**3GPP TSG-RAN WG1 #102-e R1-200xxxx**

**e-Meeting, Aug 17- Aug 28, 2020**

**Source: Moderator (Ericsson)**

**Title: Email discussion [102-e-NR-MRDC-CA-Dormancy-02]**

**Agenda item:** **7.2.10**

**Document for:** **Discussion and Decision**

# 1 Introduction

This document provides summary of email discussion [102-e-NR-MRDC-CA-Dormancy-02]on following issues discussed during preparation phase of RAN1#102-eMeeting

Below are the topics identified in [R1-2006995](file:///C:\Users\wanshic\OneDrive%20-%20Qualcomm\Documents\Standards\3GPP%20Standards\Meeting%20Documents\TSGR1_102\Docs\R1-2006995.zip) [16]

[102-e-NR-MRDC-CA-Dormancy-02] Email discussion/approval of the following from [R1-2006995](file:///C:\Users\wanshic\OneDrive%20-%20Qualcomm\Documents\Standards\3GPP%20Standards\Meeting%20Documents\TSGR1_102\Docs\R1-2006995.zip) until 8/21; if necessary, endorse remaining TPs by 8/27 – Ravi (Ericsson)

* Topic 2-1: Starting point for bwpInactivityTimer for an SCell when DCI format 2\_6 indicates dormant to non-dormant BWP switch for that SCell – [1]
* Topic 2-2: Handling SCell dormancy indication bits in DCI format 2\_6 when wake-up bit=0 – [1], [6]
* Topic 2-3: UE ignores dormancy indication in DCI format 2\_6 if it is too close to on duration – [5]
* Topic 2-4: Clarifications related to “BWP indicator field” not allowed to indicate a dormant BWP when detected in SCell DCI formats (including 0\_1, 0\_2) – [5],[6],[14]
* Topic 2-5: RRC parameter name alignment – [2], [7], [10], [12]

# 2. Discussion

### 2.1 Topic 2-1

Please provide your input to below question Q1 on this topic, preferably by 08/19 (evening PST).

#### Question 1

Q1. Is it OK to agree to below proposal from section 2.1 of [R1-2005359](http://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_102-e/Docs/R1-2005359.zip)?

* Proposal : In the case that the time gap between the last monitoring occasion of DCI 2\_6 and the start of DRX ON is larger than SCell dormancy/non-dormancy switching time,
  + The starting point of BWP switching time and bwpInactivityTimer are n slots prior to DRX ON, where n is the BWP switching time of SCells.
  + Discuss further TP (if any) to clarify this

Companies are requested to indicate their view about the above question in the Table below.

|  |  |  |
| --- | --- | --- |
| **Company Name** | **Yes/No** | **Comments (Topic 2-1, Q1)** |
| Samsung | Yes |  |
| Intel | Yes |  |
| ZTE | No | We are not sure why we need to define the starting point of BWP switching. Even in Rel-15, we didn’t define starting point for DCI-based BWP switching.  While for the bwpInactivityTimer, we may need to align the timeline between gNB and UE to avoid potential confusion. Our proposal would be to consider the starting time of DRX ON as the starting point for bwpInactivityTimer. |
| Nokia, NSB | No | There is no need to align BWP switching with DRX, nothing is broken, this is optimization. |
| CATT | No | PDCCH monitoring on SCell based on SCell dormancy and starting time of DRX ON are two independent events. |
| OPPO | No | We see no problem for BWP indication. The specs. should not define specially for the dormancy indication case. |
| LG | No | We don’t see a problem without defining the proposed behavior.. |
| Huawei | Yes | Similar issue as in topic 2-3. Either way can be considered to leave more gNB flexibility. |
| vivo | Yes | Based on the current spec, UE will start the bwpInactivityTimer at the slot where DCI2\_6 is detected, however, when UE is configured with multiple MOs for DCI2\_6 before DRX\_ON , and network transmitted DCI2\_6 in more than one MOs, there is ambiguity for gNB to know the UE start time of bwpInactivityTimer as gNB does not know in which MO the DCI 2\_6 is detected.  So the simple solution to remove such ambiguity would be to start the bwpInactivityTimer from the last valid MO before DRX\_ON |
| Spreadtrum | No | Share similar view as ZTE, in R15, no starting point for DCI-based BWP switching is defined. |
| MTK | Yes | Similar view to vivo |

### 2.2 Topic 2-2

Please provide your input to below question Q1 on this topic, preferably by 08/19 (evening PST).

#### Question 1

Q1. Do you think additional spec change is needed to handle the SCell dormancy indication bits in DCI format 2\_6 when wake-up bit=0 ?

