**3GPP TSG-RAN WG2#110 eMeeting *Draft Tdoc*** ⌘***R2-2005752***

**Online, 20th- 30th April 2020**

**Agenda Item: 7.0.1**

**Souce: Samsung**

**Title: AT110-e][206][LTE ASN1] LTE general ASN.1 discussion (Samsung)**

**Document for: Discussion and decision**

# Introduction

This document is the report of the following email discussion:

 [AT110-e][206][LTE ASN1] LTE general ASN.1 discussion (Samsung)

Scope:

* Flag issues to be discussed online (including specifics of each issue)
* General issues (class 2), as well as some smaller WIs for which there is no separate e-mail ( including LTE TEI16 but not covering WIs like NB-IoT,eMTC, eMob, DCCA)

Intended outcome:

* Discussion summary (including list of flagged topics and proposed resolutions) in [R2-2005752](https://protect2.fireeye.com/url?k=905f05e1-cd9106ac-905e8eae-000babff24ad-e298cc47eb220b5c&q=1&u=https%3A%2F%2Fwww.3gpp.org%2Fftp%2FTSG_RAN%2FWG2_RL2%2FTSGR2_110-e%2FDocs%2FR2-2005752.zip) (by email rapporteur).

Deadline for providing comments and for rapporteur inputs:

* Initial deadline (for companies' feedback):  Wednesday 2020-06-03 11:00 UTC
* Initial deadline (for rapporteur's summary in [R2-2005752](https://protect2.fireeye.com/url?k=6d352e88-30fb2dc5-6d34a5c7-000babff24ad-4c94a0f2a2d9eb23&q=1&u=https%3A%2F%2Fwww.3gpp.org%2Fftp%2FTSG_RAN%2FWG2_RL2%2FTSGR2_110-e%2FDocs%2FR2-2005752.zip)):  Thursday 2020-06-04 11:00 UTC
* Whether to continue the discussion after this TBD during Thursday 2020-06-04 online session

For completeness, I hereby provide some information regarding the flagging procedure. Note that the flagging itself is done separately from this e-mail, while the actual discussion of these flagged issues is part of this e-mail.

Flagging procedure (as announced earlier on reflector, now with extended deadline)

* If a company has concerns with the proposed way forward (i.e. status set to PropXXX/ Duplicate/ Defer), flag the concerned RIL by sending a mail using the following format:
  + Subject field: **[LTE Rel-16] 36331 RIL FLAGGING: <RIL-id>**
  + Mail body: Please provide the reason for flagging
  + Addressing, see table below

|  |  |  |
| --- | --- | --- |
| Type | To: | Cc: |
| Class 2 | RRC rapporteur | WI (CR) rapporteur, relevant session chair, RAN2 reflector |
| Class 3 | WI (CR) rapporteur | RRC rapporteur, relevant session chair, RAN2 reflector |

# Discussion

## Contributions submitted to 7.0.1

### Overview

Rapporteur input

R2-2005284 ASN.1 Review file (LTE, Word) Samsung Telecommunications draftCR Rel-16 36.331 16.0.0 TEI16 R2-2003234 Late

R2-2005285 ASN.1 Review RIL (LTE, Excel) Samsung Telecommunications report Rel-16 TEI16 R2-2003827 Late

R2-2005286 LTE Rel-16 ASN.1 Review, Class 0 and Class 1 issues Samsung Telecommunications report Rel-16 TEI16 R2-2003235 Late

R2-2005287 General changes resulting from ASN.1 review for LTE RRC REL-16 Samsung Telecommunications CR Rel-16 36.331 16.0.0 4315 - F TEI16 Late

Extension approach

R2-2005281 General ASN.1 issues for 36.331 Rel-16 (S004, S006, B102, Q604, B103, X002) Samsung Telecommunications discussion Rel-16 TEI16 R2-2003231 Late

=> Revised in R2-2005996

R2-2005996 General ASN.1 issues for 36.331 Rel-16 (S004, S006, B102, Q604, B103, X002) Samsung Telecommunications discussion Rel-16 TEI16 Late

