**3GPP TSG- Meeting # 110-eDraft R2-2005766**

**Electronic, 1– 12 June 2020**

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| *CR-Form-v12.0* |
| **CHANGE REQUEST** |
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|  |  | **CR** |  | **rev** | **-** | **Current version:** |  |  |
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| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
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| ***Proposed change affects:*** | UICC apps |  | ME | **x** | Radio Access Network | **x** | Core Network |  |

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|  |
| ***Title:***  | TP for general ASN.1 issues for 36.331 (S004, S006, B102, Q604, B103, X002) |
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| ***Source to WG:*** |  |
| ***Source to TSG:*** |  |
|  |  |
| ***Work item code:*** | TEI16 |  | ***Date:*** |  |
|  |  |  |  |  |
| ***Category:*** | F |  | ***Release:*** | REL-16 |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)Rel-12 (Release 12)**Rel-13 (Release 13)Rel-14 (Release 14)Rel-15 (Release 15)Rel-16 (Release 16)* |
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| ***Reason for change:*** | The changes included in this draft CR aim to resolve several remaining issues from ASN.1 review: S004, S006, B102, Q604, B103, X002 |
|  |  |
| ***Summary of change:*** | The CR includes the following changes* S004 (to include in DCCA CR)
	+ Change 1: Create regular CE of FailureInformation
* S006
	+ Change 2: Use regular NCE for F1AP UL dedicated info
* B102, Q604, B103, X002
	+ Change 4a (example): Extension of failureType, Extension of failureType, apply solution 1a for T312 expiry and LBT failure and solution 3 for beam recovery failure
	+ Change 4b (example): apply solution 1b for beam recovery failure

Revision r1 includes the following additional changes* S004
	+ Change 2: Note added to 5.6.21.3 clarifying UE may apply R16 version for legacy failures if configured with a feature having a failure cause that can only be reported by R16 version of the message
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| ***Consequences if not approved:*** |  |
|  |  |
| ***Clauses affected:*** | 6.3.7 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **x** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  | **x** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **x** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** | Based on v48 of ASN.1 file |
|  |  |
| ***This CR's revision history:*** |  |

Change 1: Create regular CE of FailureInformation

5.6.21 Failure information

5.6.21.1 General

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**Figure 5.6.21.1-1: Failure information**

The purpose of this procedure is to inform E-UTRAN about a failure that the UE has experienced.

5.6.21.2 Initiation

A UE initiates the procedure to report failures when one of the following conditions is met:

1> upon detecting RLC failure, in accordance with 5.3.11;

1> upon detecting a DAPS HO failure, in accordance with 5.3.5.6.

Upon initiating the procedure, the UE shall:

1> initiate transmission of the *FailureInformation* message or the *FailureInformation2* message in accordance with 5.6.21.3;

5.6.21.3 Actions related to transmission of *FailureInformation* message

When initiating the procedure according to 5.6.21.2, the UE shall:

1> set the contents of the *FailureInformation* message as follows:

2> if the procedure is initiated to report RLC failure:

3> set *logicalChannelIdentity* to the logical channel identity of the RLC entity;

3> set *cellGroupIndication* to the cell group where the RLC entity is located;

3> set *failureType* to the type of failure that has been detected;

2> if the procedure is initiated to report a DAPS HO failure:

3> set *failureType* to *dapsHO-failure*;

1> submit the *FailureInformation* message to lower layers for transmission.

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.

6.2.1 General message structure

– *UL-DCCH-Message*

The *UL-DCCH-Message* class is the set of RRC messages that may be sent from the UE to the E‑UTRAN or from the RN to the E-UTRAN on the uplink DCCH logical channel.