Companies are requested to indicate their view about the above question in the Table below.

|  |  |  |
| --- | --- | --- |
| **Company Name** | **Yes/No** | **Comments (Topic 2-2, Q1)** |
| Samsung | Yes | We prefer to preclude meaningless code point. For example, when wake-up bit = 0, the SCell dormancy indication bits should not indicate the non-dormant BWP for a SCell. |
| Intel | Yes | Agree with Samsung comments |
| ZTE | No | We are fine to clarify this issue. But from our perspective, it seems a conclusion should be sufficient. |
| Nokia, NSB | No | No need to preclude this case, and moreover UE has whole DRX period to switch its BWP to non-dormant. |
| CATT | No | There is no additional handling of SCell dormancy when UE is indicated not to wake up. |
| OPPO | No | There is no need for the clarification. The specs. Is sufficient. |
| LG | No | We don’t see a problem without clarification on this point in the specifications. |
| Huawei | Probably Y | This seems to have been discussed in UE power saving session and no conclusion. Either way is technically Ok however needs to clarify that this does not seems to anyway save any DCI overhead. |
| Vivo | Yes | Agree with Samsung |
| Spreadtrum | Yes | We are fine with the clarification from Samsung. |
| MTK | Yes | Agree with Samsung comments |

### 2.3 Topic 2-3

Please provide your input to below question Q1 on this topic, preferably by 08/19 (evening PST).

#### Question 1

Q1. Do you think additional spec change is needed to handle the case when the time gap between the last monitoring occasion of DCI 2\_6 and the start of DRX ON is smaller than SCell dormancy/non-dormancy switching time ?

Companies are requested to indicate their view about the above question in the Table below.

|  |  |  |
| --- | --- | --- |
| **Company Name** | **Yes/No** | **Comments (Topic 2-3, Q1)** |
| Samsung | Yes | To determine the valid monitoring occasions for DCI format 2\_6, only the minimum time gap X (specified for minimum preparation period before DRX on duration) is considered in the current spec. We think SCell dormancy/non-dormancy switching delay should be considered together with time gap X to determine the valid occasions for 2\_6. |
| Intel | Yes | A valid occasion of DCI 2\_6 should allow enough switching time before the start of DRX ON |
| ZTE |  | The only thing we need to specify is how to align the starting time of bwpInactivityTimer. Our proposal would be to consider the starting time of DRX ON as the starting point for bwpInactivityTimer. |
| Nokia, NSB | No | gap X and BWP switching due to dormancy do not need to interact, first MO of C-RNTI PDCCH in OnDuraiton is predictable based on gNB scheduling. |
| CATT | No | PDCCH monitoring on SCell based on SCell dormancy and starting time of DRX ON are two independent events. |
| OPPO | No | The 2 specification time line can be used as defined. The whole procedure have no problem for proceeding. |
| LG | No | We think this case should be handled by network. |
| Huawei | Yes | Similar issue as in topic 2-1. Either way can be considered to leave more gNB flexibility. |
| Vivo | No | We think proper gNB configuration can avoid such case. |
| Spreadtrum | No | When a DCI format 2\_6 indicates Scell dormancy or non-dormancy BWP change, it is up to gNB scheduling to satisfy the switching delay. |
| MTK | Yes | Similar view with Samsung |

### 2.4 Topic 2-4

Please provide your input to below question Q1 on this topic, preferably by 08/19 (evening PST).

#### Question 1

Q1. Do you think additional spec change is needed to clarify that “BWP indicator field” is not allowed to indicate a dormant BWP when detected in SCell DCI formats (including 0\_1,0\_2) ?

Companies are requested to indicate their view about the above question in the Table below.

|  |  |  |
| --- | --- | --- |
| **Company Name** | **Yes/No** | **Comments (Topic 2-4, Q1)** |
| Samsung | Yes | Based on the conclusion made in RAN1#101-e, BWP indicator field still includes a code point for dormant DL BWP and a UE does not expect the BWP indicator field in DCI 1\_1, 1\_2 is set to the ID of dormant DL BWP.  For TDD, since the DL and UL BWPs are linked, the UL BWP indicator field in DCI format 0\_1, 0\_2 should not indicate the ID of UL BWP associated with the dormant DL BWP.  For FDD, since the DL and UL BWPs are not linked, the UL BWP indicator field in DCI format 0\_1, 0\_2 can indicate any of BWPs.  We prefer to capture above things in the spec for clarity of UE behavior. |
| Intel | Yes | It makes clear specification and avoids any confusion if we could capture the behavior in specification. |
| ZTE | No | We are fine to clarify this issue. But from our perspective, it seems a conclusion should be sufficient. |
| Nokia, NSB | Yes | This is in the spirit of last meeting conclusion, fine with conclusion, no need for specification change |
| CATT | No | It is gNB implementation issue |
| OPPO | No | We don’t need that restriction in the specs. The conclusion made in last meeting can help people understanding. |
| LG | Yes | Ok with either conclusion for clarification or clarification in the specifications. |
| Huawei | Yes | As a conclusion similar to that has been made last meeting. |
| Vivo | Yes | Agree with Samsung that the issue is only about TDD case, we are fine to clarify. |
| Spreadtrum | Yes | We support clear spec change for clarification. And agree with Samsung’s comments. |
| MTK | Yes | Similar view with Samsung |

### 2.5 Topic 2-5

Please provide your input to below questions Q1,Q2,Q3 on this topic, preferably by 08/19 (evening PST).

