration
42. R3-214044 Discussion on NR QOE configuration
43. R3-214045 Discussion on Measurement Collection and Continuity in Intra-System Intra-RAT Mobility
44. R3-214046 Further consideration on RAN visible QoE
45. R3-214047 [draft] LS on RAN visible QoE
46. R3-214048 Discussion on alignment of MDT and QoE Measurements
47. R3-214049 (TP for 38.401) Alignment of MDT and QoE Measurements
48. R3-214050 (TP for E1/F1) Alignment of MDT and QoE Measurements
49. R3-214070 Further discussions on configuration and reporting of QoE measurements
50. R3-214071 CR to 38.413 on Introduction of QoE measurement
51. R3-214072 Further discussions on overland handling
52. R3-214073 Further discussions on per-slice QoE measurement
53. R3-214074 Further discussions on measurement Collection and Continuity in Intra-System Intra-RAT Mobility
54. R3-214075 Further discussions on RAN-visible QoE
55. R3-214076 Draft LS on RAN-visible QoE conclusions
56. R3-214077 Further discussions on Radio-Related Measurement and QoE Measurements
57. R3-214108 Further discussions on alignment of radio related measurement and QoE measurement
58. R3-214109 Further discussions on RAN visible QoE
59. R3-214110 Further discussions on per-slice QoE measurement
60. R3-214131 On the reception of QoE configuration in a non-supporting node
61. R3-214194 CB: # QoE1\_Workplan - Summary of email discussion
62. R3-214195 CB: # QoE2\_ Stage2 - Summary of email discussion
63. R3-214196 CB: # QoE3\_Configuration\_Report - Summary of email discussion
64. R3-214197 CB: # QoE4\_Mobility - Summary of email discussion
65. R3-214198 CB: # QoE5\_RANVisible - Summary of email discussion
66. R3-214199 CB: # QoE6\_MDTAlignment - Summary of email discussion

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1. R3-214633 CR to 38.413 on Introduction of QoE measurement
2. R3-214634 BLCR to 38.300
3. R3-214694 QoE Reference and maximum number of QoE configurations in RRC
4. R3-214704 Reply LS on the mapping between service types and slice at application
5. R3-214716 Reply LS on the mapping between service types and slice at application
6. R3-214717 LS Reply on requirement for configuration changes of ongoing QMC sessions
7. R3-214720 Reply LS on (de)activation and failure handling of NR QMC
8. R3-214726 Procedures for Configuration, Activation and Deactivation of QMC
9. R3-214727 (TP for QoE BL CR for TS 38.413) QoE Configuration and Reporting
10. R3-214728 Mobility Support for NR QoE Management
11. R3-214729 CR TS 38.423 Mobility Support for NR QoE Measurement Collection
12. R3-214730 RAN Visible QoE Metrics
13. R3-214731 Configuration and Reporting of RAN Visible QoE
14. R3-214732 The Alignment of Radio-Related Measurements and QoE Measurements
15. R3-214769 BLCR to 38.410: Support of QoE Measurement Collection for NR
16. R3-214907 QoE Configuration, Activation and Deactivation Procedures
17. R3-214908 QoE configuration details
18. R3-214909 Per slice QoE
19. R3-214910 QoE measurement collection and reporting continuity in mobility scenarios
20. R3-214911 RAN Visible QoE
21. R3-214912 Alignment of Radio-Related Measurement and QoE Measurements
22. R3-214979 [DRAFT] LS Reply on QoE Reference and Maximum Number of QoE Configurations in RRC
23. R3-214980 [DRAFT] Reply LS on Mapping Between Service Types and Slice at Application
24. R3-214981 [DRAFT] LS Reply on requirement for configuration changes of ongoing QMC sessions
25. R3-215021 Distribution of QMC Job Attributes for Management Based QoE
26. R3-215115 Discussion on NR QoE configuration procedures
27. R3-215116 Introduction of NR QoE measurements on Xn interface
28. R3-215117 Discussion on NR QoE configuration details
29. R3-215118 Discussion on Measurement Collection and Continuity in Intra-System Intra-RAT Mobility
30. R3-215119 Discussion on RAN visible QoE configuration and reporting
31. R3-215120 TP for 38.423 on RAN visible QoE configuration and reporting
32. R3-215121 Discussion on Alignment of MDT and QoE Measurements
33. R3-215308 (TP for BL CR to TS 38.300) Stage 2 updates following replies from other WGs
34. R3-215309 (TP for BL CR to TS 38.410) QMC function definition
35. R3-215310 Stage 3 updates following replies from other WGs
36. R3-215311 Inter-node propagation of management-based QMC configuration
37. R3-215312 Handling of open points for RAN visible QoE
38. R3-215313 Remaining open issues for alignment of radio-related measurements and QoE measurements
39. R3-215543 NR QoE Activation and Deactivation Procedures
40. R3-215544 NR QoE Configuration Details
41. R3-215545 Mobility issues of NR QoE
42. R3-215546 RAN visible QoE
43. R3-215547 (CR for TS38.473) Support of QoE information transfer
44. R3-215548 Alignment of MDT and QoE
45. R3-215631 Discussion on QoE activation and deactivation procedures
46. R3-215633 Discussion on NR QoE Configuration
47. R3-215635 (TP for BL CR of TS 38.413) NR QoE Configuration
48. R3-215637 (TP for BL CR of TS 38.423) NR QoE Configuration
49. R3-215639 Further discussion on Measurement Collection and Continuity in Intra-System Intra-RAT Mobility
50. R3-215641 Discussion on configuration and reporting of RVQoE
51. R3-215644 Consideration on RAN visible QoE
52. R3-215647 [draft] LS on the support for RAN visible QoE
53. R3-215657 Further discussions on configuration details
54. R3-215658 TP to 38.413 on configuration details
55. R3-215659 Further discussions on RAN visible QoE metrics
56. R3-215660 Draft LS on RAN visible QoE conclusions
57. R3-215661 Further discussions on RAN related measurements and informaiton
58. R3-215662 Further discussions on measurement collection and mobility continuity
59. R3-215663 Stage 2 TPs to 38.300 on RAN related measurements and information
60. R3-215667 Further discussion on alignment of MDT and QoE Measurements
61. R3-215668 (TP for 38.401) Alignment of MDT and QoE Measurements
62. R3-215669 (TP for E1/F1) Alignment of Radio-Related Measurement and QoE Measurements
63. R3-215688 Remaining open issues on alignment of radio related measurement and QoE measurement
64. R3-215689 Remaining open issues on per-slice QoE measurement
65. R3-215703 Updated Workplan for Rel-17 NR QoE
66. R3-215704 Clarification for QoE modification and overriding
67. R3-215706 Per-slice QoE measurement configuration and reporting
68. R3-215708 QoE Configuration and Reporting
69. R3-215865 CB: # QoE1\_Workplan - Summary of email discussion
70. R3-215866 CB: # QoE2\_Activation\_Deactivation - Summary of email discussion
71. R3-215867 CB: # QoE3\_Configuration\_Report - Summary of email discussion
72. R3-215868 CB: # QoE4\_Mobility - Summary of email discussion
73. R3-215869 CB: # QoE5\_RANVisible - Summary of email discussion
74. R3-215870 CB: # QoE6\_MDTAlignment - Summary of email discussion