3GPP TSG-RAN WG2 Meeting #110-e draft R2-2005927

Online, 1st – 12th June 2020

**Agenda item: 7.2.6**

**Source: Huawei (rapporteur)**

**Title: Summary of [AT110-e][307][NBIOT] R16 ASN.1 Review (Huawei)**

**WID: NB\_IOTenh3-Core, LTE\_eMTC5-Core**

**Document for: Discussion and Decision**

# 1 Introduction

An offline discussion has been set up to progress the ASN.1 review for WI specific issues:

* [AT110-e][307][NBIOT] R16 ASN.1 Review (Huawei)

Status: Not Started.

Scope: Remaining RIL issues (TBD).

Intended outcome: Report in R2-2005927

Deadline: June 5 1000 UTC

All RIL class 3 and 4 issues with rapporteur status equal to PropAgree, PropReject, and PropNoAct are listed in section 2 and will be agreed in block unless they are flagged via email, in which case they will move to the discussion section.

The document discusses RIL class 3 and 4 issues that have not been concluded, i.e. status different from PropAgree, PropReject, and PropNoAct.

The document is organised by topic as follows

* PUR related issues
* GWUS related issues
* Other issues

Note that it is recommended to refer to the ASN review file [2] for the details of the proposed changes, as RIL extraction does not reflect the text formatting (e.g. strike out, underline…).

# 2 RIL issues not for discussion unless flagged

Extract of the RIL:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **ID** | **Class** | **Tdoc** | **Status** | **Proposed Conclusion** | **Description** | **Proposed Change** | **Comments** | **Section** |
| H858 | 4 | None | PropAgree | v54: as suggested by QC | Should be CP transmission using PUR |  | Qualcommv33: Agree. Qualcommv39: Thinking further, there is no need to add CP. Just delete UP. If UE is sending RRC Conn Setup, it should already be in IDLE (without suspend indication). | 5.3.3.3 Actions related to transmission of RRCConnectionRequest message |
| E903 | 3 | None | PropReject | v54: Should stay consistent with what has been done in the past. | VarRLF-Report-NB is a separate variable used for NB-IoT so it should be specified/written on it’s own rather than putting in bracket. Instead of in bracket (VarRLF-Report-NB in NB-IoT), it should be VarRLF-Report or VarRLF-Report-NB. This occurs in many places, so it is good to fix it in WI CR. | change from VarRLF-Report (VarRLF-Report-NB in NB-IoT) to VarRLF-Report or VarRLF-Report-NB. The “in NB-IoT” can be removed. | Huawei: v54: the approach of having brackets (xx for NB-IoT) has been used since rel-13. Better not to change now | 5.3.11.3 Detection of radio link failure |
| H844 | 4 | None | PropNoAct | v54, already clear in stage 2 | WI Open issue: FFS whether and where to clarify that support for early contention resolution is mandatory for UE connected to 5GC. |  | Qualcommv39: See our earlier comment on this issue in H081. When we raised this issue in phase 1, Huawei said this was already clear. Unclear why additional RIL is added now. Huawei v42: This is an open issue in the chair minutes and should be closed. We think it is clear in stage 2 | – RRCConnectionRequest-NB |
| E905 | 3 | None | PropNoAct | v54: CR implementation error | We have removed reference to NR from resource reservation configuration and IE names | Remove "NR-" from IE name | Huawei: this is a CR implementation error. The full IE is deleted in the NB-IoT CR and replaced by IE ResourceReservationConfig-NB Qualcommv39: Yes this RIL can be No Act. | – NR-ResourceReservationConfig-NB |
| H853 | 4 | None | PropNoAct | v58: already captured in stage 2 | WI Open issue: FFS how the use of UE category information is captured in the specifications. Also applies to eMTC (no RIL) |  | Huawei v42: this has been clarified in stage 2. The Editor’s Note can be deleted. Qualcommv55: Unclear what PropAgree means as there is no proposed change | – UE-RadioPagingInfo-NB |

Conclusion:

All proposals are confirmed with the additional suggestions in the comment column.

