**3GPP TSG-RAN WG2 Meeting #113-bise *R2-21xxxxx***

**E-meeting, 12th – 20th April 2021**

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| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **37.340** | **CR** | **xx** | **rev** | **x** | **Current version:** | **16.5.0** |  |
|  | | | | | | | | |
| *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 |  | Radio Access Network | **x** | Core Network |  |

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|  | | | | | | | | | | |
| ***Title:*** | Introduction of SCG deactivation and activation-Option 2 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | ZTE Corporation, Sanechips | | | | | | | | | |
| ***Source to TSG:*** | 2 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | LTE\_NR\_DC\_enh2-Core | | | | |  | ***Date:*** | | | 2021-04-02 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | B |  | | | | | ***Release:*** | | | 7 |
|  | *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-15 (Release 15) Rel-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | Introduction of SCG deactivation and activation. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | Introduction of SCG deactivation and activation.  **Impact analysis**  Impacted 5G architecture options:  (NG)EN-DC, NR-DC  Impacted functionality:  SCG deactivation and activation | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | SCG deactivation and activation are not supported. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 5, 7.x, 10.x | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

Start of changes

# 5 Layer 1 related aspects

In MR-DC, two or more Component Carriers (CCs) may be aggregated over two cell groups. A UE may simultaneously receive or transmit on multiple CCs depending on its capabilities. The maximum number of configured CCs for a UE is 32 for DL and UL. Depending on UE's capabilities, up to 31 CCs can be configured for an E-UTRA cell group when the NR cell group is configured. For the NR cell group, the maximum number of configured CCs for a UE is 16 for DL and 16 for UL.

A gNB may configure the same Physical Cell ID (PCI) to more than one NR cell it serves. To avoid PCI confusion for MR-DC, NR PCIs should be allocated in a way that an NR cell is uniquely identifiable by a PCell identifier. This PCell is in the coverage area of an NR cell included in the MR-DC operation. In addition, NR PCIs should only be re-used in NR cells on the same SSB frequency sufficiently distant from each other. X2-C/Xn-C signalling supports disambiguation of NR PCIs by including the CGI of the PCell in respective X2AP/XnAP messages (e.g. SGNB ADDITION REQUEST/S-NODE ADDITION REQUEST) and by providing neighbour cell relationship via non-UE associated signaling (e.g. via the Xn Setup procedure or the NG-RAN node Configuration Update procedure).

NR-DC supports the case of no synchronization between PCell and PSCell. However, some UEs may support NR-DC only if slot-level synchronization between PCell and PSCell is ensured.

In NR-DC, power sharing is performed within frequency band with either semi-static or dynamic power sharing. With semi-static power sharing, the UE transmission power is split between MCG and SCG through configuration. With dynamic power sharing, when determining the UL transmission power of a SCG transmission, the UE takes into account transmission(s) on MCG overlapping with any part of the SCG transmission as specified in TS38.213[21].

In (NG)EN-DC and NR-DC, when SCG is deactivated as described in clause 10.x, the UE will not transmit PUSCH and SRS on SCG, and the UE is not required to monitor PDCCH on PSCell.

*Editor’s note: FFS whether other UL transmission on SCG is allowed when SCG is deactivated [Pending to RAN2].*

*Editor’s note: FFS TA handling when SCG is deactivated [Pending to RAN2].*

*Editor’s note: FFS whether/how RLM, BFD are supported when SCG is deactivated [Pending to RAN2].*

Next change

# 7 RRC related aspects

\*\*\* ignore non-related part \*\*\*

7.2 Measurements

If the measurement is configured to the UE in preparation for the Secondary Node Addition procedure described in clause 10.2, the Master node should configure the measurement to the UE.

In case of the intra-secondary node mobility described in clause 10.3, the SN should configure the measurement to the UE in coordination with the MN, if required.

The Secondary Node Change procedure described in clause 10.5 can be triggered by both the MN (only for inter-frequency secondary node change) and the SN. For secondary node changes triggered by the SN, the RRM measurement configuration is maintained by the SN which also processes the measurement reporting, without providing the measurement results to the MN.

