**3GPP TSG RAN2 Meeging #131 R2-25xxx**

**Agenda item: 8.1.3**

**Title: TP for NW Side Data Collection**

**Source: ZTE Corporation,**

**Document for: Discussion and Decision**

1. Introduction

This discussion paper is to provide the TP for NW side data collection including both text procedure and ASN.1 structure. In addition, the question about the RAN impact for the TP is also provided.

1. TP for NW side data collection

## 4.2 Architecture

### 4.2.1 UE states and state transitions including inter RAT

A UE is either in RRC\_CONNECTED state or in RRC\_INACTIVE state when an RRC connection has been established. If this is not the case, i.e. no RRC connection is established, the UE is in RRC\_IDLE state. The RRC states can further be characterised as follows:

**- RRC\_IDLE**:

- A UE specific DRX may be configured by upper layers;

- At lower layers, the UE may be configured with a DRX for PTM transmission of MBS broadcast;

- UE controlled mobility based on network configuration;

- The UE:

- Monitors Short Messages transmitted with P-RNTI over DCI (see clause 6.5);

- Monitors a Paging channel for CN paging using 5G-S-TMSI, except if the UE is acting as a L2 U2N Remote UE;

- If configured by upper layers for MBS multicast reception, monitors a Paging channel for CN paging using TMGI;

- Performs neighbouring cell measurements and cell (re-)selection;

- Performs measurements on L2 U2N Relay UEs and relay (re-)selection;

- Acquires system information and can send SI request (if configured);

- Performs logging of available measurements together with location and time for logged measurement configured UEs;

- Performs idle/inactive measurements for idle/inactive measurement configured UEs;

- If configured by upper layers for MBS broadcast reception, acquires MCCH change notification and MBS broadcast control information and data.

**- RRC\_INACTIVE**:

- A UE specific DRX may be configured by upper layers or by RRC layer;

- At lower layers, the UE may be configured with a DRX for PTM transmission of MBS broadcast and/or a DRX for PTM transmission of MBS multicast;

- UE controlled mobility based on network configuration;

- The UE stores the UE Inactive AS context;

- A RAN-based notification area is configured by RRC layer;

- Transfer of unicast data and/or signalling to/from UE over radio bearers configured for SDT.

- The UE:

- Monitors Short Messages transmitted with P-RNTI over DCI (see clause 6.5);

- While T319a is running, monitors control channels associated with the shared data channel to determine if data is scheduled for it;

- While SDT procedure is ongoing and T319a is not running, if CG-SDT is selected and if extended CG-SDT periodicity is configured (i.e. *cg-SDT-PeriodicityExt* is configured), monitors a Paging channel for CN paging using 5G-S-TMSI and RAN paging using fullI-RNTI except if the UE is acting as a L2 U2N Remote UE;

- While SDT procedure is not ongoing, monitors a Paging channel for CN paging using 5G-S-TMSI and RAN paging using fullI-RNTI, except if the UE is acting as a L2 U2N Remote UE;

- If configured by upper layers for MBS multicast reception, while SDT procedure is not ongoing, monitors a Paging channel for paging using TMGI;

- Performs neighbouring cell measurements and cell (re-)selection;

- Performs measurements on L2 U2N Relay UEs and relay (re-)selection;

- Performs RAN-based notification area updates periodically and when moving outside the configured RAN-based notification area;

- Acquires system information and, while SDT procedure is not ongoing, can send SI request (if configured);

- While SDT procedure is not ongoing, performs logging of available measurements together with location and time for logged measurement configured UEs;

- While SDT procedure is not ongoing, performs idle/inactive measurements for idle/inactive measurement configured UEs;

- If configured by upper layers for MBS broadcast reception, acquires MCCH change notification and MBS broadcast control information and data;

- If configured for MBS multicast reception in RRC\_INACTIVE, acquires multicast MCCH change notification and MBS multicast control information and data;

- Transmits SRS for Positioning.

**- RRC\_CONNECTED:**

- The UE stores the AS context;

- Transfer of unicast data to/from UE;

- Transfer of MBS multicast data to UE;

- At lower layers, the UE may be configured with a UE specific DRX;

- At lower layers, the UE may be configured with a DRX for PTM transmission of MBS broadcast and/or a DRX for MBS multicast;

- At lower layers, the UE may be configured with a cell specific cell DTX/DRX;

- For UEs supporting CA, use of one or more SCells, aggregated with the SpCell, for increased bandwidth;

- For UEs supporting DC, use of one SCG, aggregated with the MCG, for increased bandwidth;

- Network controlled mobility within NR, to/from E-UTRA, and to UTRA-FDD;

- Network controlled mobility (path switch) between a serving cell and a L2 U2N Relay UE, or vice versa, or between a source L2 U2N Relay UE and a target L2 U2N Relay UE;

- Network controlled MP operation.

