3GPP TSG-RAN WG2 Meeting #118e Tdoc R2-22xxxxx

Electronical meeting, May 9th – May 20th, 2022

Agenda: 6.14

Source: Ericsson

Title: Summary of [AT118-e][078][QoE] RRC (Ericsson) for 6.14

Document for: Discussion, Decision

# 1 Introduction

In this document the following offline is discussed:

* [AT118-e][078][QoE] RRC (Ericsson)

 Scope: Take into account online progress, address offline FFSes non-treated proposals, and open RILs. Consider CR proposals, Review Rapporteur CR resolutions. Determine agreeable parts. Update CR to reflect agreeable part and agree CR. LS out acc to agreement

 Consider: R2-2205439, R2-2206119, R2-2206130, R2-2205442, R2-2206129, R2-2205441, R2-2204874, R2-2204875, R2-2205443, R2-2205085, R2-2205087, R2-2205088, R2-2205086

 Intended outcome: Report, LS out, Agreed CR (in the end)

 Deadline: CB W2 Wed (and/or later), CR can be finally agreed in a post-meeting disc.

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# 2 Discussion

This offline discussion addresses issues raised in the referenced contributions, except for issues set to propReject and not flagged, issues already discussed and agreed in online session and editorial corrections which will be merged directly into the correction CR.

[R2-2205439](file:///C%3A%5CUsers%5Cmtk65284%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2_RL2%5CTSGR2_118-e%5CDocs%5CR2-2205439.zip) Correction CR for QoE measurements Ericsson CR Rel-17 38.331 17.0.0 3086 - F NR\_QoE-Core Late

* Baseline for further modifications

[R2-2206119](file:///C%3A%5CUsers%5Cmtk65284%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2_RL2%5CTSGR2_118-e%5CDocs%5CR2-2206119.zip) RIL List v207 for QoE L.M. Ericsson Limited discussion NR\_QoE-Core

* RIL statuses propAgree, propReject are confirmed, except 4 RILs (id’s are lost).

The RILs that were flagged are H909, I009, N014 and S751.

## 2.1 RIL H088

RIL H088 was discussed in online session with the following agreements:

R2-2205442:

* Keep the procedure text for reporting of buffer level values in RRC specification.
* Inform SA4 that the latest values of the buffer level need to be reported to the AS layer.

R2-2206129:

* FFS if we P1: Specify buffer level measurement sample periodicity within RAN visible QoE configuration.
* FFS if we need to add something to allow receiver to know the order of / timing of measurement samples.

[R2-2205442](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_118-e/Docs//R2-2205442.zip), [Discussion on RIL issues H088 and H089 related to RAN visible QoE](file:///c%3A%5C3GPP_RAN1%5CRAN2_118e_e%5C6.14.3%5CR2-2205442%20Ericsson%20Discussion%20on%20RIL%20issues%20H088%20and%20H089%20related%20to%20RAN%20visible%20QoE.docx), Ericsson, RAN2#118e, e, May 2022

[R2-2206129](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_118-e/Docs//R2-2206129.zip), [Clarifications for buffer level reporting (RIL: H088)](file:///c%3A%5C3GPP_RAN1%5CRAN2_118e_e%5C6.14.3%5CR2-2206129%20Huawei%20Clarifications%20for%20buffer%20level%20reporting%20%28RIL%3A%20H088%29.docx), Huawei, HiSilicon, RAN2#118e, e, May 2022

There is some FFSs related to the sample periodicity of the buffer level values and whether the order and/or timing of the values need to be known by the receiver. One option is to specify UE internal sampling periodicity. Another option is to have the same periodicity for the UE internal sampling as the periodicity in RRC signalling. The list can be used in RRC to avoid the UE having to discard values received from the application.

Question 1: What is your view on:

* Specifying the UE internal buffer level periodicity? Specifying the order and/or timing of the samples received from the application by the AS layer (e.g. in AT command)?
* Alternatively, use the same sampling periodicity for UE internal sampling as the RRC reporting periodicity?

