3GPP TSG-RAN WG3 Meeting #127bis R3-252118

**Wuhan, China, 7 - 11 April, 2025**

Title: (TP for LTM BLCR for TS38.473): Update on inter-CU LTM procedure

Agenda Item: 13.2

Source: Huawei, LG Electronics

Document for: Other

# 1 Introduction

This contribution contains a F1AP TP towards the LTM BLCR.

# 2 Annex – Text Proposal for LTM BLCR for TS 38.473

/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Start of changes\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

### 8.3.4 UE Context Modification (gNB-CU initiated)

#### 8.3.4.1 General

The purpose of the UE Context Modification procedure is to modify the established UE Context, e.g., establishing, modifying and releasing radio resources or sidelink resources. This procedure is also used to command the gNB-DU to stop data transmission for the UE for mobility (see TS 38.401 [4]). The procedure uses UE-associated signalling.

#### 8.3.4.2 Successful Operation



Figure 8.3.4.2-1: UE Context Modification procedure. Successful operation

The UE CONTEXT MODIFICATION REQUEST message is initiated by the gNB-CU.

<skip unchanged part>

If the *Ranging and Sidelink Positioning Service Information* IE is contained in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall, if supported, update its service information for the UE accordingly. If the *Ranging and Sidelink Positioning Authorized* IE within the *Ranging and Sidelink Positioning Service Information* IE is set to "not authorized", the gNB-DU shall, if supported, initiate actions to ensure that the UE is no longer accessing the Ranging and Sidelink Positioning service.

If the *LTM Security Information* IE is included in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall, if supported, store it and take it into account for supporting the UE’s AS security continuation during an inter-CU LTM cell switch and act as specified in TS 38.401 [4] and TS 38.321 [16]. **Interaction with UE Inactivity Notification procedure**

If the *SDT Volume Threshold* IE is contained in the UE CONTEXT MODIFICATION REQUEST message, the gNB-DU shall, if supported, use the information during an SDT transaction to inform the gNB-CU via the UE INACTIVITY NOTIFICATION message as specified in TS 38.401 [4].

**Interaction with UE Context Setup or UE Context Modification (gNB-CU initiated) procedures**

If the UE CONTEXT MODIFICATION REQUEST message is sent for a UE context set up for S-CPAC and contains the *Transmission Action Indicator* IE set to "stop", the gNB-DU shall, if supported, reset the UE context for the included *SpCell ID* IE, prepare for subsequent CPAC. The gNB-DU shall include the *SpCell ID* IE as the *Requested Target Cell ID* IE in the UE CONTEXT MODIFICATION RESPONSE message.

/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Next change\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

### 8.3.x DU-CU CSI-RS Coordination

#### 8.3.x.1 General

The purpose of the DU-CU CSI-RS Coordination procedure is to enable the gNB-DU to request the gNB-CU to activate/deactivate the SP CSI-RS transmissions from specific cells. The procedure uses UE-associated signalling.

#### 8.3.x.2 Successful Operation



Figure 8.3.x.2-1: DU-CU CSI-RS Coordination procedure. Successful operation.

The gNB-DU initiates the procedure by sending a DU-CU CSI-RS COORDINATION REQUEST message.

#### 8.3.x.3 Unsuccessful Operation

#### 8.3.x.4 Abnormal Conditions

Not applicable.

### 8.3.y CU-DU CSI-RS Coordination

#### 8.3.y.1 General

The purpose of the CU-DU CSI-RS Coordination procedure is to enable the gNB-CU to request the gNB-DU to activate/deactivate the SP CSI-RS transmission from specific cells. The procedure uses UE-associated signalling.

#### 8.3.y.2 Successful Operation



Figure 8.3.y.2-1: CU-DU CSI-RS COORDINATION procedure. Successful operation.

The gNB-CU initiates the procedure by sending a CU-DU CSI-RS COORDINATION REQUEST message.

#### 8.3.y.3 Unsuccessful Operation

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#### 8.3.y.4 Abnormal Conditions

Not applicable

/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Next change\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

#### 9.2.2.7 UE CONTEXT MODIFICATION REQUEST

This message is sent by the gNB-CU to provide UE Context information changes to the gNB-DU.

