3GPP TSG-RAN WG2 #117 R2-22xxxxx

eMeeting, 21st February - 3rd March, 2022

Agenda Item: 8.14.1.2 LS in

Source: Huawei (email rapporteur)

**Title: Report of [AT117e][068][QoE] LS in and LS out (Huawei)**

Document for: Discussion and decision

# 1 Introduction

This is report for [AT117e][068].

* [AT117-e][068][QoE] LS in and LS out (Huawei)

Scope: Take into account LS ins, Suggest impact to TSes (on a high level, details for TS-specific discussions), determine discussion points for online CB if needed, make Reply LSes to the extent needed. Include also LS out(s) as identified by R2 117-e online discussions.

Intended outcome: Report, Approved LS out(s)

Deadline: EOM (preferably offline only)

It is proposed to have two phases:

**Phase 1:** Collect companies’ comments regarding the Lses and see if online CB is needed or not (if yes, it is expected that Thursday CB can be used for such discussions). Companies can provide your comments in the comment tables. **Deadline: March 2nd 1200 UTC**

**Phase 2:** Finallize the outgoing Lses if necessary. **Deadline: March 3rd 1000 UTC**

# 2 Contact Points

Respondents to the email discussion are kindly asked to fill in the following table.

|  |  |  |
| --- | --- | --- |
| Company | Name | Email Address |
| Lenovo | Hyung-Nam Choi | hchoi5@lenovo.com |
| CMCC | Kangyi Liu | liukangyi@chinamobile.com |
| CATT | Chunlin Ni | nichunlin@catt.cn |
| Huawei, HiSilicon | Jun Chen | jun.chen@huawei.com |
| Qualcomm | Jianhua liu | jianhua@qti.qualcomm.com |
| Samsung | Seungbeom Jeong | s90.jeong@samsung.com |
| China Unicom | Shuai Gaos | gaos30@chinaunicom.cn |
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# 3 Discussion

## 3.1 Actions for incoming LSes

So far, based on [1], the following Lses were treated during online discussions. The email rapporteur’s comments are provided, and please companies check and provide feedbacks if any.

[R2-2202128](file:///C:\Users\johan\OneDrive\Dokument\3GPP\tsg_ran\WG2_RL2\TSGR2_117-e\Docs\R2-2202128.zip) LS on QoE Measurement Session Start and Measurement Session End Indication from the UE (R3-221243; contact: Ericsson) RAN3 LS in Rel-17 To:RAN2 Cc:SA5

- Apple think R3 could also have just relied on measurement reports. Ericsson think the measurement report is sent at the end of the session.

- China Unicom agree w Ericsson, think R2 can just design the signalling.

- Lenovo think the application is running otherwise th network would not configure, this is just for QoE session.

* Noted

[Rapp] The content of the LS can be directly discussed in the 38.331 CR discussion for NR QoE, i.e. [AT117-e][045][QoE] RRC CR (Ericsson).

[R2-2202137](file:///C:\Users\johan\OneDrive\Dokument\3GPP\tsg_ran\WG2_RL2\TSGR2_117-e\Docs\R2-2202137.zip) LS on RAN3 agreement for management based QoE mobility (R3-221427; contact: ZTE) RAN3 LS in Rel-17 To:RAN2

* Noted

[Rapp] No RAN2 impacts.

[R2-2202140](file:///C:\Users\johan\OneDrive\Dokument\3GPP\tsg_ran\WG2_RL2\TSGR2_117-e\Docs\R2-2202140.zip) LS on Support for Configuration and Reporting of RAN Visible QoE Measurements (R3-221465; contact: Ericsson) RAN3 LS in Rel-17 To:RAN2 Cc:SA4

- Ericsson indicate that the periodicity is in the CR.

- Huawei suggest to discuss directly in CR discussions. Chair agrees. China Unicom agrees as well.

