3GPP TSG-RAN WG2 Meeting #118 Electronic R2-220xxxx

Elbonia, 09 – 20 May 2022

**Agenda item: 6.2.2**

**Source: Nokia (Rapporteur)**

**Title: [AT118-e][222][DCCA] MAC/PDCP corrections for DCCA enhancements (Nokia)**

**WID/SID: LTE\_NR\_DC\_enh2-Core - Release 17**

**Document for: Discussion and Decision**

# 1 Introduction

This document is the report of the following email discussion:

* [AT118-e][222][DCCA] MAC/PDCP corrections for DCCA enhancements (Nokia)

      Scope: Discuss MAC and PDCP corrections for R17 DCCA marked for this discussion. Also include any MAC/PDCP corrections based on online decisions.

Intended outcome: Agreeable CR in [R2-2206165](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_118-e\R2-2206165.zip).

Deadline: Deadline 3

Covering following papers:

By Email [222] (6+2+3)

*MAC corrections:*

[R2-2205248](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_118-e/Docs/R2-2205248.zip) 38.321 corrections on deactivated SCG Nokia, Nokia Shanghai Bell CR Rel-17 38.321 17.0.0 1264 - F LTE\_NR\_DC\_enh2-Core

[R2-2205928](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_118-e/Docs/R2-2205928.zip) Discussion on the Editor notes of SCG(de)activation in 38.321 Huawei, HiSilicon discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2205929](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_118-e/Docs/R2-2205929.zip) Correction on 38.321 Huawei, HiSilicon CR Rel-17 38.321 17.0.0 1291 - F LTE\_NR\_DC\_enh2-Core

[R2-2204956](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_118-e/Docs/R2-2204956.zip) MAC related issues upon SCG activation and deactivation Lenovo discussion Rel-17

[R2-2205058](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_118-e/Docs/R2-2205058.zip) Discussion on MAC remaining issue vivo discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2205057](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_118-e/Docs/R2-2205057.zip) MAC correction on eDCCA vivo CR Rel-17 38.321 17.0.0 1250 - F LTE\_NR\_DC\_enh2-Core

*(moved from 6.2.1)*

*UP aspects: Configured Grant*

[R2-2205275](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_118-e/Docs/R2-2205275.zip) Remaining issues for configured grant Type 1 in deactivated SCG Sharp discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2205276](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_118-e/Docs/R2-2205276.zip) CR on 38.321 for Remaining issues for configured grant Type 1 in deactivated SCG Sharp CR Rel-17 38.321 17.0.0 1268 - B LTE\_NR\_DC\_enh2-Core

*PDCP aspects:*

[R2-2205061](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_118-e/Docs/R2-2205061.zip) Discussion on PDCP duplication handling while SCG is deactivated vivo discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2205423](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_118-e/Docs/R2-2205423.zip) Discussion on PDCP Duplication for SCG Deactivation CATT discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2205260](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_118-e/Docs/R2-2205260.zip) Remaining issues on UL data arrival for SCG Fujitsu discussion Rel-17 LTE\_NR\_DC\_enh2-Core [R2-2202282](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_118-e/Docs/R2-2202282.zip)

# 2 Contact Points

Respondents to the email discussion are kindly asked to fill in the following table.

|  |  |  |
| --- | --- | --- |
| Company | Name | Email Address |
| Nokia (Rapporteur) | Jarkko Koskela | jarkko.t.koskela@nokia.com |
| Huawei, HiSilicon | David Lecompte | david.lecompte@huawei.com |
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| Fujitsu | Takako Sanda | Sanda.takako @ Fujitsu.com |
| LG | Hanul Lee | hanul.lee@lge.com |
| Spreadtrum | Min Xu | Ellen.Xu@unisoc.com |
| Futurewei | Jialin Zou | [Jialinzou88@yahoo.com](mailto:Jialinzou88@yahoo.com) |
| Qualcomm | Punyaslok Purkayastha | punyaslo@qti.qualcomm.com |

# 3 Discussion

## 3.1 MAC

### 3.1.1 MAC reset

In:

[R2-2205248](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_118-e\R2-2205248.zip) 38.321 corrections on deactivated SCG Nokia, Nokia Shanghai Bell CR Rel-17 38.321 17.0.0 1264 - F LTE\_NR\_DC\_enh2-Core

[R2-2205928](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_118-e\R2-2205928.zip) Discussion on the Editor notes of SCG(de)activation in 38.321 Huawei, HiSilicon discussion Rel-17 LTE\_NR\_DC\_enh2-Core

Basically these highlight that the differences of the UE behaviors between the full MAC reset and the partial MAC reset include the following behaviors in the partial MAC reset:

* Not stop the *beamFailureDetectionTimer* and *timeAlignmentTimers*
* resets BFI\_COUNTER associated with PSCell if BFD is not configured for SCG with *bfd-and-RLM*

There are many common behaviors in the full MAC reset and the partial MAC reset. So they propose to reuse existing MAC reset clause for SCG deactivation in order to reduce the specification work for SCG deactivation and further evolution.