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| **Company** | **Comments** |
| Apple | We tend to think it is simpler to just follow the RRC reporting periodicity to reduce specification effort in this late stage. |
| Huawei, HiSilicon | We think we need to specify a sampling periodicity as proposed in R2-2206129 and as requested by SA4. Otherwise, this will not work as intended, as indicated by SA4. If we reuse the reporting periodicity, then there is no use of having a list of buffer level entries in the RRC report as the UE will always report a single value anyway. The specifications impact will be less if we just add a sampling periodicity as in R2-2206129 (we are open to discuss other values). |
| Nokia | In our understanding, the issue is resolved with R2-2205943 (Q3a in [079]). The UE QoE measurements (container based) have own periodicity, Buffer Level as a subset follows the periodicity. “Sampling” is new approach that would require further clarifications, which at this stage we should avoid, if there is another/simpler solution. |
| Ericsson | We think it is fine as it is. The sampling periodicity defined is the UE internal sampling periodicity. We could ask RAN3 for clarification. |
| Qualcomm | We want to know what is the motivation to define buffer level measurement sample periodicity within RAN visible QoE configuration. Buffer level measurement should reuse legacy QoE measurement interval. That means OAM can configure or up to UE implementation for the measurement interval. There is no additional requirement for RAN visible QOE.For the order of samples, if the gNB wants to obtain the Bufferlevel in order, gNB can configure smaller reporting periodicity. The report can be in order with different reporting intervals. And, the bufferlevel values within one reporting periodicity do not to need in order. |
| ITRI | Following the RRC reporting periodicity is simpler and reasonable for RVQoE processing at this stage. We do not see the particular necessity to specify the UE internal buffer level periodicity.  |
| Lenovo | After checking with SA4 colleagues we agree on the intention of H088, i.e. an explicit indication of the buffer level measurement sample periodicity has been requested by SA4. And we understood that the sample periodicity is not the same as the reporting periodicity.However, we think that RAN2 is not the right group to decide on the values of the sample periodicity since this is up to gNB. Therefore, we suggest to send an LS to RAN3 (cc: SA4) and ask them for their feedback. |
| Intel | Agree with Lenovo that we could ask RAN3 for the decision, as well as define the value range for periodicity. |
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## 2.2 RIL H089

RIL H089 is related to whether the PDU session ID should be mandatory or optional in RRC signalling. RAN2 agreed:

* TBD if *pdu-SessionIdList* should be mandatory in *MeasurementReportAppLayer* and application layer should always provide at least one PDU session ID in the RAN visible application layer measurement report.

[R2-2205442](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_118-e/Docs//R2-2205442.zip), [Discussion on RIL issues H088 and H089 related to RAN visible QoE](file:///c%3A%5C3GPP_RAN1%5CRAN2_118e_e%5C6.14.3%5CR2-2205442%20Ericsson%20Discussion%20on%20RIL%20issues%20H088%20and%20H089%20related%20to%20RAN%20visible%20QoE.docx), Ericsson, RAN2#118e, e, May 2022

[R2-2206130](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_118-e/Docs//R2-2206130.zip), [Corrections for RAN visible QoE (RIL: H089, H090, H909)](file:///c%3A%5C3GPP_RAN1%5CRAN2_118e_e%5C6.14.3%5CR2-2206130%20Huawei%20Corrections%20for%20RAN%20visible%20QoE%20%28RIL%3A%20H089%2C%20H090%2C%20H909%29.docx), Huawei, HiSilicon, RAN2#118e, e, May 2022

Question 2: Do you think *pdu*-*SessionIdList* should be mandatory in the *MeasurementReportAppLayer* message?