* Noted

[Rapp] The content of the LS can be directly discussed in the 38.331 CR discussion for NR QoE, i.e. [AT117-e][045][QoE] RRC CR (Ericsson).

[R2-2202138](file:///C:\Users\johan\OneDrive\Dokument\3GPP\tsg_ran\WG2_RL2\TSGR2_117-e\Docs\R2-2202138.zip) LS on Support for Configuration and Reporting of RAN Visible QoE Measurements (R3-221463; contact: Ericsson) RAN3 LS in Rel-17 To:CT1 Cc:RAN2, SA4

* Noted

[Rapp] ~~The content of the LS can be directly discussed in the 38.331 CR discussion for NR QoE, i.e. [AT117-e][045][QoE] RRC CR (Ericsson).~~RAN2 is copied and there are no RAN2 impacts.

[R2-2202139](file:///C:\Users\johan\OneDrive\Dokument\3GPP\tsg_ran\WG2_RL2\TSGR2_117-e\Docs\R2-2202139.zip) LS on Support for Configuration and Reporting of RAN Visible QoE Measurements (R3-221464; contact: Ericsson) RAN3 LS in Rel-17 To:SA4 Cc:RAN2

* Noted

[Rapp] RAN2 is copied and there are no RAN2 impacts.

[R2-2203846](file:///C:\Users\johan\OneDrive\Dokument\3GPP\tsg_ran\WG2_RL2\TSGR2_117-e\Docs\R2-2203846.zip) LS Reply on SA4 requirements for QoE (S4-220236; contact: Huawei) SA4 LS in Rel-17 NR\_QoE-Core To:RAN2 Cc:RAN3

- Mainly mobility aspects, take into account

* Noted

[Rapp] The above LS may need some RAN2 discussions.

The mobility discussion in RAN2 was triggered by the following RAN3 LS (received at RAN2#115-e):

R2-2106949 LS on the area handling for QoE during mobility (R3-212976; contact: Qualcomm) RAN3

The content of the LS is listed as below:

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| --- |
| RAN3 discussed further the following three options captured in TR 38.890 regarding the area handling for QoE during mobility.  - Option 1, where the network is responsible for keeping track of whether the UE is inside or outside the area and configures / releases configuration accordingly.  - Option 2, where the network is responsible for keeping track of whether the UE is inside or outside the area, and the UE responsible to manage start/stop of QoE accordingly.  - Option 3, where the UE is responsible for area checking (UE has the area configuration) and to manage start/stop of QoE accordingly.  RAN3 agreed to support Option 1. |

The original RAN2 LS was sent due the following discussion (RAN2#116-e meeting):

Continue the offline on mobility:

P7: Discuss whether RAN2 intends to fulfil the SA4 requirements related to mobility. Chair: Discuss in detail what are the mobility cases, what is the expected AS behaviour. Can limit to Uu part.

Can discuss whethter we need clarifications by LS.

* [Post116-e][080][eQoE] Mobility (Ericsson)

      Scope: Discuss whether RAN2 intends to fulfil the SA4 requirements related to mobility, what those requirements are (e.g. based on different case). Determine whether we need further clarifications by LS, and if so LS approval. In case there is need (in order to converge on mobility in general), the non-LS part of this discussion can continue in a long email discussion (and then the report is then for next meeting).

      Intended outcome: Approved LS out, Report

      Deadline: Short 2 (not for RP)

=> LSout approved in [R2-2111665](http://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_116-e/Docs/R2-2111665.zip)

Based on the above incoming LS, the email rapporteur thinks that it may be good to progress on mobility aspects discussion just in this email, and companies’ opinions are welcome.

[R2-2203847](file:///C:\Users\johan\OneDrive\Dokument\3GPP\tsg_ran\WG2_RL2\TSGR2_117-e\Docs\R2-2203847.zip) LS Reply on maximum container size for QoE configuration and report (S4-220237; contact: Huawei) SA4 LS in Rel-17 NR\_QoE-Core To:RAN2 Cc:RAN3, SA5, CT1

- Lenovo think we may specify then that reports that cannot be transmitted due to large size are dropped. Apple agrees

- Apple think that we then don’t need any capability transfer between AS and Application.