**Proposal 1**: HH58: Status set to ConcAgree with the additional suggestions in the comment column.

**Proposal 2**: E903: Status set to ConcReject.

**Proposal 3**: H844, E905, H853: Status set to ConcNoAct.

# 2 Discussion

## 2.1 PUR related issues

### RIL E906/ E907

Extract of the RIL:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **ID** | **Class** | **Tdoc** | **Status** | **Proposed Conclusion** | **Description** | **Proposed Change** | **Comments** | **Section** |
| E906 | 4 | None | DiscMeet | v54: Changed to class 4. To be discussed in WI session with other PUR open issues. | Is it clear what configuration will be provided at this step, compared to storing pur-Config? E.g., MAC layer would need to be provided with PUR-RNTI here, the current MAC CR says RNTI is released after PUR occasion. Also some information related to the exact next PUR occasion should be provided. Or is it implicitly assumed these are the configuration provided? | Suggest to be more explicit here, i.e. reference to PUR-RNTI, PUR occasion. To be further discussed in WI, open issues Tdoc will be submitted including further discussion. | Qualcommv46: Agree some discussion and resolution is needed. For example, latest MAC spec CR says: “- when pur-TimeAlignmentTimer configuration is received from upper layers: - start or restart the pur-TimeAlignmentTimer.” Does this mean every PUR occasion the pur TAT restarts? (Given these and some other E90x RILs are joint issues, should class be changed to 4?) Huawei: v54: also think should be class 4 | 5.3.3.1c Conditions for initiating transmission using PUR |
| E906 | 4 | None | DiscMeet | v54: Change to class 4. To be discussed in WI session with other PUR open issues. | For CP solution same as for UP solution, should we be more explicit? See E906 | See E906 | Qualcomm v46: same comment as E906. | "5.3.3.3b Actions related to transmission of RRCEarlyDataRequest message" |

**Rapporteur’s comment:**

This is discussed in [AT110-e][313][NBIOT/eMTC] PUR open issues (Ericsson). The conclusion will be captured in this document.

Conclusion:

**Proposal 4**: E906/ E907: Wait for conclusion of [Offline-313].

### RIL H810/H840/H854

Extract of the RIL:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **ID** | **Class** | **Tdoc** | **Status** | **Proposed Conclusion** | **Description** | **Proposed Change** | **Comments** | **Section** |
| H810 | 4 | None | DiscMeet | v54: To be discussed in WI session with other PUR open issues | "WI Open issue: FFS: 2-level offset need and details for pur-StartTime-r16.Also NB-IoT (RIL#840)" |  |  | "– PUR-Config" |
| H840 | 4 | None | DiscMeet | v54: To be discussed in WI session with other PUR open issues | "WI Open issue: FFS: 2-level offset need and details for pur-StartTime-r16. Also covers the Editor’s note below. Also eMTC (RIL#810)" |  |  | "– PUR-Config-NB-r16" |
| H854 | 4 | None | DiscMeet | v54: To be discussed in WI session with other PUR open issues | "WI Open issue: FFS: 2-level offset need and details for pur-StartTime-r16.Linked to RIL#H840" |  |  | 5.3.3.19 Timing alignment validation for transmission using PUR |

**Rapporteur’s comment:**

This is discussed in [AT110-e][313][NBIOT/eMTC] PUR open issues (Ericsson). The conclusion will be captured in this document.

Conclusion:

**Proposal 5**: H810/ H840/ H854: Wait for conclusion of [Offline-313].

### RIL H811/H841

Extract of the RIL:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **ID** | **Class** | **Tdoc** | **Status** | **Proposed Conclusion** | **Description** | **Proposed Change** | **Comments** | **Section** |
| H811 | 4 | None | DiscMeet | v54: to be discussed in WI session with other PUR open issues | WI Open issue: For the requested PUR TBS in eMTC and NB-IoT, the minimum value is b328.FFS: other details. Also NB-IoT (RIL#841) |  |  | "– PURConfigurationRequest" |
| H841 | 4 | None | DiscMeet | v54: To be discussed in WI session with other PUR open issues | WI Open issue: For the requested PUR TBS in eMTC and NB-IoT, the minimum value is b328.FFS: other details. Also eMTC (RIL#811) |  |  | "– PURConfigurationRequest-NB" |

**Rapporteur’s comment:**

This is discussed in [AT110-e][313][NBIOT/eMTC] PUR open issues (Ericsson). The conclusion will be captured in this document.