Measurements can be configured independently by the MN and by the SN (intra-RAT measurements on serving and non-serving frequencies). The MN indicates the maximum number of frequency layers and measurement identities of intra-frequency and inter-frequency measurement that can be used in the SN to ensure that UE capabilities are not exceeded. In MR-DC, to assist MN to identify the measurement type, the SN indicates to the MN the list of SCG serving frequencies. In NR-DC, to assist SN to identify the measurement type, the MN indicates also to SN the list of MCG serving frequencies. The SN can also request the MN for new maximum values of the number of measurement identities that it can configure, and it is up to the MN whether to accommodate the SN request. If the SN receives from the MN a new value for the maximum number of measurement identities, is SN responsibility to ensure that its configured measurement identities to comply with the new limit.

If MN and SN both configure measurements on the same carrier frequency then the configurations need to be consistent (if the network wants to ensure these are considered as a single measurement layer). Each node (MN and SN) can configure independently a threshold for the SpCell quality. In (NG)EN-DC scenario, when the PCell quality is above the threshold configured by the MN, the UE is still required to perform inter-RAT measurements configured by the MN on the SN RAT (while it's not required to perform intra-RAT measurements); when the PSCell quality is above the threshold configured by the SN, the UE is not required to perform measurements configured by the SN. In NR-DC or NE-DC scenario, when the PCell quality is above the threshold configured by the MN, the UE is not required to perform measurements configured by the MN; when the PSCell quality is above the threshold configured by the SN, the UE is not required to perform measurements configured by the SN.

NOTE: The SN cannot renegotiate the number of frequency layers allocated by the MN in this version of the protocol.

In MR-DC, both the MN and the SN can configure CGI reporting. The MN can configure CGI reporting for intra-RAT and inter-RAT cells but the SN can only configure CGI reporting of intra-RAT cells. At any point in time, the UE can be configured with at most one CGI reporting configuration. For CGI reporting coordination, the SN sends the CGI measurement request and the embedded CGI reporting configuration to the MN. Optionally, the SN sends the unknown cell information to the MN. If there is no ongoing CGI reporting measurement on UE side, the MN forwards the SN CGI measurement configuration to UE. Otherwise the MN rejects the request by sending X2/Xn reject message. In case the SN indicates the unknown cell information, and the CGI information of the requested cell is already available in the MN, the MN can also reject the request, and sends the CGI information of the requested cell to the SN. The SN cannot configure the CGI measurement using the SRB3.

When SRB3 is not configured or the SCG is deactivated, reports for measurements configured by the SN are sent on SRB1. When SRB3 is configured and the SCG is not deactivated or suspended, reports for measurements configured by the SN are sent on SRB3.

Measurement results related to the target SN can be provided by MN to target SN at MN initiated SN change procedure. Measurement results of target SN can be forwarded from source SN to target SN via MN at SN initiated SN change procedure. Measurement results related to the target SN can be provided by source MN to target MN at Inter-MN handover with/without SN change procedure.

Measurement results according to measurement configuration from the MN are encoded according to SN RRC when they are provided by MN to SN in *SgNB Addition Request* message / *SN Addition Request* message. During SN initiated SN change procedure, measurement results according to measurement configuration from SN are encoded according to SN RRC when they are provided by MN to SN in *SgNB Addition Request* message / *SN Addition Request* message.

Per-UE or per-FR measurement gaps can be configured, depending on UE capability to support independent FR measurement and network preference. Per-UE gap applies to both FR1 (E-UTRA, UTRA-FDD and NR) and FR2 (NR) frequencies. For per-FR gap, two independent gap patterns (i.e. FR1 gap and FR2 gap) are configured for FR1 and FR2 respectively. The UE may also be configured with a per-UE gap sharing configuration (applying to per-UE gap) or with two separate gap sharing configurations (applying to FR1 and FR2 measurement gaps respectively) [8].