* Noted

[Rapp] The content of the LS can be directly discussed in the 38.331 CR discussion for NR QoE, i.e. [AT117-e][045][QoE] RRC CR (Ericsson).

[R2-2203848](file:///C:\Users\johan\OneDrive\Dokument\3GPP\tsg_ran\WG2_RL2\TSGR2_117-e\Docs\R2-2203848.zip) LS Reply on RAN visible QoE (S4-220239; contact: Huawei) SA4 LS in Rel-17 NR\_QoE-Core To:RAN2 Cc:RAN3

* Noted

[Rapp] In general, SA4 confirmed RAN2 assumptions and provided some suggestions, and the content of the LS can be directly discussed in the 38.331 CR discussion for NR QoE, i.e. [AT117-e][045][QoE] RRC CR (Ericsson).

[R2-2203849](file:///C:\Users\johan\OneDrive\Dokument\3GPP\tsg_ran\WG2_RL2\TSGR2_117-e\Docs\R2-2203849.zip) LS Reply on QoE configuration and reporting related issues (S4-220309; contact: Huawei) SA4 LS in Rel-17 NR\_QoE-Core To:RAN3 Cc:RAN2, SA5

* Noted

[Rapp] RAN2 is copied and there are no RAN2 impacts.

In summary, the email rapporteur thinks the only the following LS needs some RAN2 discussions.

[R2-2203846](file:///C:\Users\johan\OneDrive\Dokument\3GPP\tsg_ran\WG2_RL2\TSGR2_117-e\Docs\R2-2203846.zip) LS Reply on SA4 requirements for QoE (S4-220236; contact: Huawei) SA4

**Question 1: For the above LS, do companies think that there are extra RAN2 impacts (on top of all RAN2 agreements and agreements from other WGs)? If Yes, please indicate the specific RAN2 impacts.**

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| **Company** | **Yes/No** | **Comments** |
| Lenovo | Yes | R2-2202137: we think the RAN3 agreements impact the HO preparation message. That means the agreed m-based measurement configuration needs to be added in the inter-node message. |
| CMCC | No |  |
| CATT | No |  |
| Huawei, HiSilicon | No (maybe stage-2 impacts) | According to the LS from SA4, we think SA4 also agrees that the network will be responsible for tracking a UE’s location (inside or outside the target area) and can release and set/reset QoE configuration accordingly.The UE can just follow the network’s orders (configuration/release).  Also RAN3 has agreed that the source node will send the QoE measurement status (whether the qoe measurement is ongoing) to the target node. Therefore we think RAN2 may add some princples for the QoE measurement when the UE move out of the area scope in stage 2, but we do not have strong views. |
| Qualcomm |  | For area scope control, we would like to confirm whether the case of multiple sessions per QoE configuration needs to be considered; if not, then no extra RAN2 impect; if yes, then we may need to consider another solution. |
| Samsung | No | No RAN2 impact is seen for R2-2203846. |
| China Unicom | No |  |
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**Question 2: Do companies have other comments regarding the above Lses?**

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| **Company** | **Comments** |
| Lenovo | R2-2202138: RAN2 is only cc: and is related to AT commands, so we think there are no RAN2 impacts. |
| Huawei, HiSilicon | Agree with Lenovo that R2-2202138 shoud have not impacts to RAN2 as RAN2 is copied. The above rapporteur comments are updated correspondingly. |
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## 3.2 Possible outgoing LSes

For the following LS, it is mentioned that an outgoing LS is needed.

[R2-2203924](file:///C:\Users\johan\OneDrive\Dokument\3GPP\tsg_ran\WG2_RL2\TSGR2_117-e\Docs\R2-2203924.zip) Report for [AT117-e][047][QoE] UE capability (CMCC) CMCC

Discussion

- QC think an LS would be helpful. Ericsson agrees.

