3GPP TSG-RAN WG2 Meeting #111 Electronic DRAFT R2-2008138

Elbonia, 17 – 28 August 2020

**Agenda item: 6.8.1**

**Source: Nokia, Nokia Shanghai Bell**

**Title: [AT111-e][208][DCCA] Corrections SCell dormancy (Nokia)**

**WID/SID: LTE\_NR\_DC\_CA\_enh-Core - Release 16**

**Document for: Discussion and Decision**

# 1 Introduction

This is the following email discussion (Please note that scope says 38.331 CRs but when checked with chairman also 38.321 CRs were intended to be covered):

* **[AT111-e][208][DCCA] Corrections SCell dormancy (Nokia)**

Scope:

* Collect companies’ feedback for the 38.331 CRs under 6.8.1, 6.8.2 and 6.8.3.1 marked for this email discussion
* Proponents may provide updated versions (if needed) under this email discussion (Tdoc numbers can be requested for this purpose from the session chair or the RAN2 secretary)

        Intended outcome:

* Discussion summary in [R2-2008138](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_111-e/Docs/R2-2008138.zip) (by email rapporteur).
* Session chair proposes agreements after the summary report is available

        Deadline for providing comments, for rapporteur inputs, conclusions and CR finalization:

* Deadline for companies' feedback:  Thursday 2020-08-20 09:00 UTC
* Deadline for rapporteur's summary (in [R2-2008138](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_111-e/Docs/R2-2008138.zip)):  Friday 2020-08-21 09:00 UTC
* Deadline for CR finalization (for agreed CRs): Thursday 2020-08-27 07:00 UTC

For simple CRs only a table has been added where people can reflect their opinion on CR. Reason for the CR can be found in the cover sheet. but if there are some unclarities regarding reasoning then additional questions may be added for companies to comment.

# 2 Configuration of sCellState

These papers are related to configuration of sCellState:

[R2-2007006](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_111-e/Docs/R2-2007006.zip) Correction on the Configuration of sCellState for 38.331 CATT CR Rel-16 38.331 16.1.0 1768 - F LTE\_NR\_DC\_CA\_enh-Core

*(moved from 6.8.3.3)*

[R2-2007007](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_111-e/Docs/R2-2007007.zip) Correction on the Configuration of sCellState for 36.331 CATT CR Rel-16 36.331 16.1.1 4366 - F LTE\_NR\_DC\_CA\_enh-Core

*(moved from 6.8.3.3)*

 *(moved from 6.8.3.3)*

So reason for change for above papers is written as (from 36.331 CR – 38.331 is analogous removing corresponding part from 38.331):

However, in NR the SCell state can be configured upon PSCell change. Therefore, for NE-DC, the SCell state should also be configured upon PSCell change, which algins with NR-DC and (NG)EN-DC.

Furthermore, the E-UTRA *sCellToAddModList* can’t be configured in NR *RRCResume* message directly. It should be the *sCellToAddModListSCG* included in an E-UTRA *RRCConnectionReconfiguration* message which embedded in *NR RRCResume* message

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| Company | Agree / Not Agree | Comments |
| Nokia | Agree (partly) | If a CR is agreed both should be agreed and coversheet should indicate dependency. Anyway purpose seems to be correct and we are OK to agree this with corrections to cover sheet. |
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# 3 Stage 2 changes regarding Dormant BWP

By Email [208]

[R2-2007691](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_111-e/Docs/R2-2007691.zip) Correction on UL behaviours in the dormant BWP Huawei, HiSilicon CR Rel-16 38.300 16.2.0 0286 - F LTE\_NR\_DC\_CA\_enh-Core

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| Company | Agree / Not Agree | Comments |
| Nokia | Agree  | This seems to be adding valid points to stage-2 currently missing |
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# 3 MAC changes regarding Dormant BWP

By Email [208]

*SCell reactivation:*

[R2-2006679](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_111-e/Docs/R2-2006679.zip) Discussion on Scell reactivation in a dormant and non-dormant BWP SHARP Corporation discussion Rel-16 LTE\_NR\_DC\_CA\_enh-Core

 *(moved from 6.8.1)*

In this paper it was identified that in case of reactivation of dormant SCell following observations were raised with nice coloring for the corresponding part in the MAC specification:

**Observation 1**: when dormant BWP is introduced, a reactivated Scell could be either in a dormant BWP or in a non-dormant BWP before a Scell A/D MAC CE is received.

