**3GPP TSG-RAN WG2 Meeting #105R2-190xxxx**

**Athens, Greece, February 25th-March 1st 2019**

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| *CR-Form-v11.4* |
| **CHANGE REQUEST** |
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|  | **38.331** | **CR** | **0877** | **rev** | **1** | **Current version:** | **15.4.0** |  |
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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:***  | Correction on smtc configuration in NR SCell addition procedure |
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| ***Source to WG:*** | MediaTek Inc. |
| ***Source to TSG:*** | R2 |
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| ***Work item code:*** | NR\_newRAT-Core |  | ***Date:*** | 02/25/2019 |
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| ***Category:*** | F |  | ***Release:*** | Rel-15 |
|  | *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:*** | In RAN2#104 meeting, CR 270 (R2-1817861) is agreed to clarify the timing reference cell in SMTC configuration. It is specified that the **source** sPCell is used as timing reference cell in case of sPCell change. This is nature for the case of handover and PSCell change since only the timing of source cell is available.However, for SCell addition, it is unclear why the timing reference cell is source cell. The handover command is generate by the target gNB, it is unlikely that the target gNB will set the SMTC based on the timing of source cell. Based on the reason for change in CR 270, the change is mainly for handover or PSCell change procedure. The SCell addition procedure is not discussed there. We think the timing reference of SCell addition should be the new (target) sPCell. |
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| ***Summary of change:*** | In field description of *smtc* in *SCellConfig*, specify that the timing reference cell is the target sPCell (if sPCell is changed). **Impact analysis**Impacted 5G architecture options: Standalone, EN-DCImpacted functionality: NR SCell addition procedureInter-operability:If the UE implements the CR but the network does not or vice-versa, the UE and NW may have different understadning on the timing reference cell used for NR SCell addition. The UE may not be able to find the target SCell and result in SCell activation failed. |
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| ***Consequences if not approved:*** | The target cell may not be able to provide SMTC configuration based on the timing of source cell in case that NR addition procedure is triggered with sPCell change. As a consequence, the UE may not be able to find the target SCell and result in SCell activation failed. |
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| ***Clauses affected:*** | 6.3.2 |
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|  | **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 ...  |
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| ***Other comments:*** |  |

### 6.3.2 Radio resource control information elements

<Skip unrelated Parts>

#### – *CellGroupConfig*

The *CellGroupConfig* IE is used to configure a master cell group (MCG) or secondary cell group (SCG). A cell group comprises of one MAC entity, a set of logical channels with associated RLC entities and of a primary cell (SpCell) and one or more secondary cells (SCells).

*CellGroupConfig* information element

-- ASN1START

-- TAG-CELL-GROUP-CONFIG-START

-- Configuration of one Cell-Group:

CellGroupConfig ::= SEQUENCE {

 cellGroupId CellGroupId,

 rlc-BearerToAddModList SEQUENCE (SIZE(1..maxLC-ID)) OF RLC-BearerConfig OPTIONAL, -- Need N

 rlc-BearerToReleaseList SEQUENCE (SIZE(1..maxLC-ID)) OF LogicalChannelIdentity OPTIONAL, -- Need N

 mac-CellGroupConfig MAC-CellGroupConfig OPTIONAL, -- Need M

 physicalCellGroupConfig PhysicalCellGroupConfig OPTIONAL, -- Need M

 spCellConfig SpCellConfig OPTIONAL, -- Need M

 sCellToAddModList SEQUENCE (SIZE (1..maxNrofSCells)) OF SCellConfig OPTIONAL, -- Need N

 sCellToReleaseList SEQUENCE (SIZE (1..maxNrofSCells)) OF SCellIndex OPTIONAL, -- Need N

 ...,

 [[

 reportUplinkTxDirectCurrent-v1530 ENUMERATED {true} OPTIONAL -- Cond BWP-Reconfig

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}

-- Serving cell specific MAC and PHY parameters for a SpCell:

SpCellConfig ::= SEQUENCE {

 servCellIndex ServCellIndex OPTIONAL, -- Cond SCG

 reconfigurationWithSync ReconfigurationWithSync OPTIONAL, -- Cond ReconfWithSync

 rlf-TimersAndConstants SetupRelease { RLF-TimersAndConstants } OPTIONAL, -- Need M

 rlmInSyncOutOfSyncThreshold ENUMERATED {n1} OPTIONAL, -- Need S

 spCellConfigDedicated ServingCellConfig OPTIONAL, -- Need M

 ...