-- ASN1START

UL-DCCH-Message ::= SEQUENCE {

 message UL-DCCH-MessageType

}

UL-DCCH-MessageType ::= CHOICE {

 c1 CHOICE {

 csfbParametersRequestCDMA2000 CSFBParametersRequestCDMA2000,

 measurementReport MeasurementReport,

 rrcConnectionReconfigurationComplete RRCConnectionReconfigurationComplete,

 rrcConnectionReestablishmentComplete RRCConnectionReestablishmentComplete,

 rrcConnectionSetupComplete RRCConnectionSetupComplete,

 securityModeComplete SecurityModeComplete,

 securityModeFailure SecurityModeFailure,

 ueCapabilityInformation UECapabilityInformation,

 ulHandoverPreparationTransfer ULHandoverPreparationTransfer,

 ulInformationTransfer ULInformationTransfer,

 counterCheckResponse CounterCheckResponse,

 ueInformationResponse-r9 UEInformationResponse-r9,

 proximityIndication-r9 ProximityIndication-r9,

 rnReconfigurationComplete-r10 RNReconfigurationComplete-r10,

 mbmsCountingResponse-r10 MBMSCountingResponse-r10,

 interFreqRSTDMeasurementIndication-r10 InterFreqRSTDMeasurementIndication-r10

 },

 messageClassExtension CHOICE {

 c2 CHOICE {

 ueAssistanceInformation-r11 UEAssistanceInformation-r11,

 inDeviceCoexIndication-r11 InDeviceCoexIndication-r11,

 mbmsInterestIndication-r11 MBMSInterestIndication-r11,

 scgFailureInformation-r12 SCGFailureInformation-r12,

 sidelinkUEInformation-r12 SidelinkUEInformation-r12,

 wlanConnectionStatusReport-r13 WLANConnectionStatusReport-r13,

 rrcConnectionResumeComplete-r13 RRCConnectionResumeComplete-r13,

 ulInformationTransferMRDC-r15 ULInformationTransferMRDC-r15,

 scgFailureInformationNR-r15 SCGFailureInformationNR-r15,

 measReportAppLayer-r15 MeasReportAppLayer-r15,

 failureInformation-r15 FailureInformation-r15,

 ulDedicatedMessageSegment-r16 ULDedicatedMessageSegment-r16,

 purConfigurationRequest-r16 PURConfigurationRequest-r16,

 failureInformation-r16 FailureInformation-r16,

 mcgFailureInformation-r16 MCGFailureInformation-r16,

 sidelinkUEInformationNR-r16 SidelinkUEInformationNR-r16

 },

 messageClassExtension-v16xy CHOICE {

 c3 CHOICE {

 ueAssistanceInformationNR-r16 UEAssistanceInformationNR-r16,

 spare15 NULL,spare14 NULL, spare13 NULL, spare12 NULL, spare11 NULL,

 spare10 NULL,spare9 NULL, spare8 NULL, spare7 NULL, spare6 NULL,

 spare5 NULL, spare4 NULL, spare3 NULL, spare2 NULL, spare1 NULL

 },

 messageClassExtensionFuture-r16 SEQUENCE {}

 }

 }

}

-- ASN1STOP

6.2.2 Message definitions

– *FailureInformation*

The *FailureInformation* message is used to provide information regarding failures detected by the UE, e.g. radio link failure for one of the RLC entities configured with PDCP duplication, failure of a DAPS HO.