- Nokia think we have been focusing on Radio capabilities, and think that a feature need to be coordinated, i.e. that a radio capability also means that the capability is supported on higher layer but how this is done is up to UE impl. Huawei agrees.

- Lenovo don’t see strong need for LS, but ok to send LS to SA4.

- CMCC think we need to send LS to SA4

- QC want to further ask more detailed questions, if different applications has different support for same service type.

* RAN2 assumes that AS layer capability will be indicated to network only if the UE is capable also on higher layers
* RAN2 assumes that how AS layer obtain application capability is based on UE implementation (with no AS spec impact).

We send LS to SA4 (and cc CT1), can elaborate on detailed Questions offline, if needed.

It is the email rapporteur’s understanding that the LS includes the following aspects:

* To: SA4
* Cc: CT1
* Content: Include the above two RAN2 assumptions, and list the agreed AS layer capabilities for NR QoE
* Actions to SA4: suggest SA4 to check the RAN2 assumptions and provide feedbacks if any

**Question 3: Do companies agree with the rapporteur’s understanding? Please indicate your comments if any.**

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| --- | --- | --- |
| **Company** | **Yes/No** | **Comments** |
| Lenovo | Yes but | To be complete we should add some description how we came up to the assumptions, e.g. i) in LTE QoE no exchange of application layer capabilities have been specified, ii) it is assumed that if UE indicates support of a QoE measurement capability for a service type in AS layer then this implies that the capability is supported in the application layer as well but how this is done is up to UE implementation. |
| CMCC | Yes but | We think it is better to check with SA4 whether there is any issue when application layer that does not support QoE receives QoE configuration from AS layer, in case SA4 may not notice this case. |
| CATT | Yes | Ok for the rappotuer’s proposal |
| Huawei, HiSilicon | Yes |  |
| Qualcomm | Yes but | Agree with CMCC that we need to ask SA4 whether there is any issue when application layer receives non-supported QoE configurations or RVQoE configurations.  And we prefer CT1 is changed to “to”, |
| Samsung | Yes | Agree with Lenovo. Besides, regarding CMCC's comment, we should first ask SA4 that  Q1) Whether different applications with the same service type can have different QoE support capability (e.g., Application 1 supports QoE, while application 2 with the same service type supports does not support QoE)?  Q2) If yes for Q1, whether UE reports support of QoE for the service type?  Q3) If yes for Q1, is there any issue? (i.e., CMCC's comment) |
| China Unicom | Yes | We agree wih the LS rapporteur’s understanding. In our view, we disagree to introduce more detailed issues and questions in the LS with the limited TU considered. And we share the same view with Lenovo, the exchange of AS layer and APP layer capability is based on UE implementation. Otherwise it will be very strange and complicated that if one UE supports AS layer capability but it doesn’t support the corresponding APP layer capability. Anyway, SA4 and CT1 would give feedback if they have any concerns. |
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Since this WI NR QoE is expected to be completed after this RAN2 meeting, the email rapporteur thinks that some RAN2 agreements (made in this meeting) may impact other WGs, e.g. CT1, SA4. For UE capability part, Q3 has covered such co-ordinations between WGs, and for other parts, it may need a LS to inform these WGs so that they can discuss and finalize their own parts.

It is the email rapporteur’s understanding that one LS is needed and it could include the following aspects:

* To: CT1, SA4
* Cc: RAN3
* Content:
  + directly include RAN2 agreements (except for UE capabilities part), or a high level summary of RAN2 agreements
  + perhaps attach the latest/agreed 38.331 CR
* Actions to CT1 and SA4: suggest the target WGs to check the RAN2 agreements and implement them in their specifcations if necessary