A measurement gap configuration is always provided:

- In EN-DC, NGEN-DC and NE-DC, for UEs configured with E-UTRA inter-frequency measurements as described in table 9.1.2-2 in TS 38.133 [8];

- In EN-DC and NGEN-DC, for UEs configured with UTRAN and GERAN measurements as described in table 9.1.2-2 in TS 38.133 [8];

- In NR-DC, for UEs configured with E-UTRAN measurements as described in table 9.1.2-3 in TS 38.133 [8];

- In NR-DC, NE-DC, for UEs configured with UTRAN measurements as described in table 9.4.6.3-1 and 9.4.6.3-2 in TS 38.133 [8];

- In MR-DC, for UEs that support either per-UE or per-FR gaps, when the conditions to measure SSB based inter-frequency measurement or SSB based intra-frequency measurement as described in clause 9.2.4 in TS 38.300 [3] are met;

If per-UE gap is used, the MN decides the gap pattern and the related gap sharing configuration. If per-FR gap is used, in EN-DC and NGEN-DC, the MN decides the FR1 gap pattern and the related gap sharing configuration for FR1, while the SN decides the FR2 gap pattern and the related gap sharing configuration for FR2; in NE-DC and NR-DC, the MN decides both the FR1 and FR2 gap patterns and the related gap sharing configurations.

In EN-DC and NGEN-DC, the measurement gap configuration from the MN to the UE indicates if the configuration from the MN is a per-UE gap or an FR1 gap configuration. The MN also indicates the configured per-UE or FR1 measurement gap pattern and the gap purpose (per-UE or per-FR1) to the SN. Measurement gap configuration assistance information can be exchanged between the MN and the SN. For the case of per-UE gap, the SN indicates to the MN the list of SN configured frequencies in FR1 and FR2 measured by the UE. For the per-FR gap case, the SN indicates to the MN the list of SN configured frequencies in FR1 measured by the UE and the MN indicates to the SN the list of MN configured frequencies in FR2 measured by the UE.

In NE-DC, the MN indicates the configured per-UE or FR1 measurement gap pattern to the SN. The SN can provide a gap request to the MN, without indicating any list of frequencies.

In NR-DC, the MN indicates the configured per-UE, FR1 or FR2 measurement gap pattern and the gap purpose to the SN. The SN can indicate to the MN the list of SN configured frequencies in FR1 and FR2 measured by the UE.

In (NG)EN-DC and NR-DC, SMTC can be used for PSCell addition/PSCell change to assist the UE in finding the SSB in the target PSCell. In case the SMTC of the target PSCell is provided by both MN and SN it is up to UE implementation which one to use.

CLI measurements can be configured for NR cells in all MR-DC options. In EN-DC and NGEN-DC, only the SN can configure CLI measurements. In NE-DC, only the MN can configure CLI measurements. In NR-DC, both the MN and the SN can configure CLI measurements, and the MN informs the SN about the maximum number of CLI measurement resources that can be configured by the SN to ensure that the total number of CLI measurement resources does not exceed the UE capabilities.

Next change

## 7.x Deactivated SCG

To enable reasonable UE battery consumption when MR-DC is configured, an activation/deactivation mechanism of SCG is supported. While the SCG is deactivated, there is no transmission via SCG RLC bearers. Only the NR SCG can be deactivated. While the SCG is deactivated, all SCG SCell(s) are in deactivated state. The network can configure the SCG as activated or deactivated upon PSCell addition, PSCell change, RRC Resume or handover. The network can trigger SCG RRC reconfiguration (e.g. PSCell change) while the SCG is deactivated.

*Editor’s Note: FFS whether SCell can be added/reconfigured/released when SCG is deactivated [Pending to RAN2].*

Both MN configured and SN configured RRM measurements are supported while the SCG is deactivated.

*Editor’s Note: FFS whether the network can configure the UE to stop certain configured RRM rmeasurements when SCG is deactivated [Pending to RAN2].*

SCG activation can be requested by the MN, by the SN and by the UE. SCG deactivation can be requested by the MN and by the SN.

*Editor’s Note: FFS whether the UE can trigger SCG deactivation, and whether the UE can provide some assistance information for deactivation of SCG [Pending to RAN2].*

Next change

# 10 Multi-Connectivity operation related aspects

\*\*\* ignore non-related part \*\*\*

## 10.x SCG (de)activation

### 10.x.1 EN-DC

The SCG (de)activation procedure is used to deactivate or activate a UE context at the SN. The SCG activation procedure may be initiated by the MN or by the SN or by the UE, and SCG deactivation procedure may be initiated by the MN or by the SN.