- The UE:

- Monitors Short Messages transmitted with P-RNTI over DCI (see clause 6.5), if configured;

- Monitors control channels associated with the shared data channel to determine if data is scheduled for it;

- Provides channel quality and feedback information;

- Performs neighbouring cell and/or L2 U2N relay measurements and measurement reporting;

- Acquires system information;

- Performs immediate MDT measurement together with available location reporting;

- If configured by upper layers for MBS broadcast reception, acquires MCCH change notification and MBS broadcast control information and data;

- Performs logging of measurements for network data collection, if configured;

Figure 4.2.1-1 illustrates an overview of UE RRC state machine and state transitions in NR. A UE has only one RRC state in NR at one time.



Figure 4.2.1-1: UE state machine and state transitions in NR

Figure 4.2.1-2 illustrates an overview of UE state machine and state transitions in NR as well as the mobility procedures supported between NR/5GC, E-UTRA/EPC and E-UTRA/5GC.



Figure 4.2.1-2: UE state machine and state transitions between NR/5GC, E-UTRA/EPC and E-UTRA/5GC

Figure 4.2.1-3 illustrates the mobility procedure supported between NR/5GC and UTRA-FDD.



Figure 4.2.1-3: Mobility procedure supported between NR/5GC and UTRA-FDD

NEXT CHANGE

#### 5.5.4.x Event N1 (Serving becomes better than threshold)

The UE shall:

1> consider the entering condition for this event to be satisfied when condition N1-1, as specified below, is fulfilled;

1> consider the leaving condition for this event to be satisfied when condition N1-2, as specified below, is fulfilled;

1> for this measurement, consider the NR serving cell indicated in the *BM-dataMeasResource* associated with this event.

Inequality N1-1 (Entering condition)

*Ms – Hys > Thresh*

Inequality N1-2 (Leaving condition)

*Ms + Hys < Thresh*

The variables in the formula are defined as follows:

***Ms*** is the measurement result of the serving cell, not taking into account any offsets.

***Hys*** is the hysteresis parameter for this event (i.e. *hysteresis* as defined within *BM-DataLoggingConfig* for this event).

***Thresh*** is the threshold parameter for this event (i.e. *n1-Threshold* as defined within *BM-DataLoggingConfig* for this event).

***Ms*** is expressed in dBm in case of RSRP, or in dB in case of RSRQ and RS-SINR.

***Hys*** is expressed in dB.

***Thresh*** is expressed in the same unit as ***Ms***.

#### 5.5.4.y Event N2 (Serving becomes worse than threshold)

The UE shall:

1> consider the entering condition for this event to be satisfied when condition N2-1, as specified below, is fulfilled;

1> consider the leaving condition for this event to be satisfied when condition N2-2, as specified below, is fulfilled;

1> for this measurement, consider the NR serving cell indicated in the *BM-dataMeasResource* associated with this event.

NOTE: If the SCell indicated by the *measObjectNR* associated to this event is not detectable, then the UE should consider for the value of *Ms* the lowest value of the value range of the measurement quantity as the SCell measurement.

Inequality N2-1 (Entering condition)

*Ms + Hys < Thresh*

Inequality N2-2 (Leaving condition)

*Ms – Hys > Thresh*

The variables in the formula are defined as follows:

***Ms*** is the measurement result of the serving cell, not taking into account any offsets.

***Hys*** is the hysteresis parameter for this event (i.e. *hysteresis* as defined within *BM-DataLoggingConfig* for this event).

***Thresh*** is the threshold parameter for this event (i.e. *n2-Threshold* as defined within *BM-DataLoggingConfig* for this event).

***Ms*** is expressed in dBm in case of RSRP, or in dB in case of RSRQ and RS-SINR.

***Hys*** is expressed in dB.

***Thresh*** is expressed in the same unit as ***Ms***.

NEXT CHANGE

## 5.5x Logged data collection

### 5.5x.1 Logged Data Collection Configuration

#### 5.5x.1.1 General



Figure 5.5x.1.1-1: Logged Data Collection Configuration

The purpose of this procedure is to configure the UE to perform data collection with data logging while in RRC\_CONNECTED.