On the other hand Vivo proposes in these papers

[R2-2205058](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_118-e\R2-2205058.zip) Discussion on MAC remaining issue vivo discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2205057](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_118-e\R2-2205057.zip) MAC correction on eDCCA vivo CR Rel-17 38.321 17.0.0 1250 - F LTE\_NR\_DC\_enh2-Core

*(moved from 6.2.1)*

Proposes to have new section for MAC reset

Question 1.1: Do you prefer accommodating deactivated SCG MAC reset actions in the existing (rel-15) MAC reset procedure or having separate MAC reset section for deactivated SCG?

|  |  |  |
| --- | --- | --- |
| Answers to Question 1.1 | | |
| Company | Yes/No | Technical Arguments |
| Nokia | Existing MAC reset | The differences of “new” MAC reset and existing is minor and it seems best to just modify existing MAC reset to ease also future developments e.g. if there is need to do updates to MAC reset it would need to be duplicated if we have two MAC resets |
| Huawei, HiSilicon | Existing MAC reset |  |
| Apple | Existing MAC reset | Our running CRs are already started this way… |
| vivo | New section | there still are lots of difference between existing MAC reset and MAC reset for SCG deactivation   * existing MAC reset section also include Sidelink part * different Bj initialization * BFR handling   Changing the existing MAC reset for SCG deactivation will make the specification complex. We propose to remove the Editor note: FFS if add new section as MAC reset for SCG deactivation or change the existing MAC reset section for SCG deactivation directly. |
| Sharp | Existing MAC reset | Same view as Nokia. |
| Ericsson | Both are fine, but slightly prefer existing MAC reset |  |
| OPPO | Existing MAC reset |  |
| Docomo | Existing MAC reset | We agree that we should relax workloads on potential updates of MAC reset in later releases. |
| Lenovo | Existing MAC reset |  |
| Fujitsu | Existing MAC reset | Does not need to have new section for deactivated SCG MAC reset |
| LG | Existing MAC reset |  |
| Spreadtrum | Existing MAC reset |  |
| Futurewei | Existing MAC reset |  |
| Qualcomm | Either can work, slightly prefer existing MAC reset |  |
|  |  |  |

1. Summary 1: TBD.
2. Proposal 1: TBD.

Then additionally in the

[R2-2205248](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_118-e\R2-2205248.zip) 38.321 corrections on deactivated SCG Nokia, Nokia Shanghai Bell CR Rel-17 38.321 17.0.0 1264 - F LTE\_NR\_DC\_enh2-Core

It is noted in reason for change that:

1. Section 5.12a: Timer handling in MAC reset is not clear in case BFD is not configured for the deactivated SCG. If BFD not configured, TATs need to be considered expired as in legacy to have correct UE behaviour.
2. Section 5.12a: BFI\_COUNTERs handling in MAC reset is not clear in case BFD is not configured for the deactivated SCG. Other BFI\_COUNTERs other than PSCell need to be accounted.

and corresponding summary of change:

1. Section 5.12a: In case BFD is not configured for the deactivated SCG all timers are stopped and TATs are considered expired. If BFD configured, all timers stopped except BFD timer and TATs.
2. Section 5.12a: In case BFD is not configured for the deactivated SCG, all BFI\_COUNTERs are reset. In case BFD is configured, other BFI\_COUNTERs are reset other than PSCell.

Question 1.2: Do you agree that In case BFD is not configured for the deactivated SCG all timers are stopped and TATs are considered expired. If BFD configured, all timers stopped except BFD timer and TATs?

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| --- | --- | --- |
| Answers to Question 1.2 | | |
| Company | Yes/No | Technical Arguments |
| Nokia | Yes (proponent) |  |
| Huawei, HiSilicon | See aside | Sorry but I am confused.  Basically:  - agree with the changes proposed for 1 (i.e. 8. in R2-2205248)  - for 2 (9 in R2-2205248): suggest that SCG deactivation is added in the triggers for SCell deactivation in 5.9, then nothing else is needed (BFI\_COUNTERs are handled by the normal SCell deactivation) |
| Apple | Same comments as Hauwei |  |
| vivo | Agree with huawei |  |
| Sharp | Same comments as Huawei |  |
| Ericsson | Yes | “timer stopped” and “timer expired” are two different conditions, and so it is better to align with the legacy wording.  The Rel-17 CR can be understood that the *timeAlignmentTimer* is stopped, but it should be considered as “expired” as in the legacy and so the change proposed by Nokia here is needed. |
| OPPO | Yes ~~but no strong view |  |
| Docomo | Yes | Related to Q4.1: If MAC CE is used to activate SCG, TA timer on PSCell has to be stopped and regarded as expired upon SCG dactivation (please see our comment on Q4.1). |
| Lenovo | Yes |  |
| Fujitsu |  | Agree with Huawei |
| LG | Yes | We agree to align with legacy wording. |
| Spreadtrum | Yes |  |
| Futurewei | Yes |  |
| Qualcomm | Agree with Huawei |  |
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1. Summary 1: TBD.
2. Proposal 1: TBD.

Question 1.3 Do you agree that in case BFD is not configured for the deactivated SCG, all BFI\_COUNTERs are reset. In case BFD is configured, other BFI\_COUNTERs are reset other than PSCell?

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| --- | --- | --- |
| Answers to Question 1.3 | | |
| Company | Yes/No | Technical Arguments |
| Nokia | Yes (proponent) |  |
| Huawei, HiSilicon | See previous |  |
| vivo | See above |  |
| Sharp | See Question 1.2 |  |
| Ericsson | Agree, but it has already been captured. | The Rel-17 CR did not explicitly capture that in case BFD is configured, BFI\_COUNTERs of other SCells are reset to zero in the MAC reset clause.  But, since SCells are explicitly de-activated, the intended behaviours are already captured as in the clause 5.17.  1> if the SCell is deactivated as specified in clause 5.9:  2> set *BFI\_COUNTER* to 0;  2> consider the Beam Failure Recovery procedure successfully completed and cancel all the triggered BFRs for this Serving Cell. |
| Docomo | Agree with Huawei |  |
| Lenovo | Yes |  |
| LG | Yes | For Huawei’s comment, we think that the procedure in S5.9 does not be applied to PSCell and BFI\_COUNTER of PSCell can be handled by S5.9. |
| Spreadtrum | Yes | Agree with Huawei’s previous comments. |
| Futurewei | Yes | Agree with the principle. Agree with Ericsson. Seems no spec change is needed. |
| Qualcomm | Agree | Agree with Ericsson’s comment. Also, please see response to Q 1.2. |
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1. Summary 1: TBD.
2. Proposal 1: TBD.