This has been discussed online with the following outcome:

* Maximum value for *requestedTBS* for eMTC is b2984 and for NB-IoT b2536.
* For *requestedTBS,* use 64 values for eMTC and 32 values for NB-IoT.

Conclusion:

**Proposal 6**: H811/ H841: Status changed to ConcAgree. Detailed values for *requestedTBS* to be discussed in CR review.

### RIL H812/H842

Extract of the RIL:

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **ID** | **Class** | **Tdoc** | **Status** | **Proposed Conclusion** | **Description** | **Proposed Change** | **Comments** | **Section** |
| H812 | 4 | R2-2005031 | PropTDoc | v54: To be discussed with other remaining ASN.1 issues | "WI Open issue: Discuss whether newUE-Identity-r16 should be moved from RRCConnectionSetup(-NB)/ RRCRonnectionResume(-NB) to RadioResourceConfigDedicated(-NB). Also NB-IoT (RIL#842)" |  | "Qualcomm v39: This was already discussed and there was no resolution to move this field due to unnecessary extension overhead in RadioResourceConfigDedicated. Suggest PropReject.  Huawei v42: This is an open issue in the chair minutes. We think configuration parameter should not be at message level. We will have a tdoc." | – RRCConnectionResume |
| H842 | 4 | R2-2005031 | PropTDoc | v54: To be discussed with other remaining ASN.1 issues | "WI Open issue: Discuss whether newUE-Identity-r16 should be moved from RRCConnectionSetup(-NB)/ RRCRonnectionResume(-NB) to RadioResourceConfigDedicated(-NB). Also eMTC (RIL#812)" |  | "Qualcomm v39: Same comment as H812  Huawei v42: we will have a tdoc" | "– RRCConnectionResume-NB" |

**Rapporteur’s comment:**

This has been discussed online with the following outcome:

* Move newUE-Identity from RRCConnectionSetup(-NB)/ RRCRonnectionResume(-NB) to RadioResourceConfigDedicated(-NB).

Conclusion:

**Proposal 7**: H812/H842: Status changed to ConcAgree.

### RIL H815

Extract of the RIL:

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| **ID** | **Class** | **Tdoc** | **Status** | **Proposed Conclusion** | **Description** | **Proposed Change** | **Comments** | **Section** |
| H815 | 4 | None | DiscMail | v54: To be discussed with other remaining ASN.1 issues | It is not clear what an empty PUR occasion is. Propose to align with NB-IoT ‘Number of consecutive PUR occasions that can be skipped before implicit release of PUR configuration’ | v54: To be discussed with other remaining ASN.1 issues |  | "– PUR-Config" |

**Companies’ view:**

|  |  |  |
| --- | --- | --- |
| **Company** | **Do you agree (yes/no)** | **Comments** |
| Ericsson | Yes | So what is exactly the proposed change? Where is this discussed, in CR discussion, or? OK to align with NB-IoT version |

Conclusion:

**Proposal 8**: H815: Status changed to ConcAgree. Change ‘Number of consecutive empty PUR occasions before implicit release’ to ‘Number of consecutive PUR occasions that can be skipped before implicit release’

### RIL H847

Extract of the RIL:

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **ID** | **Class** | **Tdoc** | **Status** | **Proposed Conclusion** | **Description** | **Proposed Change** | **Comments** | **Section** |
| H847 | 3 | None | DiscMail | v54: To be discussed with other remaining ASN.1 issues. | WI Open issue: FFS whether the note should be made applicable to 5GC |  | Qualcommv39: We think “/5GC’ should be added in the NOTE.  Huawei v42: The procedure is not applicable at all to 5GC. /5GS should not be added | 5.6.0 General |

**Rapporteur’s comment:**

This has been discussed online with the following outcome:

* Do not change the note under Table 5.6.0-1. Change the RIL H847 status to ConcNoAct.