NOTE: NG-RAN retrieves stored logged data by means of the UE information procedure.

#### 5.5x.1.2 Initiation

NG-RAN initiates the data collection procedure to UE in RRC\_CONNECTED by sending the *LoggedDataCollectionConfig* message. When at least one *loggedDataCollectionConfig* is configured to the UE:

- if the *loggedDataCollectionConfig* associates a *bm-dataMeasResource* with a *bm-dataLoggingConfig*: then the UE performs the Layer 1 measurement according to the associated *bm-dataMeasResource* and logs the data according to the associated *bm-DataLoggingConfig.*

#### 5.5x.1.3 Reception of the *loggedDataCollectionConfig* by the UE

Upon receiving the *loggedDataCollectionConfig* message the UE shall:

1> if the received *loggedDataCollectionConfig* includes the *bm-dataMeasResourceToReleaseList*:

2> perform the beam measurement for data collection removal procedure as specified in 5.5x.1.4;

1> if the received *loggedDataCollectionConfig* includes the *bm-dataMeasResourceToAddModList*:

2> perform the beam measurement for data collection addition/modification procedure as specified in 5.5x.1.5;

1> if the received *loggedDataCollectionConfig* includes the *bm-loggingConfigToReleaseList*:

2> perform the logging configuration removal procedure as specified in 5.5x.1.6;

1> if the received *loggedDataCollectionConfig* includes the *bm-loggingConfigToAddModList*:

2> perform the logging configuration addition/modification procedure as specified in 5.5x.1.7;

1> if the received *loggedDataCollectionConfig* includes the *loggedDataColletionLinkageToReleaseList*:

2> perform the logged data collection linkage identity removal procedure as specified in 5.5x.1.8;

1> if the received *loggedDataCollectionConfig* includes the *loggeDataColletionLinkageToAddModList*:

2> perform the logged data collection linkage addition/modification procedure as specified in 5.5x.1.9;

#### 5.5x.1.4 Measurement Configuration Release

The UE shall:

1> for each *bm-dataMeasResourceId* value included in the *bm-dataMeasResourceToReleaseList*:

2> remove the corresponding *bm-dataMeasReource.*

#### 5.5x.1.5 Measurement Configuration Addition/Modification

The UE shall:

1> for each *bm-dataMeasResourceId* value included in the *bm-dataMeasResourceToAddModList*:

2> if the current UE configuration contains a *bm-dataMeasResource* with the *bm-dataMeasResourceId* value:

3> reconfigure the corresponding *bm-dataMeasResource* in accordance with the received *bm-dataMeasResource;*

2> else:

3> add the received *bm-dataMeasResource;*

#### 5.5x.1.6 Logging Configuration Release

The UE shall:

1> for each *bm-DataLoggingConfigId* value included in the *bm-loggingConfigToReleaseList*:

2> remove the corresponding *bm-DataLoggingConfig.*

#### 5.5x.1.7 Logging Configuration Addition/Modification

The UE shall:

1> for each *bm-DataLoggingConfigId* value included in the *bm-loggingConfigToAddModList*:

2> if the current UE configuration contains a *bm-DataLoggingConfig* with the *bm-DataLoggingConfigId* value:

3> reconfigure the corresponding *bm-DataLoggingConfig* in accordance with the received *bm-DataLoggingConfig;*

2> else:

3> add the received *bm-DataLoggingConfig;*

#### 5.5x.1.8 Data Collection Linkage Release

The UE shall:

1> for each *loggedDataCollectionId* value included in the *loggedDataColletionLinkageToReleaseList*:

2> remove the corresponding *loggedDataCollectionLinkage.*

#### 5.5x.1.9 Data Collection Linkage Addition/Modification

The UE shall:

1> for each *loggedDataCollectionId* value included in the *LoggedDataCollectionLinkage*:

2> if the current UE configuration contains a *LoggedDataCollectionLinkage* with the *loggedDataCollectionId* value:

3> reconfigure the corresponding *LoggedDataCollectionLinkage* in accordance with the received *LoggedDataCollectionConfig;*

2> else:

3> add the received *LoggedDataCollectionLinkage.*

### 5.5x.2 Measurement and Measurements logging

#### 5.5x.2.1 General

This procedure specifies the measurement and the logging of measurement result for the data collection by a UE in RRC\_CONNECTED.

