**3GPP TSG- WG4 Meeting #116**

**, , –**

|  |
| --- |
| *CR-Form-v12.3* |
| **CHANGE REQUEST** |
|  |
|  |  | **CR** |  | **rev** | **1** | **Current version:** |  |  |
|  |
| *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)*.* |
|  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME | **x** | Radio Access Network |  | Core Network |  |

|  |
| --- |
|  |
| ***Title:***  |  |
|  |  |
| ***Source to WG:*** |  |
| ***Source to TSG:*** |  |
|  |  |
| ***Work item code:*** | LTE\_NR\_DC\_enh2-Core |  | ***Date:*** |  |
|  |  |  |  |  |
| ***Category:*** |  |  | ***Release:*** |  |
|  | *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-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19) Rel-20 (Release 20)* |
|  |  |
| ***Reason for change:*** | This CR provides a correction to the UE PSCell activation delay requirement. |
|  |  |
| ***Summary of change:*** | Update to section 8.17.2 to include SCG activation delay requirements for RACH-based PSCell activation when PSCell is configured in deactivated state, with bfd-and-RLM with no RS in RadioLinkMonirotingConfig but TCI\_ActivatedConfig.Further background in [1] |
|  |  |
| ***Consequences if not approved:*** | UE requirements do not cover a common case of PSCell configuration and activation leading to unclear UE requirement. |
|  |  |
| ***Clauses affected:*** | 8.17.2 |
|  |  |
|  | **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:*** | [1] R4-251xxxx, (LTE\_NR\_DC\_enh2-Core) Discussion on SCG activation, Nokia |
|  |  |
| ***This CR's revision history:*** |  |

<Change #1>

8.17 SCG Activation and Deactivation Delay

8.17.1 Introduction

This clause defines requirements for the delay within which the UE shall be able to activate one SCG and deactivate on SCG.

The requirements shall apply for NR-DC with an NR PCell, PSCell or SCell.

8.17.2 SCG Activation Delay Requirement

The requirements in this clause shall apply for the UE configured with one deactivated SCG in NR-DC and when PSCell in one SCG is being activated.

The delay within which the UE shall be able to activate the deactivated SCG depends upon the specified conditions.

Upon receiving SCG activation command in slot *n*, the UE shall be capable to transmit PRACH preamble or PUCCH or PUSCH towards PSCell no later than in slot $n+\frac{T\_{activation\\_time}}{NR slot length}$ ,

where:

 Tactivation\_time = TRRC\_delay + Tprocessing + Tsearch + T∆ + TIU + 2 ms

 TRRC\_delay is the RRC procedure delay as specified in TS 38.331 [2].

 Tprocessing is the SW processing time needed by UE, including RF warm up period. When PSCell is activated from deactivated state, if any PSCell parameter is modified, Tprocessing = 20ms. Otherwise, Tprocessing = 5 ms.

 Tsearch is the time for AGC settling and PSS/SSS detection.

 For RACH based PSCell activation, if the FR2 PSCell is known, Tsearch = 0 ms. If the FR2 PSCell is unknown and Es/Iot ≥ -2 dB, then Tsearch = 24\* Trs ms.

 For RACH-less based PSCell activation, if *bfd-and-RLM* is configured and TCI state is known, Tsearch = 0 ms. There are no requirements if TCI state is unknown.

 T∆ is time for fine time tracking and acquiring full timing information of the target PSCell. T∆ = 1\*Trs ms.

 TIU: When RACH based PSCell activation is configured, it is the delay uncertainty in acquiring the first available PRACH occasion in the PSCell. TIU is up to the summation of SSB to PRACH occasion association period and 10 ms. SSB to PRACH occasion associated period is defined in Table 8.1-1 of TS 38.213 [3].

 When RACH-less based PSCell activation is configured, it is the uncertainty in acquiring the first PUSCH transmission occasion [or SR on PUCCH].

 Trs is the SMTC periodicity of the PSCell if the UE has been provided with an SMTC configuration for the target cell in SCG activation command, otherwise Trs is the SMTC configured in the measObjectNR having the same SSB frequency and subcarrier spacing. If the UE is not provided SMTC configuration or measurement object on this frequency, the requirement in this clause is applied with Trs = 5 ms assuming the SSB transmission periodicity is 5 ms. There is no requirement if the SSB transmission periodicity is not 5.

In FR2, the PSCell is known if it has been meeting the following conditions:

- During the last 5 seconds before the reception of the SCG activation command:

- the UE has sent a valid measurement report for the PSCell being activated and

- One of the SSBs measured from the PSCell being activated remains detectable according to the cell identification conditions specified in clause 9.3.

- One of the SSBs measured from PSCell being activated also remains detectable during the PSCell activation delay Tactivation\_time according to the cell identification conditions specified in clause 9.3.

otherwise it is unknown.

If the UE is configured to perform *bfd-and-RLM* while the SCG is deactivated

- The TCI state is known if all the following conditions are met:

- During the period from receiving the tci-ActivatedConfig in the SCG configuration to the first transmission towards PSCell on PUCCH or PUSCH, or

- During the period from reception of the RRC command to deactivate the PScell to the first transmission towards PSCell on PUCCH or PUSCH:

- UE has not detected beam failure

- The side condition Ês/Iot ≥ -3dB is fulfilled for the RSs configured for *bfd-and-RLM* for the PSCell being activated

- The SSB measured remains detectable according to the cell identification conditions specified in clause 9.2.

- Otherwise, the TCI state is unknown.

The PCell interruption specified in clause 8.2 is allowed only during the RRC reconfiguration procedure [2].

8.17.3 SCG Deactivation Delay Requirement

The requirements in this clause shall apply for a UE which is configured with at least PCell and PSCell.

Upon receiving RRC-based SCG deactivation command in subframe *n*, the UE shall accomplish the deactivationactions specified in TS 38.331 [2] no later than in slot $n+\frac{T\_{RRC\\_delay}}{NR slot length}$:

where

 TRRC\_delay is the RRC procedure delay as specified in TS 38.331 [2].

The PCell interruption specified in clause 8.2 is allowed only during the RRC reconfiguration procedure [2].

<End Of Changes>