Direction: gNB-CU → gNB-DU

| IE/Group Name | Presence | Range | IE type and reference | Semantics description | Criticality | Assigned Criticality |
| --- | --- | --- | --- | --- | --- | --- |
| Message Type | M |  | 9.3.1.1 |  | YES | reject |
| gNB-CU UE F1AP ID | M |  | 9.3.1.4 |  | YES | reject |
| gNB-DU UE F1AP ID | M |  | 9.3.1.5 |  | YES | reject |
| SpCell ID | O |  | NR CGI 9.3.1.12 | Special Cell as defined in TS 38.321 [16]. For handover case, this IE is considered as target cell. | YES | ignore |
| <skip unchanged part> | | | | | | |
| **LTM Information Modify** |  | *0..1* |  |  | YES | reject |
| >LTM Indicator | M |  | ENUMERATED (true, …) |  | - |  |
| >Reference Configuration | O |  | 9.3.1.292 |  | - |  |
| >CSI Resource Configuration | O |  | 9.3.1.330 |  | - |  |
| **LTM CFRA Resource Config List** |  | *0..1* |  |  | YES | ignore |
| **>LTM CFRA Resource Config Item IEs** |  | *1 .. <maxnoofLTMCells>* |  |  | EACH | ignore |
| >>Cell ID | M |  | NR CGI  9.3.1.12 |  | - |  |
| >>LTM CFRA Resource Configuration | O |  | OCTET STRING | Includes the *RACH-ConfigDedicated* IE, as defined in TS 38.331 [8]. | - |  |
| >>LTM CFRA Resource Configuration for SUL | O |  | OCTET STRING | Includes the *RACH-ConfigDedicated* IE, as defined in TS 38.331 [8]. This IE applies for SUL carrier. | - |  |
| LTM Configuration ID Mapping List | O |  | 9.3.1.294 |  | YES | reject |
| **Early Sync Information Request** |  | *0..1* |  |  | YES | ignore |
| >Request for RACH Configuration | M |  | ENUMERATED (true, …) |  | - |  |
| **>LTM gNB-DUs ID List** |  | *1* |  | This IE contains the IDs of the source gNB-DU and candidate gNB-DU(s). | YES | reject |
| **>>LTM gNB-DUs Item IEs** |  | *1..< maxnoofLTMgNBDUs>* |  |  | - |  |
| >>>LTM gNB-DU ID | M |  | gNB-DU ID  9.3.1.9 |  | - |  |
| >>>LTM gNB ID | O |  | Global gNB ID 9.3.1.305 |  | - |  |
| **Early Sync Candidate Cell Information List** |  | *0..1* |  |  | YES | ignore |
| **>Early Sync Candidate Cell Information Item IEs** |  | *1 .. <maxnoofLTMCells>* |  |  | EACH | ignore |
| >>Cell ID | M |  | NR CGI  9.3.1.12 |  | - |  |
| >>TCI States Configurations List | O |  | OCTET STRING | Includes the *LTM-TCI-Info*  IE, as defined in TS 38.331 [8]. | - |  |
| >>Early UL Sync Configuration | O |  | 9.3.1.328 |  | - |  |
| >>Early UL Sync Configuration for SUL | O |  | Early UL Sync Configuration  9.3.1.328 | This IE applies for SUL carrier. | - |  |
| >>TA Assistance Information | O |  | ENUMERATED (zero, …) | The value "zero" corresponds to TA value of the cell being equal to zero. | - |  |
| >>UE Based TA Measurement Configuration | O |  | OCTET STRING | Includes the *ltm-UE-MeasuredTA-ID* contained in the *LTM-Candidate* IE, as defined in TS 38.331 [8], for the LTM candidate cell identified by the *Cell ID* IE. | - |  |
| >>SSB Positions In Burst | C-ifEarlyUL |  | 9.3.1.138 | This IE applies to early TA acquisition. | YES | ignore |
| **Early Sync Serving Cell Information** |  | *0..1* |  |  | YES | ignore |
| >UE Based TA Measurement Configuration | O |  | OCTET STRING | Includes the *ltm-ServingCellUE-MeasuredTA-ID* contained in the *LTM-Config* IE, as defined in TS 38.331 [8], for the current serving cell. | - |  |
| LTM Cells To Be Released List | O |  | 9.3.1.291 |  | YES | reject |
| Path Addition Information | O |  | 9.3.1.296 |  | YES | reject |
| NR A2X Services Authorized | O |  | 9.3.1.323 |  | YES | ignore |
| LTE A2X Services Authorized | O |  | 9.3.1.324 |  | YES | ignore |
| NR UE Sidelink Aggregate Maximum Bit Rate for A2X | O |  | NR UE Sidelink Aggregate Maximum Bit Rate  9.3.1.119 | This IE applies only if the UE is authorized for NR A2X services. | YES | ignore |
| LTE UE Sidelink Aggregate Maximum Bit Rate for A2X | O |  | LTE UE Sidelink Aggregate Maximum Bit Rate  9.3.1.118 | This IE applies only if the UE is authorized for LTE A2X services. | YES | ignore |
| DL LBT Failure Information Request | O |  | ENUMERATED (inquiry, …) |  | YES | ignore |
| Ranging and Sidelink Positioning Service Information | O |  | 9.3.1.331 | This IE applies only if the UE is authorized for NR V2X services and/or 5G ProSe services. | YES | ignore |
| Non-Integer DRX Cycle | O |  | 9.3.1.344 |  | YES | ignore |
| LTM Reset Information | O |  | 9.3.1.346 |  | YES | ignore |
| LTM Security Information | O |  | 9.3.1.XX |  | YES | reject |