R2-2005282 TP for general ASN.1 issues for 36.331 REL-16 (General ASN.1 issues for 36.331 Rel-16 (S004, S006, B102, Q604, B103, X002) Samsung Telecommunications draftCR Rel-16 36.331 16.0.0 TEI16 Late

Related TDocs on extension of failure type in NR RRC:

[R2-2005176](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2005176.zip) [E207,E206,E239] Correction to failureType handling in NR Ericsson draftCR Rel-16 38.331 16.0.0 F NR\_SON\_MDT-Core, NR\_IAB-Core, NR\_unlic-Core Late

[R2-2005130](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2005130.zip) [B108][IAB][SON] TP for failure type in SCGFailurinformation message Lenovo, Motorola Mobility discussion Rel-16

Multi WI/ merging

R2-2004626 [Q502] [Z302] Merging issues in TS 36.331 subclause 5.3.3.4a Qualcomm Incorporated discussion

V2X IRAT signalling related

R2-2005288 Report of [Post109bis-e][932][LTE/NR/ASN.1] Resolution of review issues S003, S005, B002, S046 (Samsung/Ericsson)) Samsung Telecommunications report Rel-16 5G\_V2X\_NRSL-Core Late

R2-2005289 V2X IRAT signalling (resolution of S003, S005, B002, S046) Samsung Telecommunications draftCR Rel-16 36.331 16.0.0 5G\_V2X\_NRSL-Core Late

R2-2005178 [Post109bis-e][932][LTE-NR-ASN.1] Correction on crossRAT signalling for NR V2X Ericsson CR Rel-16 38.331 16.0.0 1658 - F 5G\_V2X\_NRSL-Core Late

Other (TEI)

R2-2005290 Encoding of 5G indicator (S191) Samsung Telecommunications draftCR Rel-16 36.331 16.0.0 TEI16

Minor/ guidelines

R2-2005292 Adding guidelines for SetupRelease paramterised type (S008) Samsung Telecommunications draftCR Rel-16 36.331 16.0.0 TEI16 Late

### Issues regarding extension approach

This section includes discussion per issue, thereby covering the following TDocs:

R2-2005281 General ASN.1 issues for 36.331 Rel-16 (S004, S006, B102, Q604, B103, X002) Samsung Telecommunications discussion Rel-16 TEI16 R2-2003231 Late

=> Revised in R2-2005996

R2-2005996 General ASN.1 issues for 36.331 Rel-16 (S004, S006, B102, Q604, B103, X002) Samsung Telecommunications discussion Rel-16 TEI16 Late

R2-2005282 TP for general ASN.1 issues for 36.331 REL-16 (General ASN.1 issues for 36.331 Rel-16 (S004, S006, B102, Q604, B103, X002) Samsung Telecommunications draftCR Rel-16 36.331 16.0.0 TEI16 Late

[R2-2005176](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2005176.zip) [E207,E206,E239] Correction to failureType handling in NR Ericsson draftCR Rel-16 38.331 16.0.0 F NR\_SON\_MDT-Core, NR\_IAB-Core, NR\_unlic-Core Late

[R2-2005130](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2005130.zip) [B108][IAB][SON] TP for failure type in SCGFailurinformation message Lenovo, Motorola Mobility discussion Rel-16

Critical extension of FailureInformation message & associated general principles (S004)

This concerns the following:

**Proposal 1 Agree the general principle that, when network supports a critical extension for an UL DCCH message/ IE for one feature, it should also support for this critical extension receipt of legacy values of another feature it supports (i.e. impose additional requirements on network, alike imposed on UE for early implementation)**

**Proposal 2 Create a regular critical extension of the FailureInformation message i.e. re-use the existing name and ASN.1 section**

**Associated TP in R2-2005282**

If companies have comments regarding the proposals or the related parts of the TP R2-2005282, please add to the following table.