#### 5.5x.2.2 Initiation

For each *LoggedDataCollectionLinkage* and corresponding *bm-DataLoggingConfig* and *bm-DataMeasResource*, the UE shall:

1> if measurement and measurement logging is suspended:

2> if the AS buffer becomes available;

3> resume the measurement and measurement logging;

1> if not suspended, perform the measurement logging in accordance with the following:

2> if the *loggingType* included in a *bm-DataLoggingConfig* is set to *periodical* for the *LoggedDataCollectionLinkage*:

3> peform the Layer 1 measurement for the serving cell according to the corresponding *bm-DataMeasResource*;

3> perform the measurement logging at a time interval;

2> else if the *loggingType* included in a *bm-DataLoggingConfig* is set to *eventTriggeredLogging*, and *eventTriggeredLogging* is set to *eventN1*:

3> if the entering condition of *eventN1* is considered as fulfilled for the serving cell as specified in subclause 5.5.4.x:

4> perform the Layer 1 measurement for the serving cell according to the corresponding *bm-DataMeasResource;*

4> perform the measurement logging for the serving cell at a time interval;

2> else if the *loggingType* included in a *bm-DataLoggingConfig* is set to *eventTriggeredLogging*, and *eventTriggeredLogging* is set to *eventN2*:

3> if the entering condition of *eventN2* is considered as fulfilled for the serving cell as specified in subclause 5.5.4.y:

4> perform the Layer 1 measurement for the serving cell according to the corresponding *bm-DataMeasResource;*

4> perform the measurement logging at a time interval;

2> when performing the measurement and measurement logging:

3> set the *cell-Id* to the *servingcellId* included in the corresponding *bm-DataMeasResource*;

3> set the *refCSI-LoggedMeasurementConfigId* to the *measResourceSetAForBM* or *measResourceSetBForBM* included in the corresponding *bm-DataMeasResource*;

3> set the *csi-RS-MeasResultList* or *csi-SSB-MeasResultList* to include the csi-RS indexes or SSB indexes and correponding measurement result quantities of *measResourceSetAForBM or measResourceSetBForBM*;

2> if the *loggingType* included in the corresponding *bm-DataLoggingConfig* is set to *eventTriggeredLogging*, and *eventTriggeredLogging* is set to *eventN1* and the leaving condition for the serving cell is considered as fulfilled as specified in subclause 5.5.4.x; or

2> if the *loggingType* included in the corresponding *bm-DataLoggingConfig* is set to *eventTriggeredLogging*, and *eventTriggeredLogging* is set to *eventN2* and the leaving condition for the serving cell is considered as fulfilled as specified in subclause 5.5.4.y:

3> stop performing the L1 measurement and measurement logging.

2> when the AS buffer for logging measurement result is full;

3> suspend the L1 measurement and measurement logging

NEXT CHANGE

– *RRCReconfiguration*

The *RRCReconfiguration* message is the command to modify an RRC connection. It may convey information for measurement configuration, mobility control, radio resource configuration (including RBs, MAC main configuration and physical channel configuration) and AS security configuration.

Signalling radio bearer: SRB1 or SRB3

RLC-SAP: AM

Logical channel: DCCH

Direction: Network to UE

***RRCReconfiguration message***

-- ASN1START

-- TAG-RRCRECONFIGURATION-START

RRCReconfiguration ::= SEQUENCE {

 rrc-TransactionIdentifier RRC-TransactionIdentifier,

 criticalExtensions CHOICE {

 rrcReconfiguration RRCReconfiguration-IEs,

 criticalExtensionsFuture SEQUENCE {}

 }

}

RRCReconfiguration-IEs ::= SEQUENCE {

 radioBearerConfig RadioBearerConfig OPTIONAL, -- Need M

 secondaryCellGroup OCTET STRING (CONTAINING CellGroupConfig) OPTIONAL, -- Cond SCG

 measConfig MeasConfig OPTIONAL, -- Need M

 lateNonCriticalExtension OCTET STRING OPTIONAL,

 nonCriticalExtension RRCReconfiguration-v1530-IEs OPTIONAL

}

RRCReconfiguration-v1530-IEs ::= SEQUENCE {

 masterCellGroup OCTET STRING (CONTAINING CellGroupConfig) OPTIONAL, -- Need M

 fullConfig ENUMERATED {true} OPTIONAL, -- Cond FullConfig

 dedicatedNAS-MessageList SEQUENCE (SIZE(1..maxDRB)) OF DedicatedNAS-Message OPTIONAL, -- Cond nonHO

 masterKeyUpdate MasterKeyUpdate OPTIONAL, -- Cond MasterKeyChange

 dedicatedSIB1-Delivery OCTET STRING (CONTAINING SIB1) OPTIONAL, -- Need N

 dedicatedSystemInformationDelivery OCTET STRING (CONTAINING SystemInformation) OPTIONAL, -- Need N