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| **Company** | **Yes/No** | **Comments** |
| Lenovo | Tend to say Yes | Referring to the last LS R2-2202139 (RAN2#117-e) we received from RAN3 we got the impression that application layer is always required to send the PDU session ID(s) for each RVQoE report.RAN3 agreement:* *Include PDU session ID in RAN Visible QoE report, FFS on Slice information.*

*…**The PDU session ID information in the first agreement includes the PDU session ID(s) corresponding to the service that is measured.*  |
| Apple | No | We think in some cases the NW can figure out the PDU session ID by itself. For instance, in some simple use cases with only one service type or application that is providing QoE. Hence, the NW may optionally ask the UE to report PDU session ID when it is needed, but this is not necessary in all scenarios. |
| Huawei, HiSilicon | Yes | The information is needed for the network to figure out which PDU session the report refers to. It is not easy for the network to figure this out by itself and even if it could, it is unclear how the application layer can decide when to include the PDU session ID and when to omit it. We should clarify the application layer always reports PDU session ID which means the UE needs to always include it. It is also simpler not to add an additional indication from the NW to the UE on whether the PDU session is needed or not. |
| Nokia | No RAN2 decision? | The RAN3 request seemed to impose requirement to AT command. How it can be provided should be assessed by CT1. We believe RAN3 and CT1 should be asked back |
| Ericsson | No | We don’t think it can be optional in the signalling, it might not be needed in all cases. |
| Qualcomm | mandatory | The application layer does not know whether to forward PDU Session info to AS layer, the simple way is to always report. |
| ITRI |  | Have the same view with Nokia.  |
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## 2.3 RIL H054

RIL H054 is related to whether the handling of messages exceeding 9 kBytes in case segmentation is NOT enabled needs to be specified.

**[Class]**: 1 **[Status]**: ToDo **[TDoc]**: None **[Proposed Conclusion]**: v31

**[Description]**: The discard of the oversized measurement report is missing.

**[Proposed Change]**:

2> If the encoded RRC message is larger than the maximum supported size of a PDCP SDU specified in TS 38.323 [5]:

 3> if the RRC message segmentation is enabled based on the field rrc-SegAllowed received in appLayerMeasConfig:

 4> initiate the UL message segment transfer procedure as specified in clause 5.7.7;

 3> else:

 4> discard the RRC message.

 2> else:

 3> submit the MeasurementReportAppLayer message to lower layers for transmission upon which the procedure ends

Question 3: Do you think that handling of *MeasurementReportAppLayer* messages exceeding 9 kBytes needs to be specified in RRC?

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| **Company** | **Yes/No** | **Comments** |
| Lenovo | Yes | To our understanding this captures the answer from SA4 in the LS reply R2-2203847 (RAN2#117-e) on RAN2 question about the awareness of maximum QoE report size:*Answer: The application layer is expected to strictly comply with its QoE configuration in the collection and encapsulation of measurements into QoE reports to be sent to the AS layer, i.e., by collecting metrics, encapsulating them into an XML file, compressing that file into a container to be sent to the AS layer after a fixed time period. SA4 believes that it is difficult for the application layer to adjust the size of its QoE report container, and therefore defers to RAN2 decision on UE handling of QoE reports which exceed the maximum report size (e.g., potentially dropping the report).* |
| Apple | Yes | We agree that the UE AS would just discard the RRC message in this case. |
| Huawei, HiSilicon | Yes |  |
| Nokia | Yes |  |
| Ericsson | Yes |  |
| Qualcomm | Yes, but. | We are ok with this, but we also want to clarify (maybe with a Note) that UE will discard the RRC message If the encoded RRC message is larger than the maximum supported size of a PDCP SDU multiplexing 16 in case that the RRC message segmentation is enabled. In legacy UL RRC segmentation, the RRC content is generated by RRC layer and segments number 16 was defined to accommodate the possible maximum size of UE capability, so it is almost impossible the maximum size of RRC message containing UE capability is larger than 16x9k. But the QoE data is generated by application layer, and RRC layer cannot control the size, and we don’t the maximum size could be if considering some XR/VR service type and longer report periodicity. So from clear UE behavior point of view, it should be further clarified. |
| ITRI | Yes |  |
| Intel | Yes |  |
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## 2.4 RIL H094

RIL H094 is related to whether the IE type for the IEs for *pauseReporting*, *transmissionOfSessionStartStop* and *reportPlayOutDelayForMediaStartup* should be BOOLEAN or ENUMERATED {true, false}.