**Question 4: Do companies agree with the rapporteur’s understanding? Please indicate your comments if any.**

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| --- | --- | --- |
| **Company** | **Yes/No** | **Comments** |
| Lenovo | Yes but | The CT1 part should clearly address the impacts on AT commands they need to consider.  SA5 should be added in To: field as well since they need to specify the general concept of NR QoE in their specs. |
| CMCC | Yes |  |
| CATT | Yes | RAN3 may be in TO list and SA5 is added |
| Huawei, HiSilicon | Yes | We are ok to add SA5 in Cc list. |
| Qualcomm | Yes |  |
| Samsung | Yes | We prefer to add both RAN3 and SA5 to "To" list |
| China Unicom | Yes |  |
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**(newly added based on the WI rapporteur CUC’s request)**

In the open issue list [2], one proposal is listed as below:

**Proposal 4: RAN2 to discuss how to support pause status information in an appropriate inter-node RRC message and reply the LS to RAN3.**

The background is that RAN2 received RAN3 LS R2-2109351 and one action to RAN2 is as below:

*2) RAN3 considered a mobility scenario where the QoE reporting is paused at UE by the source gNB and agreed that the pause status information should be transferred to target gNB during handover preparation. RAN3 thereby requests RAN2 to consider including pause status information in an appropriate inter-node RRC message.*

It is the email rappoteur’s understanding that pause/resume indications have been captured in the latest RRC CR for NR QoE as part of QoE configurations, and it can be naturally sent from the source gNB to target gNB during handover preparation, i.e. see AS-config definition in HandoverPreparationInformation.

|  |
| --- |
| – *HandoverPreparationInformation*  This message is used to transfer the NR RRC information used by the target gNB during handover preparation or UE context retrieval, e.g. in case of resume or re-establishment, including UE capability information. This message is also used for transferring the information between the CU and DU.  Direction: source gNB/source RAN to target gNB or CU to DU.  ***HandoverPreparationInformation* message**  -- ASN1START  -- TAG-HANDOVER-PREPARATION-INFORMATION-START  HandoverPreparationInformation ::= SEQUENCE {  criticalExtensions CHOICE {  c1 CHOICE{  handoverPreparationInformation HandoverPreparationInformation-IEs,  spare3 NULL, spare2 NULL, spare1 NULL  },  criticalExtensionsFuture SEQUENCE {}  }  }  HandoverPreparationInformation-IEs ::= SEQUENCE {  ue-CapabilityRAT-List UE-CapabilityRAT-ContainerList,  sourceConfig AS-Config OPTIONAL, -- Cond HO  rrm-Config RRM-Config OPTIONAL,  as-Context AS-Context OPTIONAL,  nonCriticalExtension SEQUENCE {} OPTIONAL  }  AS-Config ::= SEQUENCE {  rrcReconfiguration OCTET STRING (CONTAINING RRCReconfiguration),  ...,  [[  sourceRB-SN-Config OCTET STRING (CONTAINING RadioBearerConfig) OPTIONAL,  sourceSCG-NR-Config OCTET STRING (CONTAINING RRCReconfiguration) OPTIONAL,  sourceSCG-EUTRA-Config OCTET STRING OPTIONAL  ]],  [[  sourceSCG-Configured ENUMERATED {true} OPTIONAL  ]]  } |

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| *AS-Config* field descriptions |
| ***rrcReconfiguration***  Contains the *RRCReconfiguration* configuration as generated entirely by the MN. |

It is the email rapporteur’s understanding that one reply LS (reply to R2-2109351) is needed and it could include the following aspects:

* To: RAN3
* Cc:
* Content:
  + From RAN2 point of view, pause status information has been captured as part of QoE configuration and thus it can be supported in HandoverPreparationInformation message without extra RAN2 impacts
* Actions to RAN3: take RAN2 responses into account

**Question 5: Do companies agree with the rapporteur’s understanding? Please indicate your comments if any.**

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| --- | --- | --- |
| **Company** | **Yes/No** | **Comments** |
| Qualcomm | Yes | Agree with rapporteur’s understanding. |
| Samsung | Yes | Share the same view with rapporteur. i.e., It is already captured in RRC CR. No more RAN2 impact. |
| China Unicom | Yes | We agree with the rapporteur’s understanding. |
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# 4 Conclusions