#### Question 1

Q1. Is it OK to agree to the following proposal for RRC parameter alignment from section 2 of [R1-2005421](http://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_102-e/Docs/R1-2005421.zip)?

* Update the following RRC parameter names in TS38.213 to align with those defined in TS 38.331.

|  |  |
| --- | --- |
| RAN1（38.213 10.3） | RAN2（38.331） |
| *Scell-groups-for-dormancy-outside-active-time* | *dormancyGroupOutsideActiveTime* |
| *Scell-groups-for-dormancy-within-active-time* | *dormancyGroupWithinActiveTim* |
| *first-non-dormant-BWP-ID-for-DCI-outside-active-time* | *firstOutsideActiveTimeBWP-Id* |
| *first-non-dormant-BWP-ID-for-DCI-inside-active-time* | *firstWithinActiveTimeBWP-Id* |

Companies are requested to indicate their view about the above question in the Table below.

|  |  |  |
| --- | --- | --- |
| **Company Name** | **Yes/No** | **Comments (Topic 2-5, Q1)** |
| Samsung | Yes |  |
| Intel | Yes |  |
| ZTE | Yes | Align the RRC parameters. |
| Nokia, NSB | Yes |  |
| CATT | Yes |  |
| OPPO | Yes |  |
| LG | Yes |  |
| Huawei | Y |  |
| NEC | Yes |  |
| vivo | Yes |  |
| Spreadtrum | Yes after modification | We think these parameters should have a postfix for release with them, which are aligned with TS 38.331, please refer to the modification in our t-doc [R1-2006285](http://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_102-e/Docs/R1-2006285.zip)  Noted: A lot of parameters have included a postfix for release with them in the physical specification, it is better to unify them to make the spec clear. |
| MTK | Yes | Agree with Spreadtrum |

#### Question 2

Q2. Which option do you prefer for subclause 10.3 of TS 38.213?

* Option 1 : TP for TS 38.213 from Annex of [R1-2005958](http://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_102-e/Docs/R1-2005958.zip)
* Option 2 : Text Proposal #2 for TS38.213 from section 2 of [R1-2006552](http://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_102-e/Docs/R1-2006552.zip)

Companies are requested to indicate their view about the above question in the Table below.

|  |  |  |
| --- | --- | --- |
| **Company Name** | **Preferred Option(s)**  **If multiple, list most preferred first** | **Comments (Topic 2-5, Q2) including any possible alternate TP** |
| Samsung | Option 2 |  |
| Intel | Option 2 |  |
| ZTE | Option 1, Option 2 | We can take Option1 as the starting point and make some updates if necessary. |
| Nokia, NSB | Option 2 |  |
| CATT | Option 2 |  |
| OPPO | Option 2 |  |
| Huawei | Opt 2 |  |
| NEC | Option 1, Option 2 | We are OK with option 2 while we have following two questions.  Q1. How is “a bitmap” used “*for detection of a DCI format 2\_6*”?  Q2. Why is UE behavior “the UE sets the active DL BWP to the indicated active DL BWP” unnecessary for the bitmap outside Active Time while the statement is clearly described for a bitmap within Active Time? |
| vivo | Option 2 |  |
| Spreadtrum | Option 2 after modification | The same as Q1, We think a postfix for release is needed with them, which are aligned with TS 38.331, please refer to the modification in our t-doc [R1-2006285](http://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_102-e/Docs/R1-2006285.zip). |
| MTK | Option 1, Option 2 |  |

#### Question 3

Q3. Which option do you prefer for subclauses 7.3.1.1.2, 7.3.1.2.2, 7.3.1.3.7 for 38.212?