In 5.9 Activation/Deactivation of SCells[1], it is described as below

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| [...]The MAC entity shall for each configured SCell:1> if an SCell is configured with *sCellState* set to *activated* upon SCell configuration, or an SCell Activation/Deactivation MAC CE is received activating the SCell:2> if *firstActiveDownlinkBWP-Id* is not set to dormant BWP:3> activate the SCell according to the timing defined in TS 38.213 [6]; i.e. apply normal SCell operation including:4> SRS transmissions on the SCell;4> CSI reporting for the SCell;4> PDCCH monitoring on the SCell;4> PDCCH monitoring for the SCell;4> PUCCH transmissions on the SCell, if configured.3> if the SCell was deactivated prior to receiving this SCell Activation/Deactivation MAC CE, or an SCell is configured with *sCellState* set to *activated* upon SCell configuration:4> activate the DL BWP and UL BWP indicated by *firstActiveDownlinkBWP-Id* and *firstActiveUplinkBWP-Id* respectively;3> start or restart the sCellDeactivationTimer associated with the SCell according to the timing defined in TS 38.213 [6];3> (re-)initialize any suspended configured uplink grants of configured grant Type 1 associated with this SCell according to the stored configuration, if any, and to start in the symbol according to rules in clause 5.8.2;3> trigger PHR according to clause 5.4.6.2> else if *firstActiveDownlinkBWP-Id* is set to dormant BWP:3> stop the *bwp-InactivityTimer* of this Serving Cell, if running.3> if the SCell was deactivated prior to receiving this SCell Activation/Deactivation MAC CE, or if an SCell is configured with *sCellState* set to *activated* upon SCell configuration:4> activate the DL BWP and UL BWP indicated by *firstActiveDownlinkBWP-Id* and *firstActiveUplinkBWP-Id* respectively;3> start or restart the *sCellDeactivationTimer* associated with the SCell according to the timing defined in TS 38.213 [6].[...] |

Since the C-fields in a Scell A/D MAC CE indicate the activation/deactivation status of the SCell, when a Scell A/D MAC CE is received, if the corresponding C field is set as 1, it could be considered as activating the Scell, no matter the Scell is in activated or deactivated state. So the grey part also applies to an activated Scell. Considering current spec, for an activated Scell working in a dormant BWP, when it is reactivated, the *firstActiveDownlinkBWP-ID* has to be checked (highlighted in red). If *firstActiveDownlinkBWP-Id* is not set to dormant BWP, normal SCell operation in a non-dormant BWP will be applied, such as PDCCH monitoring, CSI reporting and etc.

However, the reactivated Scell is activated and working in a dormant BWP before the Scell A/D MAC CE is received. The green part referring to BWP switching is not applied. So it is not clear which non-dormant BWP the UE has to switch to for the Scell to apply the required normal operation in non-dormant BWP.

**Observation 2**: When a Scell A/D MAC CE is received, a reactivated Scell in a dormant BWP has to perform required PDCCH monitoring, CSI reporting and etc. It is not clear how it is done in current spec.

And for an activated Scell working in a non-dormant BWP, the *bwp-InactivityTimer* could be running if the Active BWP is not the *initialDownlinkBWP/ defaultDownlinkBWP-Id.* However, when it is reactivated*,* if *firstActiveDownlinkBWP-Id* is set to dormant BWP, UE has to stop the *bwp-InactivityTimer* of this SCell (in blue part). And since the reactivated Scell is activated prior to receiving of Scell A/D MAC CE, the yellow part referring to BWP switching is not applicable.

The *bwp-InactivityTimer* could be stopped when active DL BWP is a dormant BWP or within a RA procedure. Conversely, it is not clear if the timer is stopped, any BWP switching is implicitly required. Furthermore, if BWP switch is implicitly required by stopping the timer, it should be clarified which BWP will be switched to.

**Observation 3**: When a Scell A/D MAC CE is received, a reactivated Scell in a non-dormant BWP has to stop the *bwp-InactivityTimer* if running. However, it is not clear if a consequent BWP switching is implicitly required or not, and if yes, which BWP should be switched to.

Please provide you company view on observations and need to correct them:

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| Company | Agree / Not Agree | Comments |
| Nokia | Agree (at least mostly) | In fact there seems to be small problem on reactivating SCells after we introduced dormancy. It seems that if the Dormant SCell is reactivated ,1. In case dormant BWP was active for the SCell upon re-activation, SCell should not apply normal operation including SRS transmission, CSI reporting, PDCCH monitoring, etc. but should still follow what is specified for the dormant BWP in clause 5.15.1. Furthermore, configured uplink grants should not be (re-)initialized in this case and neither PHR to be triggered.
2. firstActiveDownlinkBWP-Id and firstActiveUplinkBWP-Id are activated when SCell was previously active no matter if the firstActiveDownlinkBWP-Id is dormant BWP or not.
3. *sCellDeactivationTimer* is restarted no matter if the *firstActiveDownlinkBWP-Id* is set to dormant BWP or not

This kind of behaviour was not intention of RAN2 but just unfortunate result of the CR. We think this shall be corrected.  |
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# 3.1 MAC – Dormant state corrections