|  |  |
| --- | --- |
| Company | Remarks |
| Samsung | Our intention is that UE applies the critical extension only if it is configured with a feature which failure can only be reported by the R16 version of the message. We furthermore propose that (only) such a UE can use the R16 version of the message for reporting legacy failures. Unfortunately the TP in R2-2005282 did not really cover this aspect. We propose to add the following note at end of 5.6.21.3:  NOTE:      The UE may apply the *FailureInformation-r16* message to report a failure defined in REL-15, but only if it is configured with a feature incorporating a failure that can only be reported by the *FailureInformation-r16* message (i.e. in such case network supports the REL-16 version of the message even for legacy cases, see F.2): |
| Ericsson | The Note above is fine but there is no need to introduce NW requirement F.2. The generic note on NW may not work for all cases, as there may be differing use case and scenarios where a generic requirement on NW is not apt. This part should be removed along with F.2  (i.e. in such case network supports the REL-16 version of the message even for legacy cases, see F.2):  We would like to stick to the design where NW basically inform/indicate to UE which message/IE/field etc; the UE may/shall send; except that there should not be any additional requirement that needs to be specified on the NW side.  A good solution would be to have some indication to the UE; when such indication is present UE shall send Rel-16 else UE shall send Rel-15. |
| Nokia | We are OK with P2 (i.e. critical extension to FailureInformation). However, we are not fine with P1 and imposing some general requirements on the NW. The indication which version of FailureInformation to use should be implicit in the configuration provided to the UE. |

Avoiding critical extension for ULInformatonTransfer (S006)

This concerns the proposal P6 from last meeting (included for convenience below), for which an updated TP was provided:

*P6 Add the F1AP information by non-critical extension of the ULInformationTransfer message i.e. stating that when F1AP information is included, dedicatedInfoType contents is invalid and to be ignored by the network*

**Associated TP in R2-2005282**

If companies have comments regarding the proposed approach or the related parts of the TP R2-2005282, please add to the following table.

|  |  |
| --- | --- |
| Company | Remarks |
| Ericsson | Rather than having dummy fields, if non-critical extention is used; for this case, it is ok to have the critical extention. In general, we agree that for UL non-critical extention should be used but here critical extention is ok to avoid dummy fields. |
|  |  |

Approach for extension of failure types introduced in R16

R2-2005996 includes a discussion and a related proposal (3). For NR there were also related TDocs provide in R2-2005176 and in R2-2005130.

**Proposal 3 Decide which solution to apply for each failure type introduced in R16. I.e. RAN2 is requested to discuss and conclude whether**

* If, regardless whether suitalble legacy values exist, it is anyhow fine to use OAM to avoid avoid a legacy node acting as MN receives value an unsupported extension
* If so (i.e. solution 1a/ 3 for all)
  + While available, use an undefined code points for the R16 extensions (solution 1a)
  + Otherwise: use –v16xy and state that network only considers –v16xy i.e. ignores legacy field (solution 3)
* If not (i.e. decide per case):
  + If a suitable legacy value exist for a case: use–v16xy and specify for each case the value to be set in legacy field (solution 1b)
  + Else: solution 1a/ 3 (see previous bullet)

List of solutions discussed:

1. Use undefined code points of legacy field if/ as long as available
2. Use –v16xy extension state that if –v16xy extension is received network ignores legacy field
3. Use –v16xy extension and specify which (suitable) value UE shall set in legacy field
4. Use –v16xy extension, introduce value in legacy field (e.g. other) and specify that UE shall set in legacy field to this value (e.g other)

The key question seems to be as follows:

**Q1**: Is there a need for UE to signal suitable value by legacy field for BC reasons

Possible answers: 1) no, 2) yes, if suitable value exists, 3) yes, always

I.e. one could say 1) i.e. no need to signal suitable value in legacy field as network can avoid that a legacy node receives an R16 value. E.g. LBT failure only occurs if NR-U is configured for SCG. This option means that network configures NR-U feature only if all nodes acting as MN will support the related failure code

**Q2**: Which solution(s) to use

The solutions needed depend on the answer to Q1 i.e. if one answers 1) to Q1, solutions a) and b) seems appropriate.