### 3.1.2 Bj handling

[R2-2205248](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_118-e\R2-2205248.zip) 38.321 corrections on deactivated SCG Nokia, Nokia Shanghai Bell CR Rel-17 38.321 17.0.0 1264 - F LTE\_NR\_DC\_enh2-Core

[R2-2205928](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_118-e\R2-2205928.zip) Discussion on the Editor notes of SCG(de)activation in 38.321 Huawei, HiSilicon discussion Rel-17 LTE\_NR\_DC\_enh2-Core

These two papers consider issue about the Bj value when the SCG is deactivated.

|  |
| --- |
| FFS how to capture "Upon SCG activation, Bj values are zero", i.e., add "initialize Bj for each logical channel associated to SCG to zero" When SCG is activated or say "Bj are initialized to zero and remain to zero while the SCG is deactivated". |

In our understanding, there is no difference for these two options. Therefore we can use the current description in the specification.

[R2-2204956](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_118-e\R2-2204956.zip) MAC related issues upon SCG activation and deactivation Lenovo discussion Rel-17

The paper notes that if UE keeps updating Bj value when SCG is in deactivated, it is purely a waste of processing and does not add any value, no matter if Bj value is initialized upon SCG deactivation or SCG reactivation.

If UE stops any operation about Bj value update when SCG is deactivated and stops tracking the elapsed time since last increment, there is no real difference if initializing Bj upon SCG deactivation or SCG reactivation, since Bj will start from 0 at the moment of SCG activation. Considering the Bj value is useless when SCG is deactivated, we slightly prefer to initialize the Bj value upon SCG deactivation.

Question 1.4: Do you prefer keeping existing Bj handling (and removing FFS) or modifying UE behaviour so that Bj value is initialized upon SCG deactivation, and UE will stop Bj value and relevant parameter update when SCG is deactivated?

|  |  |  |
| --- | --- | --- |
| Answers to Question 1.4 | | |
| Company | Yes/No | Technical Arguments |
| Nokia | Keeping existing handling i.e. just remove FFS | It would seem to be simplest not to impact Bj handling at this point – there seems to be nothing broken with current CR on Bj handling. |
| Huawei, HiSilicon | Keeping existing handling i.e. just remove FFS |  |
| Apple | Existing handling is fine with us as well. |  |
| vivo | Existing handling is fine with us as well. |  |
| Sharp | Keeping existing handling i.e. just remove FFS |  |
| Ericsson | Keep the existing text | Both options achieve the same outcome. But the existing text is simpler.  The alternative by R2-2204956 is not clear, e.g., what does it mean by the stop of T value update, the additional NOTE mandates a particular UE implementation while the legacy NOTE (just above) indicates that it is up-to UE implementation. |
| OPPO | Existing handling is fine with us as well. |  |
| Docomo | Keeping existing Bj handling |  |
| Lenovo |  | Fine to follow majority |
| Fujitsu | keeping existing Bj handling (and removing FFS) |  |
| LG | modifying UE behaviour | There is similar discussion in SDT. We think it is not a good idea to specify that Bj is initialized at SCG activation, because if we start to specify like this, we may need to specify all the events that UE initializes Bj.  For the common UE behavior, it may be better to specify as “Bj is not increased when there is no UL data”. |
| Spreadtrum | Keep existing handling |  |
| Futurewei | Keep existing handling |  |
| Qualcomm | Keeping the existing handling is fine |  |
|  |  |  |

1. Summary 1: TBD.
2. Proposal 1: TBD.

### 3.1.3 Various smaller corrections from R2-2205929

[R2-2205929](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_118-e\R2-2205929.zip) Correction on 38.321 Huawei, HiSilicon CR Rel-17 38.321 17.0.0 1291 - F LTE\_NR\_DC\_enh2-Core

CR has following reason for change:

1. RAN2 has agreed that SCells of the SCG is deactivated when the UE receives the SCG deactivation. But the condtions of SCells deactivation in the clause 5.9 Activation/Deactivation of SCells do not include this case.
2. RAN2 has agreed that the UE will not receive the DL-SCH on the deactivated SCG. The texts in the clause 5.29 Activation/Deactivation of SCG only describe that the UE does not monitor the PDCCH for the PSCell. Also the UE does not clear the SPS resources in the clause 5.12a MAC Reset for SCG deactivation. But in some cases, the network may configure the SPS resources for the PSCell. Therefore it is not clear whether the UE will receive the PDSCH on the PSCell according to the SPS resources.
3. The following wording for the SCG activation and SCG deactivation is not aligned.

1> if upper layers indicate that activation of the SCG:

….

1> else if upper layers indicate that the SCG is deactivated:

…

To the rapporteur changes proposed seem correct and improve the wording of the MAC specification.