Conclusion:

**Proposal 9**: H487: Status changed to ConcNoAct.

## 2.2 GWUS related issues

### RIL H816

Extract of the RIL:

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| **ID** | **Class** | **Tdoc** | **Status** | **Proposed Conclusion** | **Description** | **Proposed Change** | **Comments** | **Section** |
| H816 | 4 | R2-2005033 | PropTDoc | v54: To be discussed with other remaining ASN.1 issues | "freqLocation-r16 should have been included in GWUS-TimeParameters-r16 same as in WUS-Config-r15.  This will simplify the signalling by removing the need of the CHOICE structure GWUS-resourceMappingPattern-r16.We will submit a tdoc." |  | "Qualcomm33: Is this new RIL for ph 2?  Huawei v42: new RIL for ph2. We will have a tdoc  Qualcommv55: Agree frequencyLocation is a common parameter and can be moved in to GWUS-TimeParameters-r16. But resourcePattern set is different for with/without legacy WUS, although one is a subset of the other. We also submitted a Tdoc (R2-2005204)" | "– GWUS-Config" |

**Rapporteur’s comment:**

This has been discussed online with the following outcome:

* frequencyLocation-r16 is not necessarily the same for all gap types.

Conclusion:

**Proposal 10**: H816: Status changed to ConcReject.

### RIL H813/H843

Extract of the RIL:

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **ID** | **Class** | **Tdoc** | **Status** | **Proposed Conclusion** | **Description** | **Proposed Change** | **Comments** | **Section** |
| H813 | 4 | R2-2005032 | DiscMail | v54: To be discussed with other remaining ASN.1 issues | "WI Open issue: RAN2 to discuss whether it is possible to have no group configured for a configured probability threshold.Also NB-IoT (RIL#843)" |  | "Huawei v42: we will have a tdoc  Qualcomm v55: It is better to allow for some probability thresholds to be assigned 0 WUS group. We also address this in Tdoc (R2-2005204)" | "– GWUS-Config" |
| H843 | 4 | R2-2005032 | DiscMail | v54: To be discussed with other remaining ASN.1 issues | "WI Open issue: RAN2 to discuss whether it is possible to have no group configured for a configured probability threshold.Also eMTC (RIL#813)" |  | "Huawei v42: we sill have a tdocQualcomm v61: We also have Tdoc (R2-2005204)" | "– GWUS-Config-NB" |

**Rapporteur’s comment:**

This has been discussed online with the following outcome:

* Each configured probability threshold shall have at least 1 WUS group.

Based on R2-2005032, it is proposed to capture in the field description of *groupsForServiceList* that E-UTRAN includes the same number of entries and in the same order in *groupsForServiceList* and *probThreshList.*

Conclusion:

**Proposal 11**: H813/H843: Status changed to ConcAgree. Clarify in the field description of *groupsForServiceList* that E-UTRAN includes the same number of entries and in the same order in *groupsForServiceList* and *probThreshList.*

### RIL H823/H859

Extract of the RIL:

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **ID** | **Class** | **Tdoc** | **Status** | **Proposed Conclusion** | **Description** | **Proposed Change** | **Comments** | **Section** |
| H823 | 4 | None | DiscMail | v54: To be discussed with other remaining ASN.1 issues | It is not specified which parameters are used in that case. Also NB-IoT (RIL#859) | Clarify in the field description that if the field is absent, the parameters in wus-Config apply |  | "– GWUS-Config" |
| H859 | 4 | None | DiscMail | v54: To be discussed with other remaining ASN.1 issues | It is not specified which parameters are used in that case. Also eMTC (RIL#823) | Clarify in the field description that if the field is absent, the parameters in wus-Config apply |  | "– GWUS-Config-NB" |

**Companies’ view:**

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| --- | --- | --- |
| **Company** | **Do you agree (yes/no)** | **Comments** |
| Huawei | yes | the condition can be updated as follows:  The field is mandatory present if *wus-Config-r15* is not present in *SystemInformationBlockType2*; otherwise the field is not present, and the parameters in *wus-Config-r15* apply~~UE~~ ~~shall delete any existing value for this field~~. |
| Qualcomm | Agree with intent | We agree with intent. However, the new text is not suitable for condition.  Ok with deletion part as shown in Huawei’s suggestion. But add the proposed new text in respective field description itself. |

Conclusion:

**Proposal 12**: H823/H859: Status changed to ConcAgree. Change the condition *NoWusR15* from “otherwise the field is not present, and the UE shall delete any existing value for this field” to “otherwise the field is not present, and the parameters in *wus-Config-r15* apply.”