Signalling radio bearer: SRB1

RLC-SAP: AM

Logical channel: DCCH

Direction: UE to E‑UTRAN

***FailureInformation message***

-- ASN1START

FailureInformation-r15 ::= SEQUENCE {

 failedLogicalChannelInfo-r15 FailedLogicalChannelInfo-r15 OPTIONAL

 -- nonCriticalExtension is removed in this version as OPTIONAL was missing

}

FailureInformation-r16 ::= SEQUENCE {

 criticalExtensions CHOICE {

 failureInformation-r16 FailureInformation-r16-IEs,

 criticalExtensionsFuture SEQUENCE {}

 }

}

FailedLogicalChannelInfo-r15 ::= SEQUENCE {

 failedLogicalChannelIdentity-r15 SEQUENCE {

 cellGroupIndication-r15 ENUMERATED {mn, sn},

 logicalChannelIdentity-r15 INTEGER (1..10) OPTIONAL,

 logicalChannelIdentityExt-r15 INTEGER (32..38) OPTIONAL

 },

 failureType ENUMERATED {duplication, spare3, spare2, spare1}

}

FailureInformation-r16-IEs ::= SEQUENCE {

 failedLogicalChannelIdentity-r16 FailedLogicalChannelIdentity-r16 OPTIONAL,

 failureType-r16 ENUMERATED {duplication, dapsHO-failure,

 spare2, spare1} OPTIONAL,

 nonCriticalExtension SEQUENCE {} OPTIONAL

}

FailedLogicalChannelIdentity-r16 SEQUENCE {

 cellGroupIndication-r16 ENUMERATED {mn, sn},

 logicalChannelIdentity-r16 INTEGER (1..10) OPTIONAL,

 logicalChannelIdentityExt-r16 INTEGER (32..38) OPTIONAL

}

-- ASN1STOP

| ***FailureInformation* field descriptions** |
| --- |
| ***cellGroupIndication***This field indicates the cell group (MCG, SCG) of the RLC entity for which the PDCP duplication failure occurred. |
| ***failureType***This field indicates the type of failure reported. Value *duplication* indicates that a radio link failure for one of the RLC entities configured with PDCP duplication has been detected. Value *dapsHO-failure* indicates that timer T304 expired during a DAPS HO. |
| ***logicalChannelIdentity, logicalChannelIdentityExt***This field indicates the logical channel identity of the RLC entity for which the PDCP duplication failure occurred. |

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Change 2: Critical extenstion of ULInformationTransfer (S006)

5.6.2 UL information transfer

5.6.2.1 General

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**Figure 5.6.2.1-1: UL information transfer**

The purpose of this procedure is to transfer NAS or (tunnelled) non-3GPP dedicated information from the UE to E-UTRAN, or to transfer F1AP dedicated information from IAB-DU to IAB Donor-CU via IAB-MT in RRC\_CONNECTED.

5.6.2.2 Initiation

A UE in RRC\_CONNECTED initiates the UL information transfer procedure whenever there is a need to transfer NAS, non-3GPP dedicated information, except at RRC connection establishment or resume in which case the NAS information is piggybacked to the *RRCConnectionSetupComplete* or *RRCConnectionResumeComplete* message correspondingly. In addition, an IAB-MT in RRC\_CONNECTED initiates the UL information transfer procedure whenever there is a need to transfer F1-AP dedicated information. The UE initiates the UL information transfer procedure by sending the *ULInformationTransfer* message. When CDMA2000 information has to be transferred, the UE shall initiate the procedure only if SRB2 is established. When F1AP information has to be transferred, the IAB-MT shall initiate the procedure only if SRB2 is established.

5.6.2.3 Actions related to transmission of *ULInformationTransfer* message

The UE shall set the contents of the *ULInformationTransfer* message as follows:

1> if there is a need to transfer NAS information:

2> if the UE is a NB-IoT UE:

3> set the *dedicatedInfoNAS* to include the information received from upper layers;

2> else, set the *dedicatedInfoType* to include the *dedicatedInfoNAS*;

1> if there is a need to transfer CDMA2000 1XRTT information:

2> set the *dedicatedInfoType* to include the *dedicatedInfoCDMA2000-1XRTT*;

1> if there is a need to transfer CDMA2000 HRPD information:

2> set the *dedicatedInfoType* to include the *dedicatedInfoCDMA2000-HRPD*;

1> upon RRC connection establishment, if UE supports the Control Plane CIoT EPS/5GS optimisation and UE does not need UL gaps during continuous uplink transmission:

2> configure lower layers to stop using UL gaps during continuous uplink transmission in FDD for *ULInformationTransfer* message and subsequent uplink transmission in RRC\_CONNECTED except for UL transmissions as specified in TS 36.211 [21];

1> if there is a need to transfer F1AP information (applies only to IAB-MT):

2> include the *dedicatedInfoF1AP*;

1> submit the *ULInformationTransfer* message to lower layers for transmission, upon which the procedure ends;

NOTE: An IAB-MT configured report F1AP information may also apply the *ULInformationTransfer-r16* message to transfer dedicated NAS information to IAB Donor-CU.

5.6.2.4 Failure to deliver *ULInformationTransfer* message

The UE shall:

1> if the UE is a NB-IoT UE, AS security is not started and radio link failure occurs before the successful delivery of *ULInformationTransfer* messages has been confirmed by lower layers; or

1> if mobility (i.e. handover, RRC connection re-establishment) occurs before the successful delivery of *ULInformationTransfer* messages has been confirmed by lower layers:

2> inform upper layers about the possible failure to deliver the information contained in the concerned *ULInformationTransfer* messages;

Change 3: Extension of failureType, indicate value other by R15 field

5.6.13a.3 Actions related to transmission of *SCGFailureInformationNR* message

The UE shall set the contents of the *SCGFailureInformationNR* message as follows:

1> include *failureType* or *failureTypeExt* within *failureReportSCG-NR* and set it to indicate the SCG failure in accordance with TS 38.331 [82], clause 5.7.3.3;