**Question 1.5**: Do you agree on above CR changes?

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| --- | --- | --- |
| Answers to Question 1.5 | | |
| Company | Yes/No | Technical Arguments |
| Nokia | Yes | Changes seem to be valid – maybe not super critical but better to have as clear specification as possible |
| Huawei, HiSilicon | Yes (proponent) |  |
| Apple | No strong view, ok if majority agree. |  |
| vivo | No | It has been captured in 5.29  1> else if upper layers indicate that the SCG is deactivated:  2> deactivate all the SCells of the configured SCG according to clause 5.9; |
| Sharp | Yes |  |
| Ericsson | Yes | One comment: in clause 5.29, it should be “SCG is deactivated” instead of “PSCell is deactivated”. |
| OPPO | Yes |  |
| Docomo | Yes |  |
| Lenovo | Yes |  |
| Fujitsu | Yes |  |
| LG | No strong view |  |
| Spreadtrum | Yes |  |
| Futurewei | Yes |  |
| Qualcomm | Yes |  |
|  |  |  |

**Summary 1**: TBD.

**Proposal 1**: TBD.

### 3.1.4 Various corrections from R2-2205248

[R2-2205248](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_118-e\R2-2205248.zip) 38.321 corrections on deactivated SCG Nokia, Nokia Shanghai Bell CR Rel-17 38.321 17.0.0 1264 - F LTE\_NR\_DC\_enh2-Core

It has following different aspects where one has overstriked the topics discussed in other sections of this document or are related to TRS and should be likely discussed as part of other TRS discussions.

|  |  |
| --- | --- |
| ***Reason for change:*** | 1. ~~Section 5.9: UE does not select TRS for the cell but the TRS is indicated in the Enhanced SCell Activation/Deactivation MAC CE.~~ 2. Section 5.29: Random Access procedure initiation should be performed after the SCG is activated and the transmission over RACH is enabled. Furthermore, BFR case should be separated from other cases for RA initiation so that BFR MAC CE will be included in the MsgA/Msg3 of the RA procedure and NW can deduce that there was BFR while the SCG was deactivated. 3. Section 5.29: Each logical channel for the SCG MAC entity is associated with the SCG. 4. Section 5.29: In case NW does not provide any reconfiguration of the first active BWPs in deactivation/activation commands nor while the SCG is deactivated, the first active BWPs need to be activated by the UE itself upon SCG activation (same as with SCells). 5. Section 5.29: MAC reset is ordered by RRC layer so not needed to write it in MAC. 6. Section 5.29: PSCell cannot be cross-scheduled so “not monitor PDCCH for the PSCell” is not a valid case. 7. ~~Section 5.12: MAC reset for SCG deactivation can be implemented into the general MAC reset part as well. Same issues exists as the following issues in 5.12a.~~ 8. ~~Section 5.12a: Timer handling in MAC reset is not clear in case BFD is not configured for the deactivated SCG. If BFD not configured, TATs need to be considered expired as in legacy to have correct UE behaviour.~~ 9. ~~Section 5.12a: BFI\_COUNTERs handling in MAC reset is not clear in case BFD is not configured for the deactivated SCG. Other BFI\_COUNTERs other than PSCell need to be accounted.~~ 10. Section 5.15.1: The current description is ambiguous when does the BWP switching happen in case BFD is configured and first active BWPs are reconfigured. 11. Section 5.15.1: RA procedure should not be re-initiated in a target BWP when BWP switching is indicated by the RRC in the SCG deactivation command. 12. ~~Section 6.1.3.55: Enhanced SCell Activation/Deactivation MAC CE can have zero, one or more TRS fields, ie., not always “several”.~~ 13. ~~Section 6.1.3.55: TRS fields encoding after the Ci field is ambiguous.~~ |

Changes related to 5.29 (activation/deactivation of SCG) section:

1. Section 5.29: Random Access procedure initiation should is moved after the SCG activation. BFR case is separated from other cases for RA initiation so that BFR MAC CE will be included in the MsgA/Msg3 of the RA procedure and NW can deduce that there was BFR while the SCG was deactivated.
2. Section 5.29: Each logical channel for the SCG MAC entity is associated with the SCG hence the “associated with SCG” can be removed.
3. Section 5.29: The first active BWPs are activated by the UE itself upon SCG activation unless active already.
4. Section 5.29: MAC reset ordering is removed.
5. Section 5.29: Remove “not monitor PDCCH for the PSCell”.

Changes 3, 5 and 6 are more or less clarifications:

**Question 1.6**: Do you agree changes 3, 5, and 6?

|  |  |  |
| --- | --- | --- |
| Answers to Question 1.6 | | |
| Company | Yes/No | Technical Arguments |
| Nokia | Yes (proponent) | These will improve the wording of specification |
| Huawei, HiSilicon | 3 and 6 ok | In RRC, it was proposed to remove calling MAC reset since it is done in MAC. No preference but need to make it consistent. |
| Apple | Ok with 6 |  |
| vivo | No | For 2, it is totally wrong that the SCG can have activation behaviour e.g, send SRS PUCCH before RACH.  For 3, it is not essential to correct it.  For 4, it is totally wrong that the SCG can have activation behaviour e.g, send SRS PUCCH before RACH.  For 5, we prefer keep it and remove form RRC.  For 6, We check with our RAN1 colleague, For DSS, the PDCCH of Scell can also schedule Pscell. |
| Sharp | Yes | In current MAC and RRC spec, MAC reset is ordered by both MAC and RRC upon SCG deactivation and either one of them is enough. |
| Ericsson | Yes | Agree with 3 and 6, but disagree with 5.  For change 5, there is already a RIL to remove it from RRC. Removing from RRC is the better solution, since in RRC it is outside the check whether SCG was deactivated before, so if there is a reconfiguration while the SCG is deactivated, MAC will be reset again, unnecessary. So it is better to remove the MAC reset from RRC and keep it in MAC. |
| OPPO | Yes |  |
| Docomo | 3 and 6 ok | As for 5, we agree with Huawei’s comment. We prefer to remove from RRC, but not a stong view. |
| Lenovo | Yes for 3 and 6 | Agree with Huawei on 5. |
| LG | Yes | 3 and 6: Should be removed.  5: Agree to specify “reset MAC” in RRC. The only case that MAC performs self-reset is Deactivation of SCG, in all other cases, "reset MAC" is performed by RRC.  For the consistency of UE behaviour, "reset MAC" should be specified in RRC. |
| Spreadtrum | Yes for 3 and 6 | Agree with Huawei. |
| Futurewei | Yes for 6 | No strong opinion. Agree with majority decision. |
| Qualcomm | Fine with 3 and 6,  No for 5 |  |
|  |  |  |