If companies have comments regarding the proposed approach or the related parts of the TP R2-2005282, please add to the following table. If companies propose to use different solutions for different cases, please provide details. Also, when proposing solution c, please clarify which value to use in the legacy field.

|  |  |  |  |
| --- | --- | --- | --- |
| Company | Q1 | Q2 | Remarks |
| CATT | 3） | a）or d） | If *SCGFailureInformationNR* includes ‘–v16xy extension’, failureType of the legacy field should point to an undefined code or point to a new value “other”.  For R15 LTE eNB, even if it can’t understand the ‘–v16xy extension’, there is no risk to make a wrong decision if the legacy field points to an undefined code or point to a new value “other”, which is a BC change. But the R15 LTE eNB can’t forward the ‘–v16xy extension’ to SN as R15 LTE eNB can’t decode ‘–v16xy extension’, so it’s better to put the ‘–v16xy extension’ also into *measResultSCG-Failure* to make ‘–v16xy extension’ visible to SN. No matter what spec version the LTE side use, the SN side can always get the ‘–v16xy extension’ info.  For R16 LTE eNB, the MN side (e.g. R16 LTE eNB) can also decode the ‘–v16xy extension’ (‘–v16xy extension’ info outside *measResultSCG-Failure*) in the *SCGFailureInformationNR* t*o* consider the MN based optimization when SCG failure happen. |
| Ericsson | 3) | d) | In LTE and in NR, our preference is to have a new value (i.e., “other”) in the legacy field and to use the “-v16xy extension”. Further, as shown also in our CR in R2-2005176, in order to be consistant with the Rel-15 principle, the same “-v16xy” extension should be also introduced in the INM as the MN should inform the SN about the failure type and measurements. |
| NEC | 3) | c) or d) | We found that the failureType “BFR failure” is different from others (T312 expiry, SCG LBT failure) in SCG Failure Information. This was agreed in SON/MDT WI, where we assume normal procedure should not be impacted just due to SON/MDt purpose. BFR is already supported in Rel-15 but it could be categorized as random access problem in legacy failureType. To our understanding, setting the failureType to BFR failure in Rel-16 seems not conditional based on SON/MDT related configurations.  With this understanding, it is expected that the Rel-16 UE supporting SON/MDT can report the Rel-16 version of failureType with setting to BFR failure to the Rel-15 network.. Rel-15 nework of course cannot understand, while the legacy failureType should be set as legacy.  We would like to check whether this understanding is correct or not. If correct, the legacy failureType should be set to random access problem by Rel-16 UE, i.e. c). Otherwise (if not correct), we are fine with d) for all cases including BFR failure. |
| Lenovo | 1) | b) | We assume that network configures a Rel-16 feature only if all nodes acting as MN will support the related failure code. On the solutions:  To a) We don’t recall that such approach has been ever used before.  To c) At least for t312-Expiry-r16 there is no legacy field available.  To d) How does this solution solve the legacy problem as the new value “other” cannot be comprehended by legacy network. |

Approach for extension of failure types introduced in R16

This section covers the following proposal (from R2-2005996):

**Proposal 4 Keep the spares defined for establishmentCause in RRCConnectionRequest-5GC-NB**

If companies have comments regarding the proposal 4, please add to the following table.

|  |  |
| --- | --- |
| Company | Remarks |
| Lenovo | Considering the fact that behaviour for network is specified if spare value is received, we are fine with the proposal. |
|  |  |

### Multi WI/ merging issues

The section covers the following TDoc, and in particular the proposals and TP included therein:

R2-2004626 [Q502] [Z302] Merging issues in TS 36.331 subclause 5.3.3.4a Qualcomm Incorporated discussion

**Proposal 1 Update status of Z302 to ConcNoAct.**

**Proposal 2 Update status of Q502 to ConcAgree WI-CR.**

**Proposal 3 Adopt the changes shown in section 2.2 to DCCA WI-CR to TS 36.331.**

If companies have comments regarding these proposals or the TP that is included, please add to the following table.

|  |  |
| --- | --- |
| Company | Remarks |
|  |  |
|  |  |

### V2X IRAT signalling

The topic was subject of an e-mail discussion that resulted in the following report

R2-2005288 Report of [Post109bis-e][932][LTE/NR/ASN.1] Resolution of review issues S003, S005, B002, S046 (Samsung/Ericsson)) Samsung Telecommunications report Rel-16 5G\_V2X\_NRSL-Core Late