}

ReconfigurationWithSync ::= SEQUENCE {

 spCellConfigCommon ServingCellConfigCommon OPTIONAL, -- Need M

 newUE-Identity RNTI-Value,

 t304 ENUMERATED {ms50, ms100, ms150, ms200, ms500, ms1000, ms2000, ms10000},

 rach-ConfigDedicated CHOICE {

 uplink RACH-ConfigDedicated,

 supplementaryUplink RACH-ConfigDedicated

 } OPTIONAL, -- Need N

 ...,

 [[

 smtc SSB-MTC OPTIONAL -- Need S

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}

SCellConfig ::= SEQUENCE {

 sCellIndex SCellIndex,

 sCellConfigCommon ServingCellConfigCommon OPTIONAL, -- Cond SCellAdd

 sCellConfigDedicated ServingCellConfig OPTIONAL, -- Cond SCellAddMod

 ...,

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 smtc SSB-MTC OPTIONAL -- Need S

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}

-- TAG-CELL-GROUP-CONFIG-STOP

-- ASN1STOP

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| *CellGroupConfig* field descriptions |
| ***mac-CellGroupConfig***MAC parameters applicable for the entire cell group. |
| ***rlc-BearerToAddModList***Configuration of the MAC Logical Channel, the corresponding RLC entities and association with radio bearers. |
| ***reportUplinkTxDirectCurrent***Enables reporting of uplink Direct Current location information upon BWP configuration and reconfiguration. This field is only present when the BWP configuration is modified or any serving cell is added or removed. This field is not present in the IE *CellGroupConfig* when provided as part of *RRCSetup* message. |
| ***rlmInSyncOutOfSyncThreshold***BLER threshold pair index for IS/OOS indication generation, see TS 38.133 [14], Table 8.1.1-1. *n1* corresponds to the value 1. When the field is absent, the UE applies the value 0. Whenever this is reconfigured, UE resets N310 and N311, and stops T310, if running.  |
| ***sCellToAddModList***List of seconary serving cells (SCells) to be added or modified. |
| ***sCellToReleaseList***List of secondary serving cells (SCells) to be released |
| ***spCellConfig***Parameters for the SpCell of this cell group (PCell of MCG or PSCell of SCG).  |

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| *ReconfigurationWithSync* field descriptions |
| ***rach-ConfigDedicated***Random access configuration to be used for the reconfiguration with sync (e.g. handover). The UE performs the RA according to these parameters in the firstActiveUplinkBWP (see UplinkConfig). |
| ***smtc***The SSB periodicity/offset/duration configuration of target cell for NR PSCell change and intra-NR handover. The network sets the *periodicityAndOffset* to indicate the same periodicity as *ssb-periodicityServingCell* in *spCellConfigCommon*. For case of intra-NR handover, the *smtc* is based on the timing reference of source PCell. For case of NR PSCell change, it is based on the timing reference of source PSCell. If the field is absent, the UE uses the SMTC configured in the measObjectNR having the same SSB frequency and subcarrier spacing. |

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| *SCellConfig field descriptions* |
| ***smtc***The SSB periodicity/offset/duration configuration of target cell for NR SCell addition. The network sets the *periodicityAndOffset* to indicate the same periodicity as *ssb-periodicityServingCell* in *sCellConfigCommon*. The *smtc* is based on the timing of the SpCell of associated cell group. In case of inter-RAT handover to NR, the timing reference is the NR PCell. In case of intra-NR PCell change (standalone NR) or NR PSCell change (EN-DC), the timing reference is the source SpCell. If the field is absent, the UE uses the SMTC configured in the measObjectNR having the same SSB frequency and subcarrier spacing. |

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| *SpCellConfig field descriptions* |
| ***reconfigurationWithSync***Parameters for the synchronous reconfiguration to the target SpCell. |
| ***rlf-TimersAndConstants***Timers and constants for detecting and triggering cell-level radio link failure. For the SCG, rlf-TimersAndConstants can only be set to *setup* and is always included at SCG addition. |
| ***servCellIndex***Serving cell ID of a PSCell. The PCell of the Master Cell Group uses ID = 0. |

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| Conditional Presence | Explanation |
| *BWP-Reconfig* | The field is optionally present, Need N, if the BWPs are reconfigured or if serving cells are added or removed in the same message. Otherwise it is absent.  |
| *ReconfWithSync* | The field is mandatory present in case of SpCell change, PSCell addition, SI update for PSCell and security key change; otherwise it is optionally present, need M. The field is not present in *RRCResume* or *RRCSetup* messages. |
| *SCellAdd* | The field is mandatory present, need M, upon SCell addition; otherwise it is not present |
| *SCellAddMod* | The field is mandatory present upon SCell addition; otherwise it is optionally present, need M. |
| *SCG* | The field is mandatory present in an SpCellConfig for the PSCell. It is absent otherwise.  |