3GPP TSG-RAN WG2 #119-bis-e R2-22xxxxx

Electronic meeting, 10th – 19th October 2022

Agenda Item: 6.2.2

Source: Ericsson

Title: Summary of [AT119bis-e][205][DCCA] BWP handling for deactivated SCG

Document for: Discussion, Decision

# 1 Introduction

This paper addresses the following email discussion:

* [AT119bis-e][205][DCCA] BWP handling for deactivated SCG (Ericsson)

      Scope: Discuss the CRs to BWP handling under AI 6.2.2 and provide agreeable CR for endorsement.

 Intended outcome: Report in in [R2-2210818](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_119bis-e/Docs/R2-2210818.zip) and CR in [R2-2210819](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_119bis-e/Docs/R2-2210819.zip).

 Deadline: Deadline 2 (report) / Deadline 3 (CRs)

According to the schedule:

* In the first phase, please provide your input to the discussion document before the DL2 deadline for comments: W1 Friday Oct 14th 0700 UTC
* In the second phase, please provide comments on the CRs before the DL3 deadline for comments:
W2 Tuesday Oct 18th 1200 UTC

A final round with Final deadline W2 W2 Tuesday Oct 18th 2300 UTC to agree the CR.

# 2 Contact information

|  |  |  |
| --- | --- | --- |
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# 3 Discussion

According to the agenda, the following four CRs are to be discussed in this email discussion:

By Email [205] (4)

[R2-2210127](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_119bis-e/Docs/R2-2210127.zip) BWP handling for deactivated SCG Nokia, Nokia Shanghai Bell CR Rel-17 38.321 17.2.0 1425 - F LTE\_NR\_DC\_enh2-Core

[R2-2210672](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_119bis-e/Docs/R2-2210672.zip) Correction on BWP handling for deactivated SCG Ericsson CR Rel-17 38.321 17.2.0 1439 - F LTE\_NR\_DC\_enh2-Core

* Revised in [R2-2210819](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_119bis-e/Docs/R2-2210819.zip)

[R2-2210455](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_119bis-e/Docs/R2-2210455.zip) Correction on the BWP for PSCell in deactivation SCG and the timing requirement for SCG activation CATT CR Rel-17 38.321 17.2.0 1432 - F LTE\_NR\_DC\_enh2-Core

[R2-2210456](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_119bis-e/Docs/R2-2210456.zip) Correction on ASN.1 for sCellState and scg-State CATT CR Rel-17 38.331 17.2.0 3546 - F LTE\_NR\_DC\_enh2-Core

These CRs address three different topics, which are discussed separately in the following three subsections.

## 3.1 BWP handling for PSCell of deactivated SCG

This topic was discussed based on discussion papers in the Monday online session and the following was agreed:

* 1 The BWP handling for PSCell of deactivated SCG is corrected in MAC specification 5.15.1. Exact wording discussed in offline [205] (Ericsson) (DL 2).

There were three CRs submitted in AI 6.2.2 proposing different variants of how the correction in 5.15.1 could be performed.

1. **The Nokia CR in** [**R2-2210127**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_119bis-e/Docs/R2-2210127.zip) **proposes the following formulation:**

For each activated Serving Cell configured with a BWP, the MAC entity shall:

1> if a BWP is activated and the active DL BWP for the Serving Cell is not the dormant BWP; and

1> if the Serving Cell is PSCell and the SCG is activated (as specified in clause 5.29) or if the Serving Cell is not the PSCell:

2> transmit on UL-SCH on the BWP;

[…]

1. **The Ericsson CR in** **[R2-2210672](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_119bis-e/Docs/R2-2210672.zip) proposes the following changes:**

For each activated Serving Cell configured with a BWP, the MAC entity shall:

1> if a BWP is activated and the active DL BWP for the Serving Cell is not the dormant BWP and the Serving Cell is not the PSCell of deactivated SCG:

2> transmit on UL-SCH on the BWP;

[…]

1> if a BWP is deactivated or the Serving Cell is PSCell of deactivated SCG:

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

[…]

1. **The CATT CR in** [**R2-2210455**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_119bis-e/Docs/R2-2210455.zip) **proposes the following changes:**