The report resulted in the following proposed way forward in P1:

* + UL DCCH: one LTE message/ procedure for transfer of NR UL DCCH messages. The procedural handling is completely re-using what is already specified in NR. Statements will be added to indicate that network only includes particular NR SL related info. The same applies for the reverse direction
  + DL DCCH: NR information is added to the concerned LTE procedure (Reconfiguration), by an octet string carrying the particular NR message (Reconfiguration). The procedural handling is completely re-using what is already specified in NR. Statements will be added to indicate that network only includes particular NR SL related info. The same applies for the reverse direction

Furthermore, the proposal is to agree the following CRs (P2):

R2-2005289 V2X IRAT signalling (resolution of S003, S005, B002, S046) Samsung Telecommunications draftCR Rel-16 36.331 16.0.0 5G\_V2X\_NRSL-Core Late

R2-2005178 [Post109bis-e][932][LTE-NR-ASN.1] Correction on crossRAT signalling for NR V2X Ericsson CR Rel-16 38.331 16.0.0 1658 - F 5G\_V2X\_NRSL-Core Late

If companies have comments regarding the outcome of the e-mail discussion (regarding proposed way forward/ P1) or particular comments to the CRs, please add to the following table.

|  |  |
| --- | --- |
| Company | Remarks |
| Ericsson | As one of the proponent companies, we are fine with the CR. There are other aspect to be discussed on this, but our proposal is to address those once that the two CRs are endorsed. |
|  |  |

### Encoding of 5G indicator (S191)

This covers the following TDoc.

R2-2005292 Adding guidelines for SetupRelease paramterised type (S008) Samsung Telecommunications draftCR Rel-16 36.331 16.0.0 TEI16 Late

The TDoc can be regarded as including the following main proposals:

**Proposal 1 Modify the signalling such that only the EN-DC band list is signalled when it is same for all (one/ multiple) PLMNs**

**Proposal 2 Adopt a signalling structure in which for each EN-DC band list the applicable PLMNs is indicated by a bit string (according to PLMN list in SIB1)**

If companies have comments regarding these proposals or to TP in R2-2005292, please add to the following table.

|  |  |
| --- | --- |
| Company | Remarks |
| CATT | I reckon there is no essential difference between Huawei’s proposal and Samsung’s proposal. Due to time limitation at the current stage, if there is no compromise can be achieved we prefer to introduce no change. |
| Huawei | Once we adopt the enhancement below (one of Samsung’s suggestions) in the in principle agreed CR in R2-2005308 than the coding size is very similar for most of the cases, and in the worst case of PLMN not sharing any bands we have the understanding that the Samsung proposed coding is actually not better.  So we proposed to simply modify the agreed in principle CR as below in yellow hghlights: *SystemInformationBlockTypexy* The IE *SystemInformationBlockTypexy* contains NR bands list which can be used for EN-DC operation with the serving cell.  *SystemInformationBlockTypexy* information element  -- ASN1START  SystemInformationBlockTypexy-r16 ::= SEQUENCE {  plmn-InfoList-r16 PLMN-InfoList-r16,  bandListENDC-r16 BandListENDC-r16,  ...  }  BandListENDC-r16 ::= SEQUENCE (SIZE (1.. maxBandsENDC-r16)) OF FreqBandIndicatorNR-r15  PLMN-InfoList-r16 ::= SEQUENCE (SIZE (0..maxPLMN-r11)) OF PLMN-Info-r16  PLMN-Info-r16 ::= SEQUENCE {  nrBandList-r16 BIT STRING (SIZE(maxBandsENDC-r16)) OPTIONAL -- Need OR  }  -- ASN1STOP   | *SystemInformationBlockTypexy* field descriptions | | --- | | ***bandListENDC***  A list of NR bands which can be configured as SCG in EN-DC operation with serving cell for the forwarding of *upperLayerIndication* to upper layers. | | ***plmn-InfoList***  This field includes the same number of entries, and listed in the same order as PLMNs across the *plmn-IdentityList* fields *plmn-IdentityList* and *plmn-IdentityList-r14* included in SIB1. I.e. the first entry corresponds to the first entry of the combined list that results from concatenating the entries included in the second to the original *plmn-IdentityList* field in SIB1. If the size of the field is set to 0, all bands in *bandListENDC* apply for all PLMNs listed in SIB1. | | ***Nr-BandList***  This field indicates a list of bands and is encoded as a bitmap, where the bit N is set to “1” if the current serving cell supports EN-DC operation with the *N*-th NR band in *bandListENDC*. The bits which have no corresponding bands in *bandListENDC* shall be set to 0; bit 1 of the bitmap is the leading bit of the bit string. | |