*Editor’s note: FFS whether the UE can initiate SCG deactivation.*

**SN addition with deactivated SCG**



**Figure 10.x.1-1: SN addition with deactivated SCG**

The MN uses this procedure to initiate SCG deactivation during Secondary Node Addition procedure. The SN may reject the request [FFS on how to reject it, pending to RAN3]. Figure 10.x.1-1 shows the signalling flow for SCG deactivation during Secondary Node Addition procedure.

1. The MN decides to deactivate the NR SCG when adding the SN.

2. The MN sends *SgNB Addition Request* message to the SN, and requests the SN to deactivate the SCG.

3. The SN responds with *SgNB Addition Request Acknowledge* message, informs the MN the addition of SN and the result of SCG deactivation.

4/5. The RRC Connection Reconfiguration procedure commences, informs the UE to add and deactivate the SCG.

*Editor’s note: FFS whether other lower layer signalling can be used to inform the UE about SCG deactivation [pending to RAN2].*

6. The MN informs the SN that the UE has completed the reconfiguration procedure successfully via *SgNB Reconfiguration Complete* message, including the SN RRC response message, if received from the UE.

*Editor’s note: FFS whether the UE must perform synchronisation towards the PSCell of the SN upon SCG deactivation during SN addition [pending to RAN2].*

**MN-initiated SN deactivation and activation**



**Figure 10.x.1-2: MN-initiated SCG deactivation and activation**

The MN uses this procedure to initiate SCG (de)activation during SN modification procedure. The SN may reject the request. Figure 10.x.1-1 shows the signalling flow for SCG deactivation and SCG activation during MN initiated SN modification procedure.

1. The SN notifies the MN about user data inactivity.

2. The MN decides to deactivate the NR SCG.

3. The MN sends *SgNB Modification Request* message to the SN, and requests the SN to deactivate the SCG.

4. The SN responds with *SgNB Modification Request Acknowledge* message, informs the MN the result of SCG deactivation.

5/6. If the SN accepts the SCG deactivation request, the RRC Connection Reconfiguration procedure commences, informs the UE to deactivate the SCG. If the SCG configuration is to be updated, the new configuration is provided in the RRC reconfiguration message

*Editor’s note: FFS whether other lower layer signalling can be used to inform the UE about SCG deactivation [pending to RAN2].*

7. The MN informs the SN that the UE has completed the reconfiguration procedure successfully via *SgNB Reconfiguration Complete* message, including the SN RRC response message, if received from the UE.

8~11. After a period of SCG deactivation, the MN decides to reactivate the SCG, it MN triggers the SN modification procedure, and requests the SN to reactivate the SCG. The MN may also trigger this procedure upon receiving the Activity Notification from the SN.

12. The SN responds with *SgNB Modification Request Acknowledge* message, informs the MN the result of SCG activation.

13/14. If the SN accepts the SCG activation request, the RRC Connection Reconfiguration procedure commences, informs the UE to reactivate the SCG. If the SCG configuration is to be updated, the new configuration is provided in the RRC reconfiguration message

*Editor’s note: FFS whether other lower layer signalling can be used to inform the UE about SCG activation [pending to RAN2].*

15. The MN informs the SN that the UE has completed the reconfiguration procedure successfully via *SgNB Reconfiguration Complete* message, including the SN RRC response message, if received from the UE.

*Editor’s note: FFS whether the UE must perform synchronisation towards the PSCell of the SN upon SCG activation [pending to RAN2].*

### 10.x.2 MR-DC with 5GC

For NGEN-DC and NR-DC, the SCG (de)activation procedure is used to deactivate or activate a UE context at the SN. The SCG activation procedure may be initiated by the MN or by the SN or by the UE, and SCG deactivation procedure may be initiated by the MN or by the SN.

*Editor’s note: FFS whether SN can initiate SCG deactivation.*

**SN addition with deactivated SCG**



**Figure 10.x.2-1: SN addition with deactivated SCG**

The MN uses this procedure to initiate SCG deactivation during SN addition procedure. The SN may reject the request [FFS on how to reject it, pending to RAN3]. Figure 10.x.1-1 shows the signalling flow for SCG deactivation during SN Addition procedure.

1. The MN decides to deactivate the NR SCG when adding the SN.

2. The MN sends *SN Addition Request* message to the SN, and requests the SN to deactivate the SCG.

3. The SN responds with *SN Addition Request Acknowledge* message, informs the MN the addition of SN and the result of SCG deactivation.