**Summary 1**: TBD.

**Proposal 1**: TBD.

Change number 2 from R2-2205248 considers that Random Access procedure initiation should be performed after the SCG is activated and the transmission over RACH is enabled. Furthermore, BFR case should be separated from other cases for RA initiation so that BFR MAC CE will be included in the MsgA/Msg3 of the RA procedure and NW can deduce that there was BFR while the SCG was deactivated. Corresponding changes is described as below:

1. Section 5.29: Random Access procedure initiation should is moved after the SCG activation. BFR case is separated from other cases for RA initiation so that BFR MAC CE will be included in the MsgA/Msg3 of the RA procedure and NW can deduce that there was BFR while the SCG was deactivated

**Question 1.7**: Do you agree on change 2 i.e. Random Access procedure initiation should be moved after the SCG activation. BFR case is separated from other cases for RA initiation so that BFR MAC CE will be included in the MsgA/Msg3 of the RA procedure and NW can deduce that there was BFR while the SCG was deactivated?

|  |  |  |
| --- | --- | --- |
| Answers to Question 1.7 | | |
| Company | Yes/No | Technical Arguments |
| Nokia | Yes (proponent) | First part of proposal seems obvious that one should not start RACH prior it is enabled for the SCG. Second part is also important to allow NW to distinguish there was BFR while SCG was deactivated. |
| Huawei, HiSilicon | No | RAN2 did not agree to distinguish the BFR case and since the UE sends an SCG failure information the network knows.  With respect to triggering of RACH, including it here will make duplicate trigger if reconfigurationWithSync is included while TA timer is expired (which will be the case if the network wishes to provide dedicated RACH resources). |
| vivo | No | RAN2 did not agree to have it and also it is totally wrong that the SCG can have activation behaviour e.g, send SRS PUCCH before RACH. |
| Sharp | Partially Yes | Yes for “Random Access procedure initiation should is moved after the SCG activation”  No for “BFR case is separated from other cases for RA initiation” because if Random Access procedure initiation is performed after the SCG activation, Random Access for BFR is triggered upon SCG activation in the case beam failure is declared by MAC and UE can cancel Random Access triggered by Random Access procedure initiation. Therefore UE doesn’t need to distinguish with BFR case. |
| Ericsson | No | The execution order may be ok to change, but the original text covers indication to higher layer that RA is needed, not triggering RA as such, so not clear that there is any issue? Regarding the BFR MAC CE, it would be a functional change and we don’t find support for that from the agreements. It may not be needed as the UE already reported measurements in the SCG failure information procedure at BFD. |
| OPPO | Yes |  |
| Lenovo | Yes | Tend to agree that if BFD occurs, RACH due to BFR should be performed upon SCG activation. |
| LGE | Partially Yes | We are ok with the change of order.  However, we don’t agree for separate BFR case. RAN2 did not agree to use BFR-RA and we think SCG Failure information is enough. |
| Spreadtrum | No | The BFR case is disagree. The beam failure is already reported to the network when it is happens. |
| Futurewei | No | Consider to specify BFD related RA part in clause 5.17. Seems cleaner to maintain the BFD condition at one place. |
| Qualcomm | Partially Yes | Yes to “Random Access procedure initiation should is moved after the SCG activation”.  No to the second part, as network can distinguish that it is BFR while SCG was deactivated from SCGFailureInformation. |
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**Summary 1**: TBD.

**Proposal 1**: TBD.

**BWP handling related aspects:**

Change number 4 from R2-2205248 considers the case NW does not provide any reconfiguration of the first active BWPs in deactivation/activation commands nor while the SCG is deactivated, the first active BWPs need to be activated by the UE itself upon SCG activation (same as with SCells) and proposes following change:

1. Section 5.29: The first active BWPs are activated by the UE itself upon SCG activation unless active already.

And Change number 10 considers that current description is ambiguous when does the BWP switching happen in case BFD is configured and first active BWPs are reconfigured. Corresponding change is:

1. Section 5.15.1: Clarified the BWP switching for first active DL BWP happens in case BFD is configured for deactivated SCG.

And change number 11 considers that: RA procedure should not be re-initiated in a target BWP when BWP switching is indicated by the RRC in the SCG deactivation command. Corresponding change is:

1. Section 5.15.1: When BWP switching is indicated by the RRC in the SCG deactivation command, the RA initiation in the target BWP is not performed.

**Question 1.8**: Do you agree that BWP handling for deactivated SCG is not clear and should be clarified as proposed in changes 4, 10 and 11? Please provide also technical arguments regardless of whether you agree or not.

|  |  |  |
| --- | --- | --- |
| Answers to Question 1.8 | | |
| Company | Yes/No | Technical Arguments |
| Nokia | Yes (proponent) | BWP handling generally seems to be quite vague in current MAC it should be clarified. |
| Huawei, HiSilicon | No | 4: For the SpCell, the only text in 38.321 is in 5.15.1 and it refers to TS 38.331 where everything is captured in the field description.  For SCG activation/deactivation, descriptions are fully included there too, so there seems to be little point to add this in MAC. Moreover, the proposed description looks incomplete (e.g. not handling absence).  10: The first sentence that has proposed changes in 5.15.1 is unclear as proposed. In addition, the description of how firstDownlinkActiveBWP-Id and firstUplinkActiveBWP-Id are to be used is fully captured in their field descriptions in TS 38.331, so this clause should rather refer to there and not duplicate information. In addition, when the SCG is deactivated, the DL BWP used for RRM measurements, and for RLM/BFD if the UE is is configured to do that, is not called "active", which somehow contradicts with the text here.  11: The considered scenario is unclear. If the SCG is deactivated, RA can only be initiated if the UE receives an SCG activation command, how could a BWP switching command be received while a RA is ongoing? |
| Apple | No | We prefer not to bring in RRC BWP fields in MAC, as the functional description is already present in RRC 38.331. We are also not clear about 11. |
| vivo | No | We agree with Huawei. |
| Sharp | See our comments | 4: In our understanding, if the firstactiveBWP-id is not included in SCG activation command, UE activates previously activated BWP. Therefore the proposed change is not correct.  10: current description is enough  11: Agree |
| Ericsson | No | It seems quite complicated to capture all intended behaviours in MAC. Agree with above to leave those in RRC field description. Additionally, for change 4, it is unclear if the below is captured or not.  the BWP is de-activated when BFD is not configured  the BWP continues to be activated when BFD is configured. |
| OPPO | No |  |
| LG | No | Agree with Huawei. |
| Spreadtrum | No |  |
| Futurewei | No |  |
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**Summary 1**: TBD.