[R2-2205443](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_118-e/Docs//R2-2205443.zip), [Discussion on RIL issues H054 and H094](file:///c%3A%5C3GPP_RAN1%5CRAN2_118e_e%5C6.14.3%5CR2-2205443%20Ericsson%20Discussion%20on%20RIL%20issues%20H054%20and%20H094.docx), Ericsson, RAN2#118e, e, May 2022

**[RIL]**: H094 **[Delegate]**: Huawei (Dawid) **[WI]**: QOE **[Class]**: 2 **[Status]**: ToDo **[TDoc]**: None **[Proposed Conclusion]**: v127

**[Description]**: **]**: Since this parameter is mandatory, it has to be sent whenever the QoE configuration is modified. This results in the UE forwarding it to app layer, even though the value has not changed.

**[Proposed Change]**: Make this parameter optional with NEED M.

**[Comments]**: [Ericsson]: Corrected in WI CR, and also the parameters pauseReporting and reportInitialPlayoutDelay.

The types were changed from BOOLEAN to ENUMERATED in order to have the IEs OPTIONAL, so that they do not always have to be signalled and thereby not always forwarded to the application layer.

Question 4: Do you think that the IE types for type for *pauseReporting*, *transmissionOfSessionStartStop* and *reportPlayOutDelayForMediaStartup* should be BOOLEAN or ENUMERATED OPTIONAL?

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| **Company** | **Comments** |
| Lenovo | Firstly, H094 did not suggest to change the type from BOOLEAN to ENUMERATED.Secondly, ENUMERATED {true, false} looks odd. Such IE has never been used before in RRC (36.331, 38.331).Therefore, we think that BOOLEAN should be kept. |
| Apple | We agree these should be optional, and the IE types for these could be changed to ENUMERATED. |
| Huawei, HiSilicon | We are OK to apply optionality to all these fields, but we agree with Lenovo that use of BOOLEAN is preferred. |
| Nokia | We agree to have it as Optional and BOOLEAN  |
| Ericsson | We think the IEs should be optional. No strong view on BOOLEAN or ENUMERATED. |
| Qualcomm | Agree with the issue that AS layer will forward the command to application layer. It makes sense to support delta configuration for the three parameters. Can use ENUMERATED {pause, resume} - optional |
| ITRI | These IEs should be optional. No strong view on BOOLEAN or ENUMERATED. |
| Intel | Agree that those IE types should be optional. No strong view using BOOLEAN or ENUMERATED. |
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## 2.5 RIL H909

RIL H909 is related to whether the last sentence of the field description for *ran-VisiblePeriodicity* needs to be updated.

***ran-VisiblePeriodicity***

The field indicates the periodicity of RAN visible reporting. Value ms120 indicates 120 ms, value ms240 indicates 240 ms and so on. If no value is indicated and the UE is configured with RAN visible reporting, the same periodicity as indicated in the *measConfigAppLayerContainer* is used.

[R2-2206130](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_118-e/Docs//R2-2206130.zip), [Corrections for RAN visible QoE (RIL: H089, H090, H909)](file:///c%3A%5C3GPP_RAN1%5CRAN2_118e_e%5C6.14.3%5CR2-2206130%20Huawei%20Corrections%20for%20RAN%20visible%20QoE%20%28RIL%3A%20H089%2C%20H090%2C%20H909%29.docx), Huawei, HiSilicon, RAN2#118e, e, May 2022