### Other

This covers the following TDoc.

R2-2005292 Adding guidelines for SetupRelease paramterised type (S008) Samsung Telecommunications draftCR Rel-16 36.331 16.0.0 TEI16 Late

R2-2005287 General changes resulting from ASN.1 review for LTE RRC REL-16 Samsung Telecommunications CR Rel-16 36.331 16.0.0 4315 - F TEI16 Late

If companies have comments regarding these TDocs, please add to the following table.

|  |  |  |
| --- | --- | --- |
| TDoc | Company | Remarks |
| 5292 | Lenovo | Basically ok but suggest minor changes:  • Instead of saying “…that apply for choice setup” it is better to say “…that apply for setup/ release choice”.  • field-rX needs to be corrected to field2. |
|  |  |  |

## Issues flagged

### Overview

**Class 2**

Following table provides an overview of the class 2 issue that have been flagged. For each such issues, further discussion will be done below.

|  |  |  |
| --- | --- | --- |
| No | Company | Remarks |
| B100 | Qualcomm | This RIL was marked as eMTC-specific and discussed in eMTC ASN.1 disucssion. However, it was raised that perhaps the same “parallel list” approach can be used to save on overhead for “mt-EDT” indication as well (in paging message).  It should be possible to do that, but there is another parameter “accessType”, which is not specific just to eMTC. So, this additional part now becomes cross-WI issue.  The suggested additional change is as follows (create parallel list pagingRecordList-v16xy to include parameters added in rel 16). Also need to capture in field description that the parallel list will be of same size and same order.  Paging-v16xy-IEs ::= SEQUENCE {  pagingRecordList-v16xy PagingRecordList-v16xy OPTIONAL, -- Need ON  uac-ParamModification-r16 ENUMERATED {true} OPTIONAL, -- Need ON  nonCriticalExtension SEQUENCE {} OPTIONAL  }  PagingRecordList ::= SEQUENCE (SIZE (1..maxPageRec)) OF PagingRecord  PagingRecordList-v16xy ::= SEQUENCE (SIZE (1..maxPageRec)) OF PagingRecord-v16xy  PagingRecord ::= SEQUENCE {  ue-Identity PagingUE-Identity,  cn-Domain ENUMERATED {ps, cs},  ...,  }  PagingRecord-v16xy ::= SEQUENCE {  accessType-r16 ENUMERATED {non3GPP} OPTIONAL, -- Need ON  mt-EDT-r16 ENUMERATED {true} OPTIONAL -- Need ON  }  If the above is agreeable in general session, we can discuss and figure out which part to be included in eMTC CR (all or none or partial; we are fine to capture wholly in eMTC CR if others are ok). |
|  |  |  |
|  |  |  |
|  |  |  |

**Class 3, smaller WI**

Similarly, a table is provided for class 3 issue for small WIs for which no separate e-mail is assigned

|  |  |  |  |
| --- | --- | --- | --- |
| No | Company | WI | Remarks |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

### XXX (Xnnn)

Relevant extracts

Summary of comments

Further comments/ suggestions can be added below.

|  |  |
| --- | --- |
| Source | Comments/ suggestions |
| NN |  |
|  |  |
|  |  |

**Proposal x**

# Conclusion & recommendation

This document includes a report of [AT110e][206][R16] R16 LTE RRC coordination. The report summarises the discussion regarding class 2 issues and includes the following proposals that RAN2 is requested to agreed:

# References

[1] 36.331 R16