4/5. The RRC reconfiguration procedure commences, informs the UE to add and deactivate the SCG.

*Editor’s note: FFS whether other lower layer signalling can be used to inform the UE about SCG deactivation [pending to RAN2].*

*Editor’s note: FFS whether SCG deactivation can be indicated to the UE via the SCG [pending to RAN2].*

6. The MN informs the SN that the UE has completed the reconfiguration procedure successfully via *SN Reconfiguration Complete* message, including the SN RRC response message, if received from the UE.

*Editor’s note: FFS whether the UE must perform synchronisation towards the PSCell of the SN upon SCG deactivation during SN addition [pending to RAN2].*

**MN-initiated SN deactivation and activation**



**Figure 10.x.2-2: MN-initiated SCG deactivation and activation**

The MN uses this procedure to initiate SCG (de)activation during SN modification procedure. The SN may reject the request. Figure 10.x.1-1 shows the signalling flow for SCG deactivation and SCG activation during MN initiated SN modification procedure.

1. The SN notifies the MN about user data inactivity.

2. The MN decides to deactivate the NR SCG.

3. The MN sends *SN Modification Request* message to the SN, and requests the SN to deactivate the SCG.

4. The SN responds with *SgNB Modification Request Acknowledge* message, informs the MN the result of SCG deactivation.

5/6. If the SN accepts the SCG deactivation request, the RRC reconfiguration procedure commences, informs the UE to deactivate the SCG. If the SCG configuration is to be updated, the new configuration is provided in the RRC reconfiguration message

*Editor’s note: FFS whether other lower layer signalling can be used to inform the UE about SCG deactivation [pending to RAN2].*

7. The MN informs the SN that the UE has completed the reconfiguration procedure successfully via *SgNB Reconfiguration Complete* message, including the SN RRC response message, if received from the UE.

8~11. After a period of SCG deactivation, the MN decides to reactivate the SCG, it MN triggers the SN modification procedure, and requests the SN to reactivate the SCG. The MN may trigger this procedure upon receiving the Activity Notification from the SN.

12. The SN responds with *SgNB Modification Request Acknowledge* message, informs the MN the result of SCG activation.

13/14. If the SN accepts the SCG activation request, the RRC reconfiguration procedure commences, informs the UE to reactivate the SCG. If the SCG configuration is to be updated, the new configuration is provided in the RRC reconfiguration message

*Editor’s note: FFS whether other lower layer signalling can be used to inform the UE about SCG activation [pending to RAN2].*

15. The MN informs the SN that the UE has completed the reconfiguration procedure successfully via *SgNB Reconfiguration Complete* message, including the SN RRC response message, if received from the UE.

*Editor’s note: FFS whether the UE must perform synchronisation towards the PSCell of the SN upon SCG activation [pending to RAN2].*

# Reference

RAN2#113e—Agreements

Agreements

1a SCG activation can be requested by MN/SN/UE. FFS on how to accept/reject the procedure. FFS which signalling is used.

1b SCG deactivation can be requested by MN/SN. FFS whether UE can request deactivation. FFS on how to accept/reject the procedure. FFS which signalling is used.

3 RRC signalling is defined for the interaction between UE/MN and MN/SN in SCG activation/deactivation. FFS if lower-layer signalling is needed.

Agreements

1 Confirm that there is no PUSCH transmission on deactivated SCG. FFS if any other UL is allowed towards SCG.

2 Confirm that there is no PDCCH monitoring on PSCell of the deactivated SCG.

3 Confirm that there is no support of SCell dormancy for SCG SCells within a deactivated SCG.

**Agreements**

**1 NW-triggered SCG activation is indicated to the UE via the MCG.**

**9 NW-triggered SCG deactivation can be indicated to the UE via the MCG. FFS via SCG.**

**Agreements**

**2 The UE behaviour when the SCG activation is indicated to the UE via the MCG is one or more of the following options:**

**option 1) similar to reconfiguration with sync, i.e. the UE always initiates random access to the PSCell.**

**option 2) in certain cases:**

**- the UE does not initiate random access and monitors PDCCH on the PSCell (at the latest after the specified processing time).**