1> if the UE sets *failureType-16xy* to *t312-Expiry*, *scg-lbtFailure* or *beamFailureRecoveryFailure*:

2> set failureType-r15 to *other*;

1> include and set *measResultSCG* in accordance with TS 38.331 [82], clause 5.7.3.4:

1> for each NR frequency the UE is configured to measure by *measConfig* for which measurement results are available:

2> set the *measResultFreqListNR* to include the best measured cells, ordered such that the best cell is listed first using RSRP to order if RSRP measurement results are available for cells on this frequency, otherwise using RSRQ to order if RSRQ measurement results are available for cells on this frequency, otherwise using SINR to order, and based on measurements collected up to the moment the UE detected the failure, and for each cell that is included, include the optional fields that are available;

NOTE: Field *measResultSCG* is used to report available results for NR frequencies the UE is configured to measure by NR RRC signalling.

1> if detailed location information is available, set the content of the *locationInfo* as follows:

2> include the *locationCoordinates*;

2> include the *horizontalVelocity*, if available;

1> if available, set the *logMeasResultListWLAN* to include the WLAN measurement results, in order of decreasing RSSI for WLAN APs;

1> if available, set the *logMeasResultListBT* to include the Bluetooth measurement results, in order of decreasing RSSI for Bluetooth beacons;

The UE shall submit the *SCGFailureInformationNR* message to lower layers for transmission.

>Next section

– *SCGFailureInformationNR*

The *SCGFailureInformationNR* message is used to provide information regarding NR SCG failures detected by the UE.

Signalling radio bearer: SRB1

RLC-SAP: AM

Logical channel: DCCH

Direction: UE to E‑UTRAN

***SCGFailureInformationNR message***

-- ASN1START

SCGFailureInformationNR-r15 ::= SEQUENCE {

 criticalExtensions CHOICE {

 c1 CHOICE {

 scgFailureInformationNR-r15 SCGFailureInformationNR-r15-IEs,

 spare3 NULL, spare2 NULL, spare1 NULL

 },

 criticalExtensionsFuture SEQUENCE {}

 }

}

SCGFailureInformationNR-r15-IEs ::= SEQUENCE {

 failureReportSCG-NR-r15 FailureReportSCG-NR-r15 OPTIONAL,

 nonCriticalExtension SCGFailureInformationNR-v1590-IEs OPTIONAL

}

SCGFailureInformationNR-v1590-IEs ::= SEQUENCE {

 lateNonCriticalExtension OCTET STRING OPTIONAL,

 nonCriticalExtension SEQUENCE {} OPTIONAL

}

FailureReportSCG-NR-r15 ::= SEQUENCE {

 failureType-r15 ENUMERATED {

 t310-Expiry, randomAccessProblem,

 rlc-MaxNumRetx,

 synchReconfigFailureSCG, scg-reconfigFailure,

 srb3-IntegrityFailure, other-r16},

 measResultFreqListNR-r15 MeasResultFreqListFailNR-r15 OPTIONAL,

 measResultSCG-r15 OCTET STRING OPTIONAL,

 ...,

 [[ locationInfo-r16 LocationInfo-r10 OPTIONAL,

 logMeasResultListBT-r16 LogMeasResultListBT-r15 OPTIONAL,

 logMeasResultListWLAN-r16 LogMeasResultListWLAN-r15 OPTIONAL,

 failureType-v16xy ENUMERATED {t312-Expiry, scg-lbtFailure,

 beamFailureRecoveryFailure-r16, spare1} OPTIONAL

 ]]

}

MeasResultFreqListFailNR-r15 ::= SEQUENCE (SIZE (1..maxFreqNR-r15)) OF MeasResultFreqFailNR-r15

MeasResultFreqFailNR-r15 ::= SEQUENCE {

 carrierFreq-r15 ARFCN-ValueNR-r15,

 measResultCellList-r15 MeasResultCellListNR-r15 OPTIONAL,

 ...

}

-- ASN1STOP

| ***SCGFailureInformationNR* field descriptions** |
| --- |
| ***failureType***Indicates the cause of the SCG failure. |
| ***measResultFreqListNR***The field contains available results of measurements on NR frequencies the UE is configured to measure by *measConfig*. |
| ***measResultSCG***Includes the NR *MeasResultSCG-Failure* IE as specified in TS 38.331 [82]. The field contains available results of measurements on NR frequencies the UE is configured to measure by the NR RRCConfiguration message. |