**3GPP TSG-RAN WG2 Meeting #124 R2-23xxxxx**

**Chicago, USA, Nov. 13th – 17th, 2023**

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **38.321** | **CR** |  | **rev** | - | **Current version:** | **17.6.0** |  |
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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:*** | Introduction of FR2 SCell enhancements | | | | | | | | | |
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| ***Source to WG:*** | Xiaomi, Apple | | | | | | | | | |
| ***Source to TSG:*** | R2 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_RRM\_enh3 | | | | |  | ***Date:*** | | | 2023-10-30 |
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| ***Category:*** | ***B*** |  | | | | | ***Release:*** | | | *Rel-18* |
|  | *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 can be 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-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
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| ***Reason for change:*** | | This CR is to introduce the FR2 unknown SCell activation enhancement as requested by RAN4 in their LS in R2-2304636 and R2-2307039.  In the enhancement of network triggering report (of L3 measurement result) during FR2 unknown SCell activation, when SCell activation command MAC CE is received and UE has valid L3 measurement results available but not reported on the unkown SCell, the RRC measurement report will be intiated which includes the SCell with beam level measreument result for that SCell.  RAN2 agreed to reuse the existing RRM measurement framework with a new repot type to support this enhancement.  In RAN2#123bis meeting, RAN2 made the following agreements on multiple SCell activation case:   * If the network activates multiple Scells within same MAC CE the UE may send only one measurement report. | | | | | | | | |
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| ***Summary of change:*** | | Add text in 5.9 to capture the interaction between MAC and RRC for FR2 SCell activation in order to support FR2 unknown SCell activation enhancement.   * If configured, MAC will send one SCell activation indication to RRC per MAC CE which is activating the SCell(s) | | | | | | | | |
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| ***Consequences if not approved:*** | | If the CR is not approved the FR2 unknown SCell activation enhancements will not be supported in NR. | | | | | | | | |
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| ***Clauses affected:*** | |  | | | | | | | | |
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|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | | **x** |  | Other core specifications | | | | TS 38.331 CR ... | | |
| ***affected:*** | |  | **x** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **x** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
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| ***This CR's revision history:*** | |  | | | | | | | | |

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## 5.9 Activation/Deactivation of SCells

If the MAC entity is configured with one or more SCells, the network may activate and deactivate the configured SCells. Upon configuration of an SCell, the SCell is deactivated unless the parameter *sCellState* is set to *activated* for the SCell by upper layers.

The configured SCell(s) is activated and deactivated by:

- receiving the SCell Activation/Deactivation MAC CE described in clause 6.1.3.10;

- receiving the Enhanced SCell Activation/Deactivation MAC CE described in clause 6.1.3.55;

- configuring *sCellDeactivationTimer* timer per configured SCell (except the SCell configured with PUCCH, if any): the associated SCell is deactivated upon its expiry;

- configuring *sCellState* per configured SCell: if configured, the associated SCell is activated upon SCell configuration;

- receiving *scg-State*: the SCells of SCG are deactivated.

The MAC entity shall for each configured SCell:

1> if an SCell is configured with *sCellState* set to *activated* upon SCell configuration, or an SCell Activation/Deactivation MAC CE or an Enhanced SCell Activation/Deactivation MAC CE is received activating the SCell:

2> if the SCell was deactivated prior to receiving this Enhanced SCell Activation/Deactivation MAC CE and a TRS is indicated for this SCell:

3> indicate to lower layers the information regarding the TRS.

2> if the SCell was deactivated prior to receiving this SCell Activation/Deactivation MAC CE or this Enhanced SCell Activation/Deactivation MAC CE; or

2> if the SCell is configured with *sCellState* set to *activated* upon SCell configuration:

3> if *firstActiveDownlinkBWP-Id* is not set to dormant BWP:

4> activate the SCell according to the timing defined in TS 38.213 [6] for MAC CE activation and according to the timing defined in TS 38.133 [11] for direct SCell activation; i.e. apply normal SCell operation including:

5> SRS transmissions on the SCell;

5> CSI reporting for the SCell;

5> PDCCH monitoring on the SCell;

5> PDCCH monitoring for the SCell;

5> PUCCH transmissions on the SCell, if configured.

3> else (i.e. *firstActiveDownlinkBWP-Id* is set to dormant BWP):

4> stop the *bwp-InactivityTimer* of this Serving Cell, if running.

3> activate the DL BWP and UL BWP indicated by *firstActiveDownlinkBWP-Id* and *firstActiveUplinkBWP-Id* respectively.

2> start or restart the *sCellDeactivationTimer* associated with the SCell according to the timing defined in TS 38.213 [6] for MAC CE activation and according to the timing defined in TS 38.133 [11] for direct SCell activation;

2> if the active DL BWP is not the dormant BWP:

3> (re-)initialize any suspended configured uplink grants of configured grant Type 1 associated with this SCell according to the stored configuration, if any, and to start in the symbol according to rules in clause 5.8.2;

3> trigger PHR according to clause 5.4.6.

1> else if an SCell Activation/Deactivation MAC CE or an Enhanced SCell Activation/Deactivation MAC CE is received deactivating the SCell; or

1> if the *sCellDeactivationTimer* associated with the activated SCell expires; or

1> if the SCG associated with the activated SCell is deactivated:

2> deactivate the SCell according to the timing defined in TS 38.213 [6];

2> stop the *sCellDeactivationTimer* associated with the SCell;

2> stop the *bwp-InactivityTimer* associated with the SCell;

2> deactivate any active BWP associated with the SCell;

2> clear any configured downlink assignment and any configured uplink grant Type 2 associated with the SCell respectively;

2> clear any PUSCH resource for semi-persistent CSI reporting associated with the SCell;

2> suspend any configured uplink grant Type 1 associated with the SCell;

2> flush all HARQ buffers associated with the SCell;

2> cancel, if any, triggered consistent LBT failure for the SCell.

1> if PDCCH on the activated SCell indicates an uplink grant or downlink assignment; or

1> if PDCCH on the Serving Cell scheduling the activated SCell indicates an uplink grant or a downlink assignment for the activated SCell; or

1> if a MAC PDU is transmitted in a configured uplink grant and LBT failure indication is not received from lower layers; or

1> if a MAC PDU is received in a configured downlink assignment:

2> restart the *sCellDeactivationTimer* associated with the SCell.

1> if the SCell is deactivated:

2> not transmit SRS on the SCell;

2> not report CSI for the SCell;

2> not transmit on UL-SCH on the SCell;

2> not transmit on RACH on the SCell;

2> not monitor the PDCCH on the SCell;

2> not monitor the PDCCH for the SCell;

2> not transmit PUCCH on the SCell.

When the indication for SCell activation is received from upper layers, the MAC entity shall:

1> if SCell Activation/Deactivation MAC CE or an Enhanced SCell Activation/Deactivation MAC CE is received activating the SCell(s):

2> if SCell(s) was deactivated prior to receiving this SCell Activation/Deactivation MAC CE or this Enhanced SCell Activation/Deactivation MAC CE:

3> indicate to upper layers SCell(s) activation indication and this SCell(s).

HARQ feedback for the MAC PDU containing SCell Activation/Deactivation MAC CE or Enhanced SCell Activation/Deactivation MAC CE shall not be impacted by PCell, PSCell and PUCCH SCell interruptions due to SCell activation/deactivation in TS 38.133 [11].

When SCell is deactivated, the ongoing Random Access procedure on the SCell, if any, is aborted.

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