**Proposal 1**: TBD.

## 3.2 Configured grants handling

*UP aspects: Configured Grant*

[R2-2205275](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_118-e\R2-2205275.zip) Remaining issues for configured grant Type 1 in deactivated SCG Sharp discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2205276](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_118-e\R2-2205276.zip) CR on 38.321 for Remaining issues for configured grant Type 1 in deactivated SCG Sharp CR Rel-17 38.321 17.0.0 1268 - B LTE\_NR\_DC\_enh2-Core

In above papers it is proposed:

1. MAC entity associated to SCG shall suspend any configured uplink grant Type 1 associated with PSCell upon SCG deactivation.
2. MAC entity associated to SCG shall (re-)initialize any suspended configured uplink grant Type 1 associated with PSCell upon SCG activation.
3. MAC entity associated to SCG should not clear any suspended configured uplink grant Type 1 associated with the PSCell in deactivated SCG if TAT associated with PTAG expires.

Also in the:

[R2-2204956](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_118-e\R2-2204956.zip) MAC related issues upon SCG activation and deactivation Lenovo discussion Rel-17

In the legacy MAC specification, for SCell deactivation and activation:

* upon SCell deactivation, configured downlink assignment and configured uplink grant Type 2 will be cleared, and configured uplink grant Type 1 will be suspended.
* Upon SCell activation, suspended configured uplink grants Type 1 will be (re)initialized

In Lenovo’s understanding, similar UE behaviour for PSCell associated configured downlink assignment and configured uplink grant Type 1 and Type 2 can be defined for SCG deactivation and activation.

1. Upon SCG deactivation, UE clears any configured downlink assignment and any configured uplink grant Type 2 associated with the PSCell respectively.
2. Upon SCG activation, UE (re-)initialize any suspended configured uplink grants of configured grant Type 1 associated with this SCell according to the stored configuration, if any.

Probably in the second proposal above the “SCell” should be “PSCell” but anyway this seems to be very aligned with Sharp proposals as well. Thus question is:

**Question 2.1**: Would you support on handling of configured downlink assignments and configured uplink grant type 2 as proposed in the above papers i.e. cleared at PSCell deactivation? And suspending configured grant type 1 at deactivation of SCG and resuming at activation?

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| --- | --- | --- |
| Answers to Question 2.1 | | |
| Company | Yes/No | Technical Arguments |
| Nokia | Yes | This seems to be quite logical to follow similar handling as for deactivated SCells – We have some preference for Lenovo style TP |
| Huawei, HiSilicon | Yes | but no strong view |
| Apple | Agree |  |
| vivo | Yes | but no strong view |
| Sharp | Yes (proponent) | The difference of our TP and Lenovo’s TP is to specify the behaviour of suspended CG type 1 after TAT is expired and we think it should not be cleared. According to Lenovo’s TP, suspended CG type 1 would be cleared if TAT is expired while SCG is deactivated. We think it is unnecessary to clear any suspended CG type 1 in deactivated SCG. |
| Ericsson | Yes | Follow like SCell activation/de-activation |
| OPPO | Yes |  |
| Docomo | Yes |  |
| Lenovo | Yes | The simplest way is to follow what captured for SCell activation/deactivation. |
| Fujitsu | Yes |  |
| LG | Yes |  |
| Spreadtrum | Yes |  |
| Futurewei | Yes |  |
| Qualcomm | Yes |  |
|  |  |  |

**Summary 1**: TBD.

**Proposal 1**: TBD.

## 3.3 PDCP aspects

*PDCP duplication:*

[R2-2205061](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_118-e\R2-2205061.zip) Discussion on PDCP duplication handling while SCG is deactivated vivo discussion Rel-17 LTE\_NR\_DC\_enh2-Core

[R2-2205423](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_118-e\R2-2205423.zip) Discussion on PDCP Duplication for SCG Deactivation CATT discussion Rel-17 LTE\_NR\_DC\_enh2-Core

In RAN2#117e meeting, the following agreements were achieved:

* 8: The network ensures by explicit signalling (that exists in Rel-16 already) that, while the SCG is deactivated, for each UL split bearer:

a) primaryPath is set to an MCG RLC entity

b) ul-DataSplitThreshold is set to infinity

c) PDCP duplication is only allowed to be activated for MCG RLC entities (i.e. not for both MCG and SCG RLC entities)

* Can discuss what (if anything) we capture on these in Stage-2, RRC and/or PDCP/MAC

In RAN2#117e meeting, it was agreed that PDCP duplication is only allowed to be activated for MCG RLC entities, i.e. not for both MCG and SCG RLC entities. In release 16 spec, two kinds of PDCP duplication are supported; one is DC based duplication involving both MCG and SCG RLC entities, another is CA based PDCP duplication involving RLC entities on a given cell group (MCG or SCG). When SCG is deactivated, no data is to be transmitted on RLC entities at SCG side for UL split bearer; the DC duplication for SCG RLC entities and CA duplication on SCG should be deactivated. But the CA based PDCP duplication on MCG could be activated to transmit data at MCG side.