 otherConfig OtherConfig OPTIONAL, -- Need M

 nonCriticalExtension RRCReconfiguration-v1540-IEs OPTIONAL

}

RRCReconfiguration-v1540-IEs ::= SEQUENCE {

 otherConfig-v1540 OtherConfig-v1540 OPTIONAL, -- Need M

 nonCriticalExtension RRCReconfiguration-v1560-IEs OPTIONAL

}

RRCReconfiguration-v1560-IEs ::= SEQUENCE {

 mrdc-SecondaryCellGroupConfig SetupRelease { MRDC-SecondaryCellGroupConfig } OPTIONAL, -- Need M

 radioBearerConfig2 OCTET STRING (CONTAINING RadioBearerConfig) OPTIONAL, -- Need M

 sk-Counter SK-Counter OPTIONAL, -- Need N

 nonCriticalExtension RRCReconfiguration-v1610-IEs OPTIONAL

}

RRCReconfiguration-v1610-IEs ::= SEQUENCE {

 otherConfig-v1610 OtherConfig-v1610 OPTIONAL, -- Need M

 bap-Config-r16 SetupRelease { BAP-Config-r16 } OPTIONAL, -- Need M

 iab-IP-AddressConfigurationList-r16 IAB-IP-AddressConfigurationList-r16 OPTIONAL, -- Need M

 conditionalReconfiguration-r16 ConditionalReconfiguration-r16 OPTIONAL, -- Need M

 daps-SourceRelease-r16 ENUMERATED{true} OPTIONAL, -- Need N

 t316-r16 SetupRelease {T316-r16} OPTIONAL, -- Need M

 needForGapsConfigNR-r16 SetupRelease {NeedForGapsConfigNR-r16} OPTIONAL, -- Need M

 onDemandSIB-Request-r16 SetupRelease { OnDemandSIB-Request-r16 } OPTIONAL, -- Need M

 dedicatedPosSysInfoDelivery-r16 OCTET STRING (CONTAINING PosSystemInformation-r16-IEs) OPTIONAL, -- Need N

 sl-ConfigDedicatedNR-r16 SetupRelease {SL-ConfigDedicatedNR-r16} OPTIONAL, -- Need M

 sl-ConfigDedicatedEUTRA-Info-r16 SetupRelease {SL-ConfigDedicatedEUTRA-Info-r16} OPTIONAL, -- Need M

 targetCellSMTC-SCG-r16 SSB-MTC OPTIONAL, -- Need S

 nonCriticalExtension RRCReconfiguration-v1700-IEs OPTIONAL

}

RRCReconfiguration-v1700-IEs ::= SEQUENCE {

 otherConfig-v1700 OtherConfig-v1700 OPTIONAL, -- Need M

 sl-L2RelayUE-Config-r17 SetupRelease { SL-L2RelayUE-Config-r17 } OPTIONAL, -- Need M

 sl-L2RemoteUE-Config-r17 SetupRelease { SL-L2RemoteUE-Config-r17 } OPTIONAL, -- Need M

 dedicatedPagingDelivery-r17 OCTET STRING (CONTAINING Paging) OPTIONAL, -- Cond PagingRelay

 needForGapNCSG-ConfigNR-r17 SetupRelease {NeedForGapNCSG-ConfigNR-r17} OPTIONAL, -- Need M

 needForGapNCSG-ConfigEUTRA-r17 SetupRelease {NeedForGapNCSG-ConfigEUTRA-r17} OPTIONAL, -- Need M

 musim-GapConfig-r17 SetupRelease {MUSIM-GapConfig-r17} OPTIONAL, -- Need M

 ul-GapFR2-Config-r17 SetupRelease { UL-GapFR2-Config-r17 } OPTIONAL, -- Need M

 scg-State-r17 ENUMERATED { deactivated } OPTIONAL, -- Need S

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

 ue-TxTEG-RequestUL-TDOA-Config-r17 SetupRelease {UE-TxTEG-RequestUL-TDOA-Config-r17} OPTIONAL, -- Need M

 nonCriticalExtension RRCReconfiguration-v1800-IEs OPTIONAL

}

RRCReconfiguration-v1800-IEs ::= SEQUENCE {

 needForInterruptionConfigNR-r18 ENUMERATED { disabled, enabled } OPTIONAL, -- Need M