[To be updated]

# 5 References

[1] R2\_117-e Chair Notes 2022-02-28 1630 UTC

[2] R2-2202043, QoE related open issue list, China Unicom

# 6 Ongoing email discussions for NRQoE

* [AT117-e][045][QoE] RRC CR (Ericsson)

Scope: Ph1: Review the CR provided in [R2-2203428](file:///C:\Users\johan\OneDrive\Dokument\3GPP\tsg_ran\WG2_RL2\TSGR2_117-e\Docs\R2-2203428.zip), including the proposed R2 117e New resolutions, including check of previous meeting updates (as there was no formal endorsement).

Ph2: Take into account meeting progress and impact due to Incoming LSes acc to disc [068]. Identify further agreements (and Determine points for discussion if needed). Preferably Offline only.

Intended outcome: Ph2: Report if useful, Agreed CR

Deadline: For online CB W2 Thursday if needed, otherwise short Post Meeting Disc.

* [AT117-e][046][QoE] Invited tdocs Open Issues (Ericsson)

Scope: Consider the invited input, and tdocs provided under 8.14.3.2 excluding issues handled in [R2-2202878](file:///C:\Users\johan\OneDrive\Dokument\3GPP\tsg_ran\WG2_RL2\TSGR2_117-e\Docs\R2-2202878.zip), or in the RRC CR, or under 8.14.4 or issues where we are still waiting for input from other groups (there is overlap in some tdocs). For the invited input and non-excluded contents, determine agreeable parts, discussion points and remaining open issues (if any). Determine need for LS outs if any.

Intended outcome: Report

Deadline: W1 Friday (for online CB W2 Monday).  
CLOSED

* [AT117-e][047][QoE] UE capability (CMCC)

Scope: Treat [R2-2202827](file:///C:\Users\johan\OneDrive\Dokument\3GPP\tsg_ran\WG2_RL2\TSGR2_117-e\Docs\R2-2202827.zip), [R2-2202988](file:///C:\Users\johan\OneDrive\Dokument\3GPP\tsg_ran\WG2_RL2\TSGR2_117-e\Docs\R2-2202988.zip), [R2-2203347](file:///C:\Users\johan\OneDrive\Dokument\3GPP\tsg_ran\WG2_RL2\TSGR2_117-e\Docs\R2-2203347.zip), [R2-2203404](file:///C:\Users\johan\OneDrive\Dokument\3GPP\tsg_ran\WG2_RL2\TSGR2_117-e\Docs\R2-2203404.zip), [R2-2203429](file:///C:\Users\johan\OneDrive\Dokument\3GPP\tsg_ran\WG2_RL2\TSGR2_117-e\Docs\R2-2203429.zip), determine agreeable parts and discussion points. Determine need for LS outs if any.

Intended outcome: Report

Deadline: W1 Friday (for online CB W2 Monday).

CLOSED

* [AT117-e][068][QoE] LS in and LS out (Huawei)

Scope: Take into account LS ins, Suggest impact to TSes (on a high level, details for TS-specific discussions), determine discussion points for online CB if needed, make Reply LSes to the extent needed. Include also LS out(s) as identified by R2 117-e online discussions.

Intended outcome: Report, Approved LS out(s)

Deadline: EOM (preferably offline only)

* [AT117-e][069][QoE] UE capabilities CRs (CMCC)

Scope: Reflect progress including R2 117-e. CR endorsement

Intended outcome: Endorsed UE cap CRs (38331 and 38306) for Merge.

Deadline: EOM (offline)

* [Post117-e][070][QoE] 38300 CR (China Unicom)

Scope: Reflect progress including R2 117-e. CR approval

Intended outcome: Agreed Stage-2 CR

Deadline: Short Post