For each activated Serving Cell which is not a Serving Cell configured in deactivation SCG configured with a BWP, the MAC entity shall:

1> if a BWP is activated and the active DL BWP for the Serving Cell is not the dormant BWP:

2> transmit on UL-SCH on the BWP;

[…]

As can be seen, the CRs represent three different ways of solving the ambiguity between 5.15.1 and 5.29. Some observations:

* 1 and 3 only exclude the case of deactivated SCG from the BWP actions, but do not specify the BWP actions when Serving Cell is the PSCell of deactivated SCG. This is only covered in 2, thus 1 and 3 can be considered incomplete.
* There is no need to cover SCells of deactivated SCG, since these are explicitly deactivated upon SCG deactivation in 5.29. Therefore it is already clear that the BWP actions in 5.15.1 do not apply, and the only case to cover is when the Serving Cell is the PSCell of deactivated SCG.
* The formulation in 1 is somewhat complex, since the ‘and’ statement forces it to cover also cases where Serving Cell is not the PSCell.
* There is a typo in 3; it should say “deactivated SCG” instead of “deactivation SCG”.

Considering these observations, 2 seems a good basis for the CR to correct 5.15.1 of TS 38.321, which also seemed to be the consensus in the Monday online discussion, but we would like to first confirm this view with other companies.

**Q1: Do companies agree that the CR in R2-2210672 is a good basis to correct the BWP handling for PSCell of deactivated SCG in 5.15.1 of TS 38.321?**

|  |  |  |
| --- | --- | --- |
| Company | Yes / No | Detailed comments |
| ZTE | Yes |  |
| vivo | Yes |  |
| Intel | Yes |  |
| MediaTek | Yes |  |
| Nokia | Yes | Looks reasonable to us |
| CATT | Please see comments | According to the pre-condition as highlighted in yellow, **only for the activated serving cell, the procedure on BWP handling will be performed**. However, the state for PSCell in deactivated SCG and the state for PSCell in activated SCG is not clear. Thus, for PSCell in deactivated SCG, we are not sure whether proposed procedure on BWP handling in the CR (R2-2210672) can be performed, i.e., the correction “or the Serving Cell is PSCell of deactivated SCG” may be senseless, since it will never be performed.

|  |
| --- |
| For each activated Serving Cell configured with a BWP, the MAC entity shall:1> if a BWP is activated and the active DL BWP for the Serving Cell is not the dormant BWP and the Serving Cell is not the PSCell of deactivated SCG:2> transmit on UL-SCH on the BWP;[…]1> if a BWP is deactivated or the Serving Cell is PSCell of deactivated SCG:2> not transmit on UL-SCH on the BWP;[…] |

LGE: In TS 38.321, it is clearly specified that SpCell is always activated. Thus, we think PSCell is always activated even if SCG is deactivated. |
| LGE | Yes |  |
| Spreadtrum | Yes |  |
| Sharp | Yes | * The BWP actions when Serving Cell is the PSCell of deactivated SCG should be specified to align with the following statement in clause 5 of 38.213 V17.3.0:The UE is not required to monitor the downlink radio link quality in DL BWPs other than the active DL BWP on the PSCell.
* By comparing 1 and 2, the condition to exclude the case of deactivated SCG seems to be the same, but the wording of 2 is simpler than that of 1. As Rapporteur comments, whether the ‘and’ statement covers ‘if the Serving Cell is not the PSCell’ or not is unclear.
* The wording of 3 is also unclear because there might be a mis-leading that a BWP is configured in deactivated SCG.
 |

The second question is to collect comments and wording suggestions on the CR. For this purpose, I have uploaded a draft version of the CR (R2-2210819) to be agreed in the discussion folder ([link](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_119bis-e/Inbox/Drafts/%5BOffline-205%5D%5BDCCA%5D%20BWP%20handling%20for%20deactivated%20SCG%20%28Ericsson%29)). I used the CR in [**R2-2210672**](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_119bis-e/Docs/R2-2210672.zip) as basis, with some minor updates on the cover page. The CR is now based to the latest 17.2.0 version of 38.321. Please add your comments and wording suggestions in the fields below. I can then update the draft, depending on how the discussion goes.