[R2-2204848](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_118-e/Docs//R2-2204848.zip), [Discussion on NR QoE issues](file:///c%3A%5C3GPP_RAN1%5CRAN2_118e_e%5C6.14.3%5CR2-2204848%20Lenovo%20Discussion%20on%20NR%20QoE%20issues.docx), Lenovo, RAN2#118e, e, May 2022

The issue was discussed in the online session with the following agreements:

* FFS if RAN2 to confirm that it is left to UE implementation how to send QoE and RVQoE reports to the gNB.
* FFS if RAN2 to agree to replace the RAN3 requirement in stage 2 saying “If there is no reporting periodicity defined in the RAN visible QoE configuration, RAN visible QoE reports should be sent together with the legacy QoE reports” by “If there is no reporting periodicity defined in the RAN visible QoE configuration, the reporting periodicity of the associated QoE measurement configuration shall be applied”.

The current text has some issues as the AS layer is not supposed to be required to decode the container. An option could be to remove the text with the understanding that gNB always configures the periodicity if RAN visible QoE is configured.

Question 5: Do you prefer to keep or remove the last sentence of the field description for *ran-VisiblePeriodicity*? If the text is kept, do you think it needs to be updated and to what in such case?

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| **Company** | **Comments** |
| Lenovo | We prefer to keep it as it is to be complete, i.e. what absence of the parameter means.Furthermore, the change proposed by H909 is in contradiction with what has been captured in 21.4, see below. That means the reporting of QoE/RVQoE reports is left to UE implementation.*“UE can send both RAN visible application layer measurement reports and the application layer measurement reports to the gNB in the same MeasurementReportAppLayer message.”* |
| Apple | Agree with Lenovo, whether to send QoE/RVQoE together is up to UE implementation |
| Huawei, HiSilicon | The sentence quoted by Lenovo is just the description of what is possible. Of course, the reports will not always be sent together, e.g. in case the periodicities are different. But for the case of absence of RAN visible periodicity in the configuration, stage-2 description is very clear (section 21.4):“RAN visible QoE measurements can be reported with a reporting periodicity different from the one of regular QoE. If there is no reporting periodicity defined in the RAN visible QoE configuration, RAN visible QoE reports should be sent together with the legacy QoE reports.”To reply to the question – we need to modify the text as proposed in R2-2206130. The current description does not consider that reporting might not be periodical and is misaligned with RAN3 agreement and stage-2 description. |
| Nokia | We support the change: “If there is no reporting periodicity defined in the RAN visible QoE configuration, the reporting periodicity of the associated QoE measurement configuration shall be applied”. |
| Ericsson | We think the sentence should be removed as the network should configure the periodicity when applicable. The AS layer shouldn’t have to check the content of the container. |
| Qualcomm | Prefer to remove it, it is can be captured in stage 2 from functionality description point of view. Actually, this sentence should be captured in SA4 specifications. If we keep the sentence as it is, it will make misunderstanding UE RRC layer will implement it. |
| ITRI | We prefer to remove the last sentence of the field description for *ran-VisiblePeriodicity* to avoid inconsistency on AS behaviour.  |
| Intel | We also prefer to remove the last sentence. Additionally, it is also not clear what periodicity is used by *measConfigAppLayerContainer,* as such information is transparent to AS layer. |
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## 2.6 RIL I009/N014

RIL I009/N014 is related to setup/release of *AppLayerMeasConfig* and a release mechanism for *rrc-SegAllowed*. For further information see:

 appLayerMeasConfig-r17 AppLayerMeasConfig-r17 OPTIONAL, -- Need M

**[RIL]**: I009 **[Delegate]**: Intel (Sudeep) **[WI]**: **QOE [Class]**: 2 **[Status]**: ToDo **[TDoc]**: None **[Proposed Conclusion]**: v045

**[Description]**: No mechanism to release.

**[Proposed Change]**: Suggest to use SetupRelease.

 **[RIL]**: N014 **[Delegate]**: Nokia(Tero) **[WI]**: QOE **[Class]**: 2 **[Status]**: ToDo **[TDoc]**: None **[Proposed Conclusion]**:

**[Description]**: See I009 - either need code should be Need R or SetupRelease should be added.

**[Proposed Change]**: Add SetupRelease-wrapper.

Question 6: Do you think that SetupRelease or Need R should be used for *AppLayerMeasConfig*?