* Option 1a : TP for TS 38.212 from Annex of [R1-2005958](http://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_102-e/Docs/R1-2005958.zip)
* Option 1b : Text Proposal1 for TS38.212 from section 5.2 of [R1-2006285](http://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_102-e/Docs/R1-2006285.zip)
* Option 1c : Text Proposal #1 for TS38.212 from section 2 of [R1-2006552](http://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_102-e/Docs/R1-2006552.zip)

Companies are requested to indicate their view about the above question in the Table below.

|  |  |  |
| --- | --- | --- |
| **Company Name** | **Preferred Option(s)**  **If multiple, list most preferred first** | **Comments (Topic 2-5, Q3) including any possible alternate TP** |
| Samsung | Option 1c |  |
| Intel | Option 1b or 1c | It seems the difference between 1b and 1c is the use of *dormancyGroupWithinActiveTime-r16* and *dormancyGroupWithinActiveTime.* A RRC parameter with or without a postfix for release are both used in some other place in the specification.  Which one is the better way? |
| ZTE | Option 1a | We can take Option 1a as the starting point.  We think another issue needs to be clarified is, whether network is allowed to apply Case 2 SCell dormancy indication (i.e., without scheduling PDSCH) if SCell dormancy indication filed is not configured. Our understanding is yes. One of the potential TP could be.  -------------------------------------TP-----------------------------------------  If one-shot HARQ-ACK request is not present or set to '0', and all bits of frequency domain resource assignment are set to 0 for resource allocation type 0 or set to 1 for resource allocation type 1 or set to 0 or 1 for dynamic switch resource allocation type, this field is reserved, if configured, and the following fields among the fields above are used for SCell dormancy indication, where each bit corresponds to one of the configured SCell(s), with MSB to LSB of the following fields concatenated in the order below corresponding to the SCell with lowest to highest SCell index  - Modulation and coding scheme of transport block 1  - New data indicator of transport block 1  - Redundancy version of transport block 1  - HARQ process number  - Antenna port(s)  - DMRS sequence initialization |
| Nokia, NSB | Option 1c |  |
| CATT | Option 1C |  |
| OPPO | Option 1c |  |
| Huawei | 1c |  |
| NEC | Option 1a or 1c | “-r16” is usually not captured for a parameter name |
| vivo | Option 1c | There is no need to have “*-r16*” postfix in RAN1 spec. |
| Spreadtrum | Option 1b | We think a postfix for release is needed, which is aligned with TS 38.331.  Noted: A lot of parameters have included a postfix for release with them in the physical specification, it is better to unify them to make the spec clear. |
| MTK | Option 1b or 1c |  |

# 3 Conclusions

TBU

# 4 References

1. [R1-2005359](http://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_102-e/Docs/R1-2005359.zip) Remaining issues on Scell dormancy like behavior vivo
2. [R1-2005421](http://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_102-e/Docs/R1-2005421.zip) Remaining Issues of SCell Dormancy and Cross-carrier Scheduling ZTE
3. [R1-2005626](http://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_102-e/Docs/R1-2005626.zip) Remaining issues on Rel-16 carrier aggregation MediaTek Inc.
4. [R1-2005665](http://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_102-e/Docs/R1-2005665.zip) PDCCH location for SCell dormancy CATT
5. [R1-2005788](http://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_102-e/Docs/R1-2005788.zip) Remaining issues on CA Huawei, HiSilicon
6. [R1-2005856](http://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_102-e/Docs/R1-2005856.zip) Remaining issues on MR-DC & eCA Intel Corporation
7. [R1-2005958](http://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_102-e/Docs/R1-2005958.zip) TP on SCell dormancy for alignment NEC
8. [R1-2006035](http://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_102-e/Docs/R1-2006035.zip) Remaining issues for Scell dormancy OPPO
9. [R1-2006123](http://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_102-e/Docs/R1-2006123.zip) On maintenance of Scell dormancy and CCS with different SCSs Samsung
10. [R1-2006285](http://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_102-e/Docs/R1-2006285.zip) Remaining issues on Multi-RAT Dual-Connectivity and Carrier Aggregation enhancements Spreadtrum Communications
11. [R1-2006430](http://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_102-e/Docs/R1-2006430.zip) Remaining issues on Efficient CA design Nokia, Nokia Shanghai Bell
12. [R1-2006552](http://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_102-e/Docs/R1-2006552.zip) Corrections for SCell Dormancy Sharp
13. [R1-2006663](http://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_102-e/Docs/R1-2006663.zip) Maintenance for reduced latency Scell management for NR CA Ericsson
14. [R1-2006786](http://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_102-e/Docs/R1-2006786.zip) Remaining issues on SCell dormancy Qualcomm Incorporated
15. [R1-2001419](http://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_100_e/Docs/R1-2001419.zip) Text proposals from email discussion [100e-NR-LTE\_NR\_DC\_CA\_enh-ScellDormancy-01] Ericsson
16. [R1-2006995](file:///C:\Users\wanshic\OneDrive%20-%20Qualcomm\Documents\Standards\3GPP%20Standards\Meeting%20Documents\TSGR1_102\Docs\R1-2006995.zip) Summary of efficient and low latency serving cell configuration/activation/setup, RAN1#102-e, August 2020.