**Q2: Any comments or wording suggestions on the draft CR R2-2210819 to correct the BWP handling for PSCell of deactivated SCG in 5.15.1 of TS 38.321?**

|  |  |
| --- | --- |
| Company | Detailed comments |
| ZTE | We are fine with the changes on text procedure, but we think the “inter-operability” analysis in cover sheet may be not accurate. If the UE is not implemented according to the CR and the network is, the UE behaviour is unclear because of the conflicts in MAC spec, this may cause mismatch between the UE and the network. So instead of saying no impact, we suggest to update the cover sheet to make the CR worthwhile.  |
| vivo | No strong view on the inter-operability analysis. It seems that the reasonable UE behaviour at both UE and NW side is clear. The change of the CR is just to make the spec more precise and consistent.  |
| Nokia | We are fine to improve cover sheet but we are also fine as it is now. |
| CATT | Please see our comments above, and the following **example** changes are suggested:For each activated Serving Cell which is not a Serving Cell configured in deactivation SCG, or the PSCell in deactivated SCG, or the PSCell in activated SCG, and configured with a BWP, the MAC entity shall:1> if a BWP is activated and the active DL BWP for the Serving Cell is not the dormant BWP and the Serving Cell is not the PSCell of deactivated SCG:2> transmit on UL-SCH on the BWP;[…]1> if a BWP is deactivated or the Serving Cell is PSCell of deactivated SCG:2> not transmit on UL-SCH on the BWP;[…] |
| LGE | We are OK with the suggested CR. |
| Spreadtrum | No strong view as the CR is a clarification. The behaviour of UE and network are clear before this clarification. |
| Sharp | We think the current CR can imply that there is an active DL BWP on the PSCell of deactivated SCG, but to align with the current PHY spec as commented on Q1, we suggest to clarify the following text procedure based on the BWP actions when Serving Cell is the PSCell of deactivated SCG covered by the CR in R2-2210672:1> if a BWP is deactivated or the Serving Cell is PSCell of deactivated SCG:2> not transmit on UL-SCH on the BWP;2> not transmit on RACH on the BWP;2> not monitor the PDCCH on the BWP;2> not transmit PUCCH on the BWP;2> not report CSI for the BWP;2> not transmit SRS on the BWP;2> not receive DL-SCH on the BWP;2> clear any configured downlink assignment and configured uplink grant of configured grant Type 2 on the BWP;2> suspend any configured uplink grant of configured grant Type 1 on the inactive BWP;2> if the Serving Cell is PSCell of deactivated SCG:3> if *firstActiveDownlinkBWP-Id* is included in the *spCellConfigDedicated*:4> consider the DL BWP indicated by *firstActiveDownlinkBWP-Id* as an active DL BWP on the PSCell.3> else:4> consider the previously activated DL BWP as an active DL BWP on the PSCell.We are also fine with the CATT’s suggestion above on Q2 with modification of typo as a baseline. |

## 3.2 SCG activation timing

The CR in [R2-2210455](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_119bis-e/Docs/R2-2210455.zip) also included a second change to the direct SCG activation timing in 5.29. It is proposed to refer to 38.133 for SCG activation regardless of whether SCG activation involves random access or not.