 aerial-Config-r18 SetupRelease { Aerial-Config-r18 } OPTIONAL, -- Need M

 sl-IndirectPathAddChange-r18 SetupRelease { SL-IndirectPathAddChange-r18 } OPTIONAL, -- Need M

 n3c-IndirectPathAddChange-r18 SetupRelease { N3C-IndirectPathAddChange-r18 } OPTIONAL, -- Need M

 n3c-IndirectPathConfigRelay-r18 SetupRelease { N3C-IndirectPathConfigRelay-r18 } OPTIONAL, -- Need M

 otherConfig-v1800 OtherConfig-v1800 OPTIONAL, -- Need M

 srs-PosResourceSetAggBW-CombinationList-r18 SetupRelease { SRS-PosResourceSetAggBW-CombinationList-r18 } OPTIONAL, -- Need M

 ltm-Config-r18 SetupRelease {LTM-Config-r18} OPTIONAL, -- Need M

 nonCriticalExtension RRCReconfiguration-v1830-IEs OPTIONAL

}

RRCReconfiguration-v1830-IEs ::= SEQUENCE {

 otherConfig-v1830 OtherConfig-v1830 OPTIONAL, -- Need M

 nonCriticalExtension RRCReconfiguration-v1900-IEs OPTIONAL

}

RRCReconfiguration-v1900-IEs ::= SEQUENCE {

loggedDataCollectionConfig-r19 SetupRelease {LoggedDataCollectionConfig-r19} OPTIONAL, -- Need M

nonCriticalExtension SEQUENCE {} OPTIONAL

}

MRDC-SecondaryCellGroupConfig ::= SEQUENCE {

 mrdc-ReleaseAndAdd ENUMERATED {true} OPTIONAL, -- Need N

 mrdc-SecondaryCellGroup CHOICE {

 nr-SCG OCTET STRING (CONTAINING RRCReconfiguration),

 eutra-SCG OCTET STRING

 }

}

BAP-Config-r16 ::= SEQUENCE {

 bap-Address-r16 BIT STRING (SIZE (10)) OPTIONAL, -- Need M

 defaultUL-BAP-RoutingID-r16 BAP-RoutingID-r16 OPTIONAL, -- Need M

 defaultUL-BH-RLC-Channel-r16 BH-RLC-ChannelID-r16 OPTIONAL, -- Need M

 flowControlFeedbackType-r16 ENUMERATED {perBH-RLC-Channel, perRoutingID, both} OPTIONAL, -- Need R

 ...

}

MasterKeyUpdate ::= SEQUENCE {

 keySetChangeIndicator BOOLEAN,

 nextHopChainingCount NextHopChainingCount,

 nas-Container OCTET STRING OPTIONAL, -- Cond securityNASC

 ...

}

OnDemandSIB-Request-r16 ::= SEQUENCE {

 onDemandSIB-RequestProhibitTimer-r16 ENUMERATED {s0, s0dot5, s1, s2, s5, s10, s20, s30}

}

T316-r16 ::= ENUMERATED {ms50, ms100, ms200, ms300, ms400, ms500, ms600, ms1000, ms1500, ms2000}

IAB-IP-AddressConfigurationList-r16 ::= SEQUENCE {

 iab-IP-AddressToAddModList-r16 SEQUENCE (SIZE(1..maxIAB-IP-Address-r16)) OF IAB-IP-AddressConfiguration-r16 OPTIONAL, -- Need N

 iab-IP-AddressToReleaseList-r16 SEQUENCE (SIZE(1..maxIAB-IP-Address-r16)) OF IAB-IP-AddressIndex-r16 OPTIONAL, -- Need N

 ...

}

IAB-IP-AddressConfiguration-r16 ::= SEQUENCE {

 iab-IP-AddressIndex-r16 IAB-IP-AddressIndex-r16,

 iab-IP-Address-r16 IAB-IP-Address-r16 OPTIONAL, -- Need M

 iab-IP-Usage-r16 IAB-IP-Usage-r16 OPTIONAL, -- Need M

 iab-donor-DU-BAP-Address-r16 BIT STRING (SIZE(10)) OPTIONAL, -- Need M

...