**- the SCG can schedule data transmission on the PDCCH**

**The UE decides not to perform random access (one option to be selected):**

**option 2a) if the TA timer is still running and possibly other conditions (FFS how TAT starts)**

**option 2b) based on the contents of the SCG activation indication**

**FFS for option 2a): in the SCG deactivated state, the UE monitors some DL beams (FFS if the same as BFD or RLM) and, if the UE sees that the beams are not good enough (details FFS), the UE either (one of the options to be selected):**

**- will perform random access upon reception of the next SCG activation indication from the MCG**

**- reports measurement results (details FFS) via the MCG and wait for reconfiguration.**

**7 Further discuss the format and content of the SCG activation indication from the MCG to the UE after there is more progress on solution 2.**

**5 Continue to discuss whether some kind of beam monitoring (similar to RLM/BFD) should be supported when the SCG is deactivated. FFS if this only applies to when TAT is running.**

**6 Clarify the meaning of "the UE maintains DL sync while the SCG is deactivated" (e.g. whether that is a consequence of doing RRM measurements of the PSCell or something more is needed).**

**8 Further discuss the comparison between**

**- define a mechanism for SCG activation upon UL data arrival on SCG bearers**

**- use split bearer with primary path on MCG (network sees UL data and can initiate activation)**

**11 It is FFS whether the UE can provide some assistance information for deactivation of the SCG (but there is no proposal so far).**

**FFS if in absence of PDCCH monitoring and UL transmission, and it is possible to assume that TA is valid when the TA timer has not expired.**

RAN2#112e—Agreements

**Agreements**

* The work will focus on a single deactivated SCG.
* FFS if SCG RRC reconfiguration can select the SCG activation state (activated/deactivated) at PSCell addition/change, RRC resume or HO.
* Continue RAN2 work with the assumption that when the SCG is deactivated, the UE does not monitor PDCCH on the PSCell. This assumption can be reconsidered if issues are found.
* As a baseline, MN-configured RRM measurement/reporting procedures do not depend on the SCG activation state (deactivated or activated). Further optimisations are not precluded.
* While the SCG is deactivated, PSCell mobility is supported. MN- and SN-configured measurements are supported for deactivated SCG.
* FFS1: Details on the performed measurements (e.g. all SN configured measurements or subset based on certain criteria, restrictions on inter-frequency/RAT)
* FFS2: Support for SCell addition/mobility
* FFS3: Reporting procedure
* FF4: PSCell mobility procedure
* RAN2 assumes that UE will not perform SRS transmission while the SCG is deactivated. This assumption can be reconsidered if issues are found.
* FFS if RACH is needed for SCG reactivation

**Agreements**

**1 SCG RRC reconfiguration can select the SCG activation state (activated/deactivated) at PSCell addition/change, RRC resume or HO.**

**Agreements**

**5: When the SCG is in deactivated state, the UE sends MeasurementReport messages for measurement results of SN-configured measurements embedded in the E-UTRA (if the MCG is EUTRA) or in the NR (if the MCG is NR) ULInformationTransferMRDC message via SRB1**

**6a: When the SCG is in deactivated state, the UE can receive an SCG RRCReconfiguration message embedded in an MCG RRC(Connection)Reconfiguration message on SRB1, like when the SCG is activated, and then the UE**

**- processes the SCG RRCReconfiguration message according to Rel-15/16 procedures (FFS if any restriction/difference)**

**- sends an SCG RRCReconfigurationComplete message in the MCG RRC(Connection)ReconfigurationComplete message according to Rel-15/16 procedures**

**6b: The SCG RRCReconfiguration can change the PSCell. FFS if the UE does RACH towards the target PSCell, in that case.**

**7a: While the SCG is deactivated:**

**- there can be SCG SCells in deactivated state**

**- there cannot be SCG SCells in activated state**

**- it is FFS whether there can be SCells in SCG dormant state.**

**7b: FFS whether SCell can be added/reconfigured/released while the SCG is deactivated or this can be done only at SCG activation or after SCG activation.**

**8a: It is FFS whether the network can configure the UE stop certain configured RRM measurements while the SCG is deactivated, or can release certain RRM measurements at SCG deactivation.**

**8b: Relaxation of RRM measurement requirements (as compared with non-DRX activated cell requirements) while the SCG is deactivated is FFS.**

RAN3#111e—Agreements

**Xn interface: MN initiated SN addition procedure:**

**Add a new IE in the SN addition request message to indicate at least the de-activation, while the detail code of this new IE is FFS.**

E.g., if the IE is set to 1 or not existed, the SCG is requested to activate. If the IE is set to 0, the SCG is requested to de-activate.