**Q3: Do companies agree the second change in CR R2-2210455, affecting section 5.29 of TS 38.321?**

|  |  |  |
| --- | --- | --- |
| Company | Yes / No | Detailed comments |
| ZTE | Prefer Yes | It is true that TS 38.133 specifies UE requirements for both RACH-based and RACH-less SCG activation, so the current specification seems incomplete if it is only referring to TS 38.133 for a specific case. In addition, the terminology “direct SCG activation” is actually not used in TS38.133, so it seems fine to not highlight it and just referring to TS38.133 for all the cases.  |
| vivo | Yes |  |
| Intel | Yes |  |
| MediaTek | Yes |  |
| Nokia | Yes (but not critical) | Seems correct but also existing text does not seem wrong. But the proposed text seems more clear so we are fine to have it |
| CATT | Yes as proponent | The change proposed in the CR is to cover the missing case of SCG activation with RACH, so as to align with the RAN4 spec. The reason is that after checking, we find that the SCG activation timing requirements defined in TS38.133, covers both cases on SCG activation with or without RACH.  |
| LGE | Yes | If "else" is not removed, in MAC point of view, there is no SCG activation procedure in the case that BFI\_COUNTER is larger than BFI max count for PSCell, i.e., MAC entity indicates that RA procedure is needed for SCG activation and no SCG activation procedure in MAC. Thus, we think "else" should be removed.In addition, in our view, it is unclear what "direct SCG activation" means. The terminology is not used anywhere in RAN1 spec and RAN2 spec. We think "direct SCG activation" should be removed. |
| Spreadtrum | Yes |  |
| Sharp | Yes |  |

## 3.3 Correction on ASN.1 for *sCellState* and *scg-State*

The CR in [R2-221045](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_119bis-e/Docs/R2-2210456.zip)6 includes two changes for TS 38.331. The first change is to clarify in 5.3.5.5.9 that direct SCG SCell activation is supported also when *reconfigurationWithSync* is not included for the SCG, if the SCG SCell was configured before. This is based on agreement from RAN2#118e:

* **Support direct SCG SCell activation (i.e. including sCellState), even if reconfigurationWithSync is not included for the SCG and the SCG SCell was configured before SCG activation**

There is also an update to the field condition of *sCellState* in secondaryCellGroup in 6.3.2.

**Q4: Do companies agree the first change in CR R2-2210456, affecting sections 5.3.5.5.9 and 6.3.2 of TS 38.331?**

|  |  |  |
| --- | --- | --- |
| Company | Yes / No | Detailed comments |
| ZTE | See comments | We have some sympathy with the proposal. But we have two questions for clarification:1. Based on current TS38.133, RAN4 only specifies UE requirements for SCell addition, handover and RRCResume, there is no UE requirement defined for this scenario, so will this change impact RAN4?

1. Regarding the change on condition, when resuming an RRC connection, the network can also activate the SCG SCell, even if in this case, SCG *reconfigurationWithSync* is required. To us, the last sentence is unclear whether it covers “RRC resume” or not?

- in the *secondaryCellGroup* at:- SCG activation from deactivation SCG,- SCell addition, if the SCG is not indicated as deactivated,- reconfiguration with sync, if the SCG is not indicated as deactivated. |
| vivo | See comments | 1. For direct SCell activation when activating an deactivated SCG, RAN4 discussed the requirement but did not have consensus on this (R4-2210605). So, not sure to ask RAN4 to discuss it again.
2. The CR indicated that NR SCG reconfigurationWithSync is mandatory present in secondaryCellGroup in RRCResume, so the RRC resume case is removed. So, we can understand the intention, but we think better not to change the original sentence and the original sentence is helpful to understand the scenarios for direct SCell activation.
 |
| Intel | yes with comments | Intention is ok, but the following wording needs to be updated, e.g., “which is used to active SCG from deactivation SCG:” |
| MediaTek | See comments | We have some sympathy on the intention.For change in procedure text, would it be easier to remove “including *reconfigurationWithSync*” so that it covers all cases? (as below)“or received in an *RRCReconfiguration* message ~~including~~ *~~reconfigurationWithSync~~* embedded in an *RRCResume* message or embedded in an *RRCReconfiguration* message or embedded in an E-UTRA *RRCConnectionReconfiguration* message or embedded in an E-UTRA *RRCConnectionResume* message“ |
| Nokia | yes with comment | Cover sheet has a problem – it talks about sCellState – it should be scg-State. Anyway intention is ok and we are optn with enhancements from other companies. |
| CATT | Yes as proponent | The intention is to capture the missing agreement made by RAN2 into the spec. As for other issues proposed by companies, some replies are given in the following:***On ZTE and vivo’s comment, i.e., whether there are RAN4 impacts:***At least for now, it is true that there is not applicable requirement for scell activation upon SCG activation. As for vivo’s comment, we are checking with our RAN4 colleague whether the discussion (R2-2210605) is intended for the case of SCG SCell activation upon SCG activation or not. We can discuss later offline once I get their response. ***On other comments regarding the RRCResume:***For the change on condition, as we mentioned in CR coversheet, based on the consideration that the NR SCG *reconfigurationWithSync* is mandatory in *secondaryCellGroup* in *RRCResume* message and *RRCConnectionResume* message, i.e. the RRC resume case could be covered by reconfiguration with sync case. so, we do not include the RRC resume case in the list of cases for t *secondaryCellGroup*. We can also accept to explicitly include RRC resume case here for better understanding for the scenarios if it is majority view.***On the comments regarding the changes proposed by MTK:***The current wording is clearer. And if we simply delete the “including *reconfigurationWithSync*”, it is indeed confusion, i.e., it seems that the spec can support the network configures the *sCellState* in any SCG *RRCReconfiguration* message even when the RRCReconfiguraiton message is only to modify some configurations, like measConfig. But we can also accept the proposed change if majority agree in the phase 2 (CR reviewing).  |
| LGE | See comments | 1. We agree with the intention but also further online discussion seems to be needed due to RAN4 impact said by ZTE. Maybe the agreement may need to be implemented to spec after RAN4 discussion.