}

SL-ConfigDedicatedEUTRA-Info-r16 ::= SEQUENCE {

 sl-ConfigDedicatedEUTRA-r16 OCTET STRING OPTIONAL, -- Need M

 sl-TimeOffsetEUTRA-List-r16 SEQUENCE (SIZE (8)) OF SL-TimeOffsetEUTRA-r16 OPTIONAL -- Need M

}

SL-TimeOffsetEUTRA-r16 ::= ENUMERATED {ms0, ms0dot25, ms0dot5, ms0dot625, ms0dot75, ms1, ms1dot25, ms1dot5, ms1dot75,

 ms2, ms2dot5, ms3, ms4, ms5, ms6, ms8, ms10, ms20}

UE-TxTEG-RequestUL-TDOA-Config-r17 ::= CHOICE {

 oneShot-r17 NULL,

 periodicReporting-r17 ENUMERATED { ms160, ms320, ms1280, ms2560, ms61440, ms81920, ms368640, ms737280 }

}

SRS-PosResourceSetAggBW-CombinationList-r18 ::= SEQUENCE (SIZE(1.. maxNrOfLinkedSRS-PosResSetComb-r18)) OF SRS-PosResourceSetLinkedForAggBW-List-r18

SRS-PosResourceSetLinkedForAggBW-List-r18 ::= SEQUENCE (SIZE(2..maxNrOfLinkedSRS-PosResourceSet-r18)) OF SRS-PosResourceSetLinkedForAggBW-r18

-- TAG-RRCRECONFIGURATION-STOP

-- ASN1STOP

NEXT CHANGE

6.3.2 Radio resource control information element

– *BM-DataLoggingConfig*

The IE *BM-DataLoggingConfig* specifies the data logging related configuration for AI/ML functions.

Event N1: Serving becomes worse than absolute threshold;

Event N2: Serving becomes better than absolute threshold;

***BM-DataLoggingConfig* information element**

-- ASN1START

-- TAG-BM-DataLoggingConfig-START

BM-DataLoggingConfig-r19 ::= SEQUENCE {

bm-DataLoggingConfigId-r19 BM-DataLoggingConfigId-r19,

loggingType-r19 CHOICE {

eventTriggerdLogging-r19 LoggingEventType-r19,

periodic BOOLEAN

},

loggingQuantity-r19 MeasQuantityResults

...

}

loggingEventType-r19 SEQUENCE {

associatedMeasObject-R19 MeasObjectId,

eventType-r19 CHOICE {

eventN1-r19 SEQUENCE {

 n1-Threshold MeasTriggerQuantity,

 hysteresis Hysteresis,

 timeToTrigger TimeToTrigger

 },

eventN2-r19 SEQUENCE {

 n2-Threshold MeasTriggerQuantity,

 hysteresis Hysteresis,

 timeToTrigger TimeToTrigger

 },

}

}

-- TAG-BM-LoggedDataCollectionConfig-STOP

-- ASN1STOP

– *BM-DataLoggingConfigId*

The IE *BM-DataLoggingConfigId* is used to identify the *BM-DataLoggingConfig*.

***BM-DataLoggingConfig* information element**

-- ASN1START

-- TAG-BM-DataLoggingConfigId-START

BM-DataLoggingConfigId-r19 ::= INTEGER (0..maxNrofBM-DataLoggingConfig-1-r19)

-- TAG-BM-LoggedDataCollectionConfigId-STOP

-- ASN1STOP

– *BM-DataMeasResource*

The IE *BM-DataMeasResource* specifies the measurement resources for UE to perform the NW side data collection in terms of AI/ML based beam management,

***BM-DataMeasResource* information element**

-- ASN1START

-- TAG-BM-DataMeasResource-START

BM-DataMeasResource-19 ::= SEQUENCE {

bM-dataMeasResourceId-r19 BM-DataMeasResourceId-r19

servingcellId ServCellIndex OPTIONAL, -- Need R

measResourceSetAForBM-r19  CSI-ResourceConfigId OPTIONAL, -- Need R

measResourceSetBForBM-r19 CSI-ResourceConfigId OPTIONAL, -- Need R

...

}

-- TAG-BM-DataMeasResource-STOP

-- ASN1STOP

|  |
| --- |
| ***DataMeasResourceConfig* field descriptions** |
| ***measResourceSetAForBM, measResourceSetBforBM***To indicate the CSI measurement resources for data collection of AI/ML based beam management  |

|  |
| --- |
| ***DataMeasResourceForBM* field descriptions** |
| ***servingCellId***To indicate the serving cell where the *measResourceSetAForBM* and *measResourceSetBForBM* is from. |

– *BM-DataMeasResourceId*

The IE *BM-DataMeasResourceId* is used to identify one *BM-DataMeasResource*.