**Question 3.1**: Do you think something is required to be captured in RAN2 specifications on PDCP duplication? If yes, please provide preference how to capture (e.g. by reference to one of the proposals or providing alternative approach)?

|  |  |  |
| --- | --- | --- |
| Answers to Question 3.1 | | |
| Company | Yes/No | Technical Arguments |
| Nokia | Yes | We think a generic statement in stage 2 is enough to capture the above RAN2#117e agreement, since all the necessary stage-3 IEs to achieve it are in place.  Regarding DRBs with survival-time-state support, we think they should not be configured with an RLC entity mapped to a deactivated SCG, so no need to explicitly address such a case in stage 3. |
| Huawei, HiSilicon | Possible but | Comments on R2-2205061: 1) changes to PDCP: this is a new feature to deactivate PDCP duplication on SRB by RRC signalling. This can be debated but a new UE capability would be needed.  2) changes to MAC: this is a modification of UE behaviour upon reception of PDCP duplication MAC CE, this seems unnecessary since the network can send the MAC CE not to activate cross CG duplication when the SCG is deactivated  [vivo] the logic is the same as the SCell deactivation operation, in which the NW can send SCell A/D MAC CE to deactivate the SCG SCell.  3) changes to RRC:  a) duplicationState: the change is unclear ("set to false" while this is a list of BOOLEAN) and if it means false for all entities, it contradicts with RAN2 agreement because it forbids intra-CG duplication, which is still allowed  [vivo] thanks for pointing out this. “set to false” means for the RLC entities associated with deactivated SCG.  b) pdcp-Duplication: the change seems to mandate the field to be present when the SCG is deactivated, for no clear reason.  [vivo] the proposed change just means when the field is present for SRB and DRB, the network sets this field to false when the SCG is deactivated.  Comments on R2-2205423:  - According to RAN2 agreement, CA duplication in SCG should be allowed, while this proposal does not allow it.  - Duplication is controlled also by MAC CE, which is anyway not covered by this.  Alternatives:  Put in stage 2 or in PDCP something like: "**The network always keeps the SCG activated while PDCP duplication is activated for MCG and for SCG RLC entities associated with a PDCP transmitting entity**."  Optionally, duplicate the node in MAC (for PDCP duplication MAC CE) and in RRC (in pdcp-Duplication and in duplicationState, or at IE level to avoid duplication). |
| Apple | Stage-2 is probably enough.. as this is NW configuration and we assume NWs config as agreed. |  |
| vivo | Yes | Since stage 3 statement have been captured for “primaryPath” and “ul-DataSplitThreshold” for split bearer, that’s why we propose the stage 3 CR for PDCP duplication. If the majority want to capture it in stage 2, maybe all these aspects can be removed to stage 2 spec.  We also provide some responses to HW. |
| Sharp | Yes | Stage-2 is enough, if needed. |
| Ericsson | Okay to capture in stage-2 | Firstly, we are not supportive to capture these network implementations in stage-3 specs. The way it is captured in the proposed TPs breaks previous agreed handling of PDCP duplication for SRBs (i.e. duplication cannot be deactivated for SRBs). No updates are needed to procedural text, assuming network sets the fields correctly.  Therefore, we agree with Nokia that a generic sentence in stage-2 would be sufficient to capture the network behaviour. |
| OPPO | Yes | Stage 2 is fine, but stage 3 is also better. |
| Docomo | Yes | We agree that stage-2 statement is enough. |
| Lenovo | Yes | Stage 2 is enough. |
| LG | Maybe Yes | Basic principle of SRB PDCP duplication is that when the PDCP duplication is configured, it is always activated. This principle should be kept in any case.  We think the only thing need to be captured in the spec is that “when the SCG is deactivated, the SCG RLC entities are deactivated”. Then, the PDCP will not submit the duplicated PDUs to SCG RLC entities because SCG RLC entities are not activated. Please see below.  38.323  When submitting a PDCP PDU to lower layer, the transmitting PDCP entity shall:  - if the transmitting PDCP entity is associated with one RLC entity:  - submit the PDCP PDU to the associated RLC entity;  - else, if the transmitting PDCP entity is associated with at least two RLC entities:  - if the PDCP duplication is activated for the RB:  - if the PDCP PDU is a PDCP Data PDU:  - duplicate the PDCP Data PDU and submit the PDCP Data PDU to the associated RLC entities **activated** for PDCP duplication;  - else:  - submit the PDCP Control PDU to the primary RLC entity;  The text “when the SCG is deactivated, the SCG RLC entities are deactivated” may be captured in RRC or 38.300. |
| Fujitsu | Yes | Captured in Stage-2 specification would be reasonable |
| Spreadtrum | Yes | Can be captured in stage-2 specification. |
| Futurewei | Yes | Consider the RAN2 agreement is an important requirement, it can be captured in stage 2 spec. |
| Qualcomm | Stage-2 maybe fine | Capturing in Stage-2 maybe fine, as the attempts above to capture these in Stage-3 seem to be not completely correct and somewhat difficult to converge on. |
|  |  |  |

**Summary 2**: TBD.

**Proposal 2**: TBD.

[R2-2205260](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_118-e\R2-2205260.zip) Remaining issues on UL data arrival for SCG Fujitsu discussion Rel-17 LTE\_NR\_DC\_enh2-Core [R2-2202282](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_118-e\R2-2202282.zip)

In the latest RRC specification, an UE behaviour of UL data arrival is specified as follows.