/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*Next change\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

#### 9.2.2.x1 DU-CU CSI-RS COORDINATION REQUEST

This message is sent by the gNB-DU to request the gNB-CU to activate/deactivate the SP CSI-RS transmissions from specific cells.

Direction: gNB-DU → gNB-CU

| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| --- | --- | --- | --- | --- |
| Message Type | M |  | 9.3.1.1 |  |
| gNB-CU UE F1AP ID | M |  | 9.3.1.4 |  |
| gNB-DU UE F1AP ID | M |  | 9.3.1.5 |  |

#### 9.2.2.x2 DU-CU CSI-RS COORDINATION RESPONSE

This message is sent by the gNB-CU to inform the gNB-DU about the SP CSI-RS transmissions activation/deactivation result.

Direction: gNB-CU → gNB-DU

| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| --- | --- | --- | --- | --- |
| Message Type | M |  | 9.3.1.1 |  |
| gNB-CU UE F1AP ID | M |  | 9.3.1.4 |  |
| gNB-DU UE F1AP ID | M |  | 9.3.1.5 |  |

#### 9.2.2.y1 CU-DU CSI-RS COORDINATION REQUEST

This message is sent by the gNB-CU to request the gNB-DU to activate/deactivate the SP CSI-RS transmissions from specific cells.

Direction: gNB-CU → gNB-DU

| IE/Group Name | Presence | Range | IE type and reference | Semantics description |
| --- | --- | --- | --- | --- |
| Message Type | M |  | 9.3.1.1 |  |
| gNB-CU UE F1AP ID | M |  | 9.3.1.4 |  |
| gNB-DU UE F1AP ID | M |  | 9.3.1.5 |  |

#### 9.2.2.y2 CU-DU CSI-RS COORDINATION RESPONSE

This message is sent by the gNB-DU to inform the gNB-CU about the SP CSI-RS transmissions activation/deactivation result.

Direction: gNB-DU → gNB-CU

| IE/Group Name | Presence |  | Range | IE type and reference | Semantics description |
| --- | --- | --- | --- | --- | --- |
| Message Type | M |  |  | 9.3.1.1 |  |
| gNB-CU UE F1AP ID | M |  |  | 9.3.1.4 |  |
| gNB-DU UE F1AP ID | M |  |  | 9.3.1.5 |  |

/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*End of changes\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/

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### 9.3.1 Radio Network Layer Related IEs

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9.3.1.XX LTM Security Information

This IE contains the security related information for LTM candidate cell(s) to support the UE in generating the key material for AS security during an inter-CU LTM cell switch.

| **IE/Group Name** | **Presence** | **Range** | **IE type and reference** | **Semantics description** |
| --- | --- | --- | --- | --- |
| Next Hop Chaining Count | M |  | INTEGER (0..7) | Next Hop Chaining Count (NCC) defined in TS 33.501 [Y] |