***BM-DataMeasResourceId* information element**

-- ASN1START

-- TAG-BM-DataMeasResourceId-START

BM-DataMeasResourceId-r19 ::= INTEGER (0..maxNrofDataMeasResource-1-r19)

-- TAG-BM-DataMeasResourceId-STOP

-- ASN1STOP

– *LoggedDataCollectionConfig*

The IE *loggedDatacCollection* specifies the data collection for AI/ML functions to be performed by the UE, and covers measurement resource part, data logging part, and the linkage between measurement resource and data logging configuration.

***LoggedDataCollectionConfig* information element**

-- ASN1START

-- TAG-LoggedDataCollectionConfig-START

LoggedDataCollectionConfig-19 ::= SEQUENCE {

bm-dataMeasResourceToAddModList-r19  SEQUENCE (SIZE (1..maxNrofBM-DataMeasResources-r19)) OF BM-DataMeasResource-r19 OPTIONAL, -- Need N

 bm-dataMeasResourceToReleaseList-r19 SEQUENCE (SIZE (1.. maxNrofBM-DataMeasResources-r19)) OF BM-DataMeasResourceId-r19 OPTIONAL, -- Need N

bm-loggingConfigToAddModList-r19 SEQUENCE (SIZE (1..maxNrofBM-LoggingConfig-r19)) OF BM-LoggingConfig-r19 OPTIONAL, -- Need N

bm-loggingConfigToReleaseList-r19 SEQUENCE (SIZE (1.. maxNrofBM-LoggingConfig-r19)) OF BM-LoggingConfigId-r19 OPTIONAL, -- Need N loggeDataColletionLinkageToAddModList-r19  SEQUENCE (SIZE (1..maxNrofLoggedDataCollectionLinkage-r19)) OF LoggedDataCollectionLinkage-r19 OPTIONAL, -- Need N

loggedDataCollectionLinkageToReleaseList-r19 SEQUENCE (SIZE (1..maxNrofLoggedDataCollectionLinkage-r19)) OF LoggedDataCollectionId-r19 OPTIONAL, -- Need N

...}

-- TAG-LoggedDataCollectionConfig-STOP

-- ASN1STOP

|  |
| --- |
| ***LoggedDataCollectionConifg* field descriptions** |
| ***bm-dataMeasResourceToAddModList***Contains the measurement resource configurations for UE to perform the data collection. |
| ***bm-loggingConfigToAddModList***Contains the data logging related configuration for UE to perform the data logging. |
| ***loggedDataCollectionlinkageToAddModList***Contains the *loggedDataCollectionId* for UE to associate the *bm-dataMeasResource* with the *bm-loggingConfig* |

– *LoggedDataCollectionLinkage*

The IE *LoggedDataCollecgionLinkage* specifies the linkage between *DataMeasResourceForBM* and *loggingConfigForBM*

***LoggedDataCleectionLinkage* information element**-- ASN1START

-- TAG-LoggedDataCollectionLinkage-START

LoggedDataCollectionLinkage-r19 ::= SEQUENCE {

 loggedDataCollectionId-r19 LoggedDataCollectionId-r19,

 loggedDataCollectionLinkage CHOICE {

 bm SEQUENCE {

 bm-dataMeasResourceForBMId-r19 BM-DataMeasResourceId-r19,

 bm-loggingConfigForBMId-r19 BM-LoggingConfigId-r19

 },

 ...

 }

 ...

}

-- TAG-LoggedDataCollectionLinkage-STOP

-- ASN1STOP

– *LoggedDataCollectionId*

The IE *LoggedDataCollecgionId* is used for identifying the *LoggedDataCollectionLinkage*

***LoggedDataCleectionLinkage* information element**

-- ASN1START

-- TAG-LoggedDataCollecgionId-START

LoggedDataCollectionId-r19 ::= INTEGER (0..maxNrofLoggedDataCollectionLinkage-1-r19)

-- TAG-LoggedDataCollecgionId-STOP

-- ASN1STOP

NEXT CHANGE

## 7.4 UE variables

<Text Omitted>

#### – *VarCSI-LogMeasReport*

The UE variable *VarCSI-LogMeasReport* includes the logged measurements information for network data collection in accordance with *CSI-LoggedMeasurementConfig*.

*VarCSI-LogMeasReport* UE variable

-- ASN1START

-- TAG-VARCSI-LOGMEASREPORT-START

VarCSI-LogMeasReport-r19 ::= SEQUENCE {

 csi-LogMeasInfoList CSI-LogMeasInfoList-r19

}

-- TAG-VARCSI-LOGMEASREPORT-STOP

-- ASN1STOP