**Add a new IE in the SN addition response message to indicate at least the de-activation result, while the detail code of this new IE is FFS.**

E.g., if the IE is set to 0, the SCG is de-activated. If the IE is set to 1, the SCG is activated.

Open issue 1: During SN addition procedure, if the request of SCG (de)activation is rejected:

1) SN uses the response message including “SCG deactivation” result is sufficient;

2) or SN allows to use the reject message including new Cause value;

3) or SN allows to uses the reject message as legacy (without new Cause)

**MN initiated SN modification procedure**

**Add a new IE, e.g., “SCG activation requested” with two codepoints in the SN modification request message in order to indicate the SCG is requested to activate or de-activate.**

**Add a new IE, e.g., “SCG activation result” with two codepoints in the SN modification response message in order to indicate the SCG is activated or de-activated.**

Open issue 2: During SN modification procedure, if the request of SCG (de)activation is rejected:

1) SN uses the response message including “SCG (de)activation” is sufficient;

2) or SN allows to use the reject message including new Cause value;

3) or SN allows to use the reject message as legacy (without new Cause).

FFS: Whether X2/Xn Handover procedure needs to be enhanced to support of SCG (de)activation.

**F1 interface: UE context setup procedure**

**Add a new IE in the UE context setup request message to indicate at least the de-activation, while the detail code of this new IE is FFS.**

E.g., if the IE is set to 1 or not existed, the SCG is requested to activate. If the IE is set to 0, the SCG is requested to de-activate.

**Add a new IE in the UE context setup response message to indicate at least the de-activation result, while the detail code of this new IE is FFS.**

E.g., if the IE is set to 0, the SCG is de-activated. If the IE is set to 1, the SCG is activated.

Open issue 3: During UE context setup procedure, if the request of SCG (de)activation is rejected:

1) gNB-DU uses the response message including “SCG (de)activation” is sufficient;

2) or gNB-DU allows to use the reject message including new Cause value;

3) or gNB-DU allows to use the reject message as legacy (without new Cause).

F1 interface: UE Context Modification

**Add a new IE, e.g., “SCG activation requested” with two codepoints in the UE Context Modification request message in order to indicate the SCG is requested to activate or de-activate.**

**Add a new IE, e.g., “SCG activation result” with two codepoints in the UE Context Modification response message in order to indicate the SCG is activated or de-activated.**

Open issue 4: During UE Context Modification procedure, if the request of SCG (de)activation is rejected:

1) gNB-DU uses the response message including “SCG (de)activation” is sufficient;

2) or gNB-DU allows to use the reject message including new Cause value;

3) or gNB-DU allows to use the reject message as legacy (without new Cause).

Open issue 5: Whether E1AP shall be enhanced to support of SCG (de)activation, if included, the Bearer Context Setup procedure enhancement shall be aligned with X2/Xn/F1AP.

Open issue 6: Whether E1AP shall be enhanced to support of SCG (de)activation, if included, the Bearer Context Modification enhancement shall be aligned with X2/Xn/F1AP.

Open issue 7: Introduce a new Cause value for class1 procedure failure case, e.g., “Requested SCG state not available” is defined as “The action failed because the requested SCG state is not accepted.”

RAN3#110e—Agreements

**Agreements:**

**MN initiated SN modification procedure can be used for support of SCG (de)activation, and SN can decide whether to accept or reject SCG (de)activation request after receiving SN modification request message.**

**Activity Notification message sent from SN to MN, can be used for the MN to make final decision on SCG (de)activation. It is FFS whether no spec impacts or the Activity Notification message shall be enhanced, e.g., add a new SCG (de)activation suggestion IE.**

**MN can initiate SCG (de)activation during SN addition procedure, SN can decide whether to accept or reject SCG (de)activation request after receiving SN addition request message, FFS on how to reject it.**