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| **Company** | **Comments** |
| Lenovo | We prefer to specify the need code for field rrc-SegAllowed as “Need R” instead of using SetupRelease {AppLayerMeasConfig-r17}. This is much simpler otherwise it requires some changes in the procedure text related to the reception of appLayerMeasConfig. Furthermore, use of SetupRelease type for an IE containing ToAddMod and ToRelease lists is redundant. |
| Apple | We think SetupRelease-wrapper can be used. |
| Huawei, HiSilicon | Perhaps using SetupRelease is more future proof in case we extend AppLayerMeasConfig in future, but no strong view. |
| Nokia | Neutral: rrc-SegAllowed as “Need R” makes sense to us,while SetupRelease might be more future-proof |
| Ericsson | Same view as Nokia. |
| Qualcomm | Need R needs enough, but no strong view. |
| ITRI | Same view with Lenovo.  |
| Intel | Share the same vie with Nokia that it would be more future proof and easy to release the whole IE of *AppLayerMeasConfig.*We are also fine to use Need R if majority companies prefer.  |
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## 2.7 RIL S751

RIL S751 is related to the indentation of the text “consider itself to be configured to send application layer measurement report for the *measConfigAppLayerId* in accordance with 5.7.16” in chapter 5.3.5.13d, whether the text should be B3 or B4. The indentation was first changed to B4 in the RRC CR, but then it was commented that the current style B3 is correct. For further information see:

[R2-2205085](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_118-e/Docs//R2-2205085.zip), [Correction on UE configuration for QoE (RIL#: S751)](file:///c%3A%5C3GPP_RAN1%5CRAN2_118e_e%5C6.14.3%5CR2-2205085%20Samsung%20Correction%20on%20UE%20configuration%20for%20QoE%20%28RIL#: S751).docx), Samsung, RAN2#118e, e, May 2022

Question 7: Do you think the style should be B3 or B4 for the text “consider itself to be configured to send application layer measurement report for the *measConfigAppLayerId* in accordance with 5.7.16” in chapter 5.3.5.13d?

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| **Company** | **Comments** |
| Lenovo | Proposed change looks ok and style should be B4. |
| Apple | We think B3 is correct. The UE would anyway consider itself as configured to report QoE even if the container is not included. |
| Huawei, HiSilicon | The proposed change is incorrect, i.e. it should be B3. As mentioned by Apple, the UE should consider to be configured to provide the reports even if there is no container, which happens after HO with full configuration. |
| Nokia | We think B3 is correct |
| Ericsson | Agree with Huawei, the proposed change is not correct for the reason mentioned by Huawei. |
| Qualcomm | B3 is correct. Container is optional in case of full configuration; UE should consider itself to be configured to send QoE for the *measConfigAppLayerId* in case that container is absent. |
| ITRI | We think B3 is correct.  |
| Intel | We think B3 is more suitable, as appLayerMeasConfig can include other configurations (e.g. pauseReporting, etc) without having container inside (*measConfigAppLayerContainer-r17* is optional) during reconfiguration. If measConfigAppLayerContainer-r17 was previously configured, the UE should still send application layer measurement report for the corresponding RRC ID. |
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# 3 Conclusion

TBD

# 4 References

1. [R2-2205439](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_118-e/Docs/R2-2205439.zip), [Correction CR for QoE measurements](file:///c%3A%5C3GPP_RAN1%5CRAN2_118e_e%5C6.14.1%5CR2-2205439%20Ericsson%20Correction%20CR%20for%20QoE%20measurements.docx), Ericsson, RAN2#118e, e, May 2022
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