*Dormant UE behaviour:*

[R2-2007217](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_111-e/Docs/R2-2007217.zip) correction on the UE behaviour on dormant state vivo CR Rel-15 36.321 15.9.0 1491 - F LTE\_NR\_DC\_CA\_enh-Core, LTE\_euCA-Core

[R2-2007218](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_111-e/Docs/R2-2007218.zip) correction on the UE behaviour on dormant state vivo CR Rel-16 36.321 16.1.0 1492 - A LTE\_NR\_DC\_CA\_enh-Core, LTE\_euCA-Core

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| Company | Agree / Not Agree | Comments |
| Nokia | Agree  | Intention is correct but as the PUCCH cannot be configured for dormant SCell. Current specification is bit confusing about talking PUCCH for dormant SCell. |
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[R2-2007219](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_111-e/Docs/R2-2007219.zip) correction on the UE behaviour on dormant BWP vivo CR Rel-16 38.321 16.1.0 0810 - F LTE\_NR\_DC\_CA\_enh-Core

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| Company | Agree / Not Agree | Comments |
| Nokia | Agree (partly and even more changes needed) |  Correct – PUCCH is not supported and thus having this written as action for SCell activated with dormant BWP is misleading.But also additionally when one reads 5.15.1 one can notice that there are other issues as well:1. Transmission on RACH is not prevented for SCell with dormant BWP active. This is not aligned with RAN2 agreement.
2. “Perform periodic or semi-persistent CSI measurement for the BWP, if configured;” does not prevent any reporting. Furthermore, MAC does not perform measurements but defines how the reporting is done.

All of the listed issues should be corrected (and possibly we can also do some clean up) assuming these are agreeable by RAN2. |
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# 3.2 MAC – Clarifications on PHR triggering:

[R2-2006810](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_111-e/Docs/R2-2006810.zip) Clarifications on PHR triggers-R15 OPPO CR Rel-15 38.321 15.9.0 0786 - F NR\_newRAT-Core

[R2-2006811](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_111-e/Docs/R2-2006811.zip) Clarifications on PHR triggers-R16 OPPO CR Rel-16 38.321 16.1.0 0787 - F LTE\_NR\_DC\_CA\_enh-Core

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| Company | Agree / Not Agree | Comments |
| Nokia | Not Agree | In our understanding intention was to trigger PHR for reactivation case as well. |
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[R2-2007947](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_111-e/Docs/R2-2007947.zip) Correction on PHR triggering upon BWP switching from dormant BWP to non-dormant BWP Huawei, HiSilicon CR Rel-16 38.321 16.1.0 0871 - F LTE\_NR\_DC\_CA\_enh-Core

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| Company | Agree / Not Agree | Comments |
| Nokia | Not Agree | no need. "Upon change of activated BWP from dormant BWP to non-dormant DL BWP of an SCell of any MAC entity with configured uplink" in PHR section (5.4.6) covers BWP switching.. |
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[R2-2008014](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_111-e/Docs/R2-2008014.zip) CR on the terminology of PHR trigger Samsung CR Rel-16 38.321 16.1.0 0874 - F LTE\_NR\_DC\_CA\_enh-Core

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| Company | Agree / Not Agree | Comments |
| Nokia | Agree | We are fine to update terminology. If this is agreeable we could consider combining this with CRs agreed to MAC dormant BWP handling (if any).  |
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# 4 RRC changes regarding dormant BWP

By Email [208]

[R2-2007003](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_111-e/Docs/R2-2007003.zip) Correction on the Dormant BWP CATT discussion Rel-16 LTE\_NR\_DC\_CA\_enh-Core

**Do you see need to change need codes of the *dormancyGroupWithinActiveTime* and *dormancyGroupOutsideActiveTime* to need “R”?**

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| Company | Agree / Not Agree | Comments |
| Nokia | Not Agree | How would you release the configuration with need code M?  |
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[R2-2007684](https://www.3gpp.org/ftp/TSG_RAN/WG2_RL2/TSGR2_111-e/Docs/R2-2007684.zip) Correction on dormant BWP Huawei, HiSilicon CR Rel-16 38.331 16.1.0 1881 - F LTE\_NR\_DC\_CA\_enh-Core

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| Company | Agree / Not Agree | Comments |
| Nokia | Agree (but see the comment for need for corrections)  | Intention seems to be correct as there should not be case that NW configures dormant BWP unless there is more than one DL BWP for the serving cell. In the CR there is something wrong with the fonts as the conditions listed at the end seems to be some “garbage”. Please correct these. And as the CR is quite minor we can consider combining CR with some other CR (if we have any other CR for RRC regarding dormancy)  |
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# 5 Conclusion

To be seen