### RIL H848

Extract of the RIL:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **ID** | **Class** | **Tdoc** | **Status** | **Proposed Conclusion** | **Description** | **Proposed Change** | **Comments** | **Section** |
| H848 | 3 | None | DiscMail | v54: To be discussed with other remaining ASN.1 issues | The signalling is unecessary complicated. Considering that the configuration is only 3 bits, it is simpler to signal always. | "gwus-Config-r16 WUS-ConfigPerCarrier-NB-r15 OPTIONAL -- Cond GWUS  gwus-Config  For FDD: Carrier specific GWUS Configuration. E-UTRAN configures value explicit only the same value in gwus-Config and in if wus-Config if both are is not present for the carrier." | "Qualcomm v55: will include this RIL also in the Tdoc (R2-2005204).  MediaTek (Felix): We have no strong view on the signaling structure. But if the original one is kept, suggest to rename the field from explicit to explicitValue. The term “explicit” is a keyword in C++ and should be avoided as a field name." | "– SystemInformationBlockType22-NB" |

**Rapporteur’s comment:**

This has been discussed online with the following outcome:

- Replace choice structure for per carrier group WUS signalling with “gwus-Config-r16 WUS-ConfigPerCarrier-NB-r15”

Conclusion:

**Proposal 13**: H848: Status changed to ConcAgree.

## 2.3 Other issues

### RIL H845

Extract of the RIL:

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **ID** | **Class** | **Tdoc** | **Status** | **Proposed Conclusion** | **Description** | **Proposed Change** | **Comments** | **Section** |
| H845 | 3 | None | PropTDoc | v54: To be discussed with other NB-IoT specific issues. Proponent suggested to have tdoc | WI Open issue: RAN2 to discuss whether to introduce provision to introduce full carrier EARFCN value in anr-carrierList |  |  | "– ANR-MeasConfig-NB" |

**Rapporteur’s comment:**

This has been discussed online with the following outcome:

* Do not introduce provision for full carrier EARFCN value in anr-carrierList. Change RIL H845 status to ConcNoAct..

Conclusion:

**Proposal 14:** H845: Status changed to ConcNoAct.

### RIL H846

Extract of the RIL:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **ID** | **Class** | **Tdoc** | **Status** | **Proposed Conclusion** | **Description** | **Proposed Change** | **Comments** | **Section** |
| H846 | 3 | None | PropTDoc l | v54:To be discussed with other NB-IoT specific issues. Proponent suggested to have tdoc. | WI Open issue: FFS: Whether a time indication of when the ANR measurements were performed is included in the report, and whether it is a time stamp or a simple indication "immediately after going to IDLE, immediately before going to CONNECTED, in between". |  |  | "– ANR-MeasReport-NB" |
|  |  |  |  |  |  |  |  |  |

**Companies’ view:**

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| --- | --- | --- |
| **Company** | **Do you agree (yes/no)** | **Comments** |
| Huawei | No need for a time indication | As described in R2-2005034, as the eNB cannot know when the UE performs the measurements, it makes no sense to change the deployment topology during a measurement campaign. If, for any reason, this is needed, then the measurements that have been requested can just be discarded. As this should be a rare case, this is not a big issue.  On the other hand, if a relative timestamp is provided, we wonder how this is converted to an absolute time and by which entity. In general, OAM processing is performed at the end of the measurements campaign. |
|  |  |  |