**5.7.4.2 Initiation**

**…**

**1> if the SCG is deactivated, and,**

**1> the UE has uplink data to send for an SCG RLC entity while the UE previously did not have any uplink data to send for any SCG RLC entity:**

**2> initiate transmission of the *UEAssistanceInformation* message in accordance with 5.7.4.3 to indicate that the UE has uplink data to send for a DRB whose *DRB-Identity* is not included in any *RLC-BearerConfig* in the *CellGroupConfig* associated with the MCG.**

However, it has not been discussed/decided how RRC of the UE would be informed of UL data arrival. Fujitsu proposes that PDCP should indicate UL data arrival to RRC while the SCG is deactivated.

**Proposal 1: While the SCG is deactivated, when a PDCP entity of an SCG bearer receives PDCP SDU from upper layers, the PDCP entity indicates the UL data arrival to RRC.**

**Proposal 2: RAN2 discusses changes for PDCP specification based on the TP in an Annex of this document.**

**Question 3.2:** Would you agree that we are missing a indication from PDCP about UL data arrival to RRC? And if yes, do you have any comments on the TP

|  |  |  |
| --- | --- | --- |
| Answers to Question 3.2 | | |
| Company | Yes/No | Technical Arguments |
| Nokia | Yes but TP is not correct | The accompanying TP needs to be discussed further because in its present form it:  - does not implement Proposal 1 (the indication is given only at submission to lower layer, not at reception from upper layers);  - does not account for SCG bearers with CA duplication i.e. with more than one RLC entities. |
| Huawei, HiSilicon | No | The only usefulness of capturing inter-layer interaction in requirements is to make it unambiguous when it is triggered. Here, the proposed TP for 38.323 would add much. Could be added to a 38.323 CR if any, but should not do a CR just for that. |
| Apple | We are neutral on the change. This is something that UEs will anyway implement to handle this scenario. |  |
| vivo | No | If it is required, it should be upper layer, it is not PDCP. Today date also can trigger RRC resume, what is description about inter-layer interaction? |
| Sharp | Yes | Further discussion is needed e.g. more than one RLC entities case as Nokia points out. |
| Ericsson | Yes but the TP needs to be revised | Similar to Nokia’s comments, the changes should be done together with the below condition (where the PDCP SDU is received from upper layers):  For a PDCP SDU received from upper layers, the transmitting PDCP entity shall: |
| OPPO | No |  |
| Docomo | No strong view | We are ok if UE implementation can handle. |
| Lenovo | No |  |
| LG | No | This is UE internal interaction, and should not be captured in the specification. If this is captured, lots of CRs will be submitted in a future to clarify UE internal interaction. |
| FUJITSU (proponent) | Yes | Something needs to be captured otherwise specifications will become ambiguous. How to capture could be discussed later. |
| Spreadtrum | No strong view | Not sure for whether the inter-layer interaction shall be captured in the specification. |
| Futurewei | No |  |
| Qualcomm | Yes | We think it is better to have this specified for clarity. If we have this agreement, the TP should be corrected. |
|  |  |  |

**Summary 2**: TBD.

**Proposal 2**: TBD.

## 3.4 MAC CE for SCG activation

[R2-2204956](file:///C:\Users\terhentt\Documents\Tdocs\RAN2\RAN2_118-e\R2-2204956.zip) MAC related issues upon SCG activation and deactivation Lenovo discussion Rel-17

in the above paper it is proposed to introduce MAC CE for SCG activation in very simple manner.

Rapporteur wants to note that in earlier discussion there has been quite discussions that whenever SCG is deactivated/activated it is assumed that network will do proper configuration of parameters simultaneously e.g. if it wants some specific measurements, DRB changed etc.. would not be possible with simple MAC CE addition. But likely there could be some scenarios where MAC CE can be used without changing some parameters on RRC level. But likely this would require quite lengthy discussions.

**Question 4.1**: Do you consider it is still possible and beneficial to introduce MAC CE for SCG activation/deactivation and if yes how it should be done?

|  |  |  |
| --- | --- | --- |
| Answers to Question 4.1 | | |
| Company | Yes/No | Technical Arguments |
| Nokia | No | The change is very simple but it seems very challenging to have MAC CE actually working in real life scenario as there is no possibility to reconfigure any parameters at (de)activation. It seems safest not to do at this point. |
| Huawei, HiSilicon | Yes |  |
| Apple | No | Not critical, and also creates new changes for En-DC for LTE MAC. (in addition to defining in NR). |
| vivo | Yes |  |
| Sharp | No | Same view as Nokia |
| Ericsson | No |  |
| OPPO | Yes | It is benefit to introduce L2 command for SCG A/D. if it always relays on RRC, it will reduce the benefit of SCG deactivation function. |
| Docomo | See comments | No strong view, but we find a relation with Q1.2; if MAC CE triggers SCG activation described in 38.321 v17.0.0 5.29 as it is, when TA timer on PSCell is still running, UE will try SCG activation without RACH even if BFD on deactivated SCG is not configured, that does not align the agreement in the previous meeting. But this issue can be resolved by regarding TA timer on PSCell as expired upon SCG deactivation when BFD is not configured. |
| Lenovo | Yes |  |
| LG | No | The MAC CE is useful if the state is changed dynamically. However, we think SCG activation/deactivation would not change dynamically, and thus we don’t see the benefit of using MAC CE.  In addition, even if the MAC CE format is simple, it does not mean that everything is simple. RAN2 has to discuss UE behavior at reception of MAC CE and define related procedures. |
| Fujitsu | No | It’s too late to revisit this topic |
| Spreadtrum | No |  |
| Futurewei | Yes |  |
| Qualcomm | Yes |  |

**Summary 2**: TBD.

**Proposal 2**: TBD.

# 4 Conclusion

TBD.