If RAN2 agree with the 1st change, some sentence needs to be updated in the field description: the 1st (SCG activation from deactivation SCG) seems to cover the 3rd (reconfiguration with sync, if the SCG is not indicated as deactivated) |
| Spreadtrum | Yes | Agree the intension and OK with the changes. |
| Sharp | See comments | The intention seems to be fine, but1. For the requirements for direct SCell activation, RAN2 should coordinate with RAN4 whether the CR is agreeable or not.
2. For the conditional presence of *SCellAddSync*, we have the same view as vivo and the text procedure can be modified as below:The field is optionally present, Need N, in the *masterCellGroup* in case of SCell addition, reconfiguration with sync, and resuming an RRC connection, and, in the *secondaryCellGroup* in case of SCG activation from deactivation SCG, SCell addition if the SCG is not indicated as deactivated, and reconfiguration with sync if the SCG is not indicated as deactivated. It is absent otherwise.
 |

The second change is in 6.2.2 to change the need code for *scg-State* field in *RRCReconfiguration* and *RRCResume* messages from Need N to Need S.

**Q5: Do companies agree the second change in CR R2-2210456, affecting section 6.2.2 of TS 38.331?**

|  |  |  |
| --- | --- | --- |
| Company | Yes / No | Detailed comments |
| ZTE | Prefer No | The intention of “Need N” means the UE does not need to store the field, the UE just takes immediate action when receives (or not receives) the field. However, we tend to agree that there is possibility of mis-interpretation on “if absence, no action”.In general, we think the current text procedure and field description are clear about the intended UE behaviour, so we can live with current spec (no change). But we can also accept the change if majority want.  |
| vivo | No strong view | The procedure text gives the clear UE behaviour, however it is inconsistent with the current usage definition of Need N.  |
| Intel | Yes | ok with the second change |
| MediaTek | No | The conditional code “Need N” implies one-shot action. It does not imply that “No action on absence”. So, we think current definition is fine.  |
| Nokia | No | Same view as MTK |
| CATT | Yes as proponent | Whether the IE scg-state is present or not has impacts on UE behaviour as specified in the field description, e.g., if UE is the deactivated SCG state, and the RRC reconfiguration/resume message is received with the IE scg-state is absent, UE need to perform SCG activation procedure, instead of no action.

|  |
| --- |
| *No action* (one-shot configuration that is not maintained)Used for (configuration) fields that are not stored and whose presence causes a one-time action by the UE. Upon receiving message with the field absent, the UE takes no action. |

 |
| LGE | Yes | This needs to be changed to "Need S" as the UE behaviour upon absence of the field is specified in the procedural text.  |
| Spreadtrum | Yes | The description of Need M about “field absent, no action” is not suitable for the IE “*scg-State*”. |
| Sharp | No strong view | We have some sympathy on MTK’s view and CATT’s view, and we can go with the majority view. |

# 4 Conclusion

Based on the discussion in the previous sections we propose the following:

[Proposal 1 To be updated.](#_Toc509923397)