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| --- | --- | --- |
| Ericsson | Time indication discussion can be postponed to Rel-17 |  |
| Ericsson | For Anr-CarrierList we could be ok to have choice with full config and index | If operator do not deploy SIB5 and still want ANR measurements, we should have possibilities. |
| ZTE |  | Further clarification:  The main issue may be not for deployment topology change. For such network optimization case, even without time stamp information, it’s easy for network to judge whether a report is valid according to the report contents.  But for the ANR function, another important purpose is to optimise network coverage that would be based on the reported valid RSRP/RSRQ measurement of the serving cell and neighbouring cells. This function may be used a little frequently. This function needs assistance of time stamp info. For example, at a time point, the network optimise some coverage related parameters and later receive ANR report. In this ANR report, the RSRP/RSRQ measurements are still bad. The likely reason may be that this ANR report is performed before this time network optimisation. But without any time stamp info, the network cannot differentiate this case. The network may assume the optimisation has not taken effect or not enough and apply another parameters optimisation. This is obviously undesirable.  We are not clear why there has relative time/absolute time issue? For example, the UE receives PUR configuration at T1, UE perform PUR measurement (we assume it’s a time very close to T1), store the record and finally send report at T2. Then the time stamp info would be equal to T2 –T1 (with hour granularity). We can further assume eNB receives this report at T3 and deliver it to OAM at T4. We think it’s easy to understand T2, T3 and T4 would be very close, e.g., at least in a same hour-level time point. So it's easy for OAM to understand when this record has generated. In a more specific example, the UE receives configuration at 7am and perform measurement soon. And it has chance to send the report at about 9am. The time stamp info would be 2 hours. We assume the OAM would receive this report not too later than 9am, say 9:05am. Then OAM can subtract 2 hours (time stamp info) from the current time and can clearly know this record is generated at about 7:05am. |

Conclusion:

One company thinks it is not needed, One company thinks it can be postponed to R17. One company thinks it is needed.

Chair has indicated during online discussion that we will go with the majority.

**Proposal 14:** H846: Status changed to ConcNoAct. No time indication is provided with the ANR measurements report.

# 3 Conclusion

Already agreed during online session:

**Proposal 7**: H812/H842: Status changed to ConcAgree.

**Proposal 9**: H487: Status changed to ConcNoAct.

**Proposal 10**: H816: Status changed to ConcReject.

**Proposal 11**: H813/H843: Status changed to ConcAgree. Clarify in the field description of *groupsForServiceList* that E-UTRAN includes the same number of entries and in the same order in *groupsForServiceList* and *probThreshList.*

**Proposal 13**: H848: Status changed to ConcAgree.

**Proposal 14:** H845: Status changed to ConcNoAct.

**Potential Easy agreements:**

**Proposal 1**: H858: Status set to ConcAgree with the additional suggestions in the comment column.

**Proposal 2**: E903: Status set to ConcReject.

**Proposal 3**: H844, E905, H853: Status set to ConcNoAct.

**Proposal 6**: H811/ H841: Status changed to ConcAgree. Detailed values for *requestedTBS* to be discussed in CR review.

**Proposal 8**: H815: Status changed to ConcAgree. Change ‘Number of consecutive empty PUR occasions before implicit release’ to ‘Number of consecutive PUR occasions that can be skipped before implicit release’

**Proposal 12**: H823/H859: Status changed to ConcAgree. Change the condition *NoWusR15* from “otherwise the field is not present, and the UE shall delete any existing value for this field” to “otherwise the field is not present, and the parameters in *wus-Config-r15* apply.”

**Proposal 14:** H846: Status changed to ConcNoAct. No time indication is provided with the ANR measurements report.

**Pending on conclusion of [Offline-313]:**

**Proposal 4**: E906/ E907: Wait for conclusion of [Offline-313].

**Proposal 5**: H810/ H840/ H854: Wait for conclusion of [Offline-313].

# 4 List of referenced documents

1. R2-200xxxx, “RAN2 agreements for Rel-16 additional enhancements for NB-IoT and MTC”, Blackberry, Rel-16, LTE\_eMTC5-Core, NB\_IOTenh3-Core
2. R2-2005284 ASN.1 Review file (LTE, Word) Samsung Telecommunications draftCR Rel-16 36.331 16.0.0 TEI16 R2-2003234
3. R2-2005285 ASN.1 Review RIL (LTE, Excel) Samsung Telecommunications report Rel-16 TEI16 R2-2003827