**3GPP TSG-RAN WG1 #100bis-e R1-20xxxxx**

**e-Meeting, April 20th – 30th, 2020**

**Source: Ericsson**

**Title: Summary of email discussion [100b-e-NR- LTE\_NR\_DC\_CA-ScellDormancy-01]**

**Agenda item:** **7.2.10.3**

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

# 1 Introduction

This document provides summary of email discussion [100b-e-NR- LTE\_NR\_DC\_CA-ScellDormancy-01] on following TPs discussed during preparation phase of RAN1#100bis-eMeeting

Below are the TPs identified in [R1-2002739](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_100b_e/Inbox/R1-2002739.zip) [1]

* TP (from R1-2001542) to 38.212 on FDRA for Case2 dormancy indication for dynamic RA type indication
* TP (from R1-2002149) to 38.213 on DCI indication for configured SCells with dormant BWP
* TP (from R1-2002228) to 38.213 on aligning with RAN2 agreements on UL dormancy handling
* TP (from R1-2001542) to 38.213 on wording for SCell dormancy “without scheduling PDSCH”

# 2. Discussion

### 2.1 TP1

--------------------------------- Start TP1 for TS 38.212 sub-clause 7.3.1.2.2 ---------------------------------------

**7.3.1.2.2 Format 1\_1**

<Unchanged parts omitted>

- SCell dormancy indication – 0 bit if higher layer parameter *Scell-groups-for-dormancy-within-active-time* is not configured; otherwise 1, 2, 3, 4 or 5 bits bitmap determined according to higher layer parameter *Scell-groups-for-dormancy-within-active-time,* where each bit corresponds to one of the SCell group(s) configured by higher layers parameter *Scell-groups-for-dormancy-within-active-time,* with MSB to LSB of the bitmap corresponding to the first to last configured SCell group. The field is only present when this format is carried by PDCCH on the primary cell within DRX Active Time and the UE is configured with at least two DL BWPs for an SCell.

If 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 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)

<Unchanged parts omitted>

--------------------------------- End TP1 for TS 38.212 sub-clause 7.3.1.2.2 ----------------------------------------

Q: Is it OK to agree to above TP1 for 38.212 sub-clause 7.3.1.2.2?

*Note: For background related to the TP, please see [2]*

Please provide your input preferably by 04/21 (evening PST).

|  |  |  |
| --- | --- | --- |
| **Company Name** | **Yes/No** | **Comments (TP1)** |
| vivo | Partially Yes | DMRS sequence initialization should not be removed, it has been present in 38.213 section 10.3. So we should just remove the bracket to be consistent with 38.213. |
| ZTE |  | As there are so many ‘or’ in this sentence, one further update could be as following.  If 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 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 |
| Huawei, HiSi | Yes |  |
| Nokia, NSB | Yes | Since 213 specifications describes CASE2 PDCCH clearly, we suggest that duplication text in 212 is removed completely. |
| Samsung | Yes |  |
| Ericsson | Partially OK | This behavior should be in only one place to avoid such inconsistency issues.   * DMRS sequence initialization should be included (i.e. remove sq. brackets) to align with 38.213. * No need to modify the FDRA text as the spec is correct as it is (all bits of FDRA are 0 for RA type 0 or all FDRA bits are 1 for RA type 1, for dynamic RA type), and also given there is no definition for “dynamic switch resource allocation type”.   We are OK to have the text in either 212 or 213, but since we are discussing TP for 212, OK to remove the text from 212. |
| Qualcomm | Yes |  |
| Intel | Yes | We slightly prefer the current TP, which make a compact paragraph. ZTE’s revision is also fine. |
| CATT | Yes |  |
| Spreadtrum | Yes | Agree with Nokia and Ericsson, this part in 212 should be remove. |

### 2.2 TP2

--------------------------------- Start TP2 for TS 38.213 sub-clause 10.3 ---------------------------------------

If a UE is provided search space sets to monitor PDCCH for detection of DCI format 1\_1, and if

- the CRC of DCI format 1\_1 is scrambled by a C-RNTI or a MCS-C-RNTI, and if

- *resourceAllocation* = *resourceAllocationType0* and all bits of the frequency domain resource assignment field in DCI format 1\_1 are equal to 0, or

- *resourceAllocation* = *resourceAllocationType1* and all bits of the frequency domain resource assignment field in DCI format 1\_1 are equal to 1

- *resourceAllocation = dynamicSwitch* and all bits of the frequency domain resource assignment field in DCI format 1\_1 are equal to 0 or 1

the UE considers the DCI format 1\_1 as indicating SCell dormancy, not scheduling a PDSCH reception or indicating a SPS PDSCH release, and for transport block 1 interprets the sequence of fields of

- modulation and coding scheme

- new data indicator

- redundancy version

and of

- HARQ process number

- antenna port(s)

- DMRS sequence initialization

as providing a bitmap to each configured SCell with a DL BWP provided by *dormant-BWP*, in an ascending order of the SCell index, where

- a '0' value for a bit of the bitmap indicates an active DL BWP, provided by *dormant-BWP*, for the UE for a corresponding activated SCell

- a '1' value for a bit of the bitmap indicates

- an active DL BWP, provided by *first-non-dormant-BWP-ID-for-DCI-inside-active-time*, for the UE for a corresponding activated SCell, if a current active DL BWP is the dormant DL BWP

- a current active DL BWP, for the UE for a corresponding activated SCell, if the current active DL BWP is not the dormant DL BWP

- the UE sets the active DL BWP to the indicated active DL BWP

<Unchanged parts omitted>

--------------------------------- end TP2 for TS 38.213 sub-clause 10.3 ---------------------------------------

Q: Is it OK to agree to above TP2 for 38.213 sub-clause 10.3?

*Note: For background related to the TP, please see [3]*

Please provide your input preferably by 04/21 (evening PST).

|  |  |  |
| --- | --- | --- |
| **Company Name** | **Yes/No** | **Comments (TP2)** |
| vivo | Yes |  |
| ZTE | Yes | The TP seems fine. |
| Huawei | Yes | OK |
| Nokia, NSB | Yes |  |
| Samsung | Yes |  |
| Ericsson | OK | If updating here 212 should be updated also? |
| Qualcomm | Not directly | According to the RAN1 #99 agreement, the bitmap is defined for all configured SCells but not only those that are configured with dormant BWPs. It is understood that a bit is meaningful for SCell dormancy indication only the corresponding SCell is configured with dormant BWP.  Agreements:   * For the case when PDCCH with DCI format 1-1 is used for indicating dormancy for SCells, and when UE is indicated that the PDCCH is not used for PDSCH scheduling (i.e., Case 2)   + - The explicit information field for SCell dormancy indication is a bitmap of length N1 where N1 is the number of configured Scells for the UE, and each bit in the bitmap corresponds to one configured SCell     - … |
| Intel | Yes | TP is fine |
| CATT | No | TP is not an essential correction |
| Spreadtrum | No | We respect the previous agreements and there is nothing wrong. The bitmap should correspond to each configured SCell. |

### 2.2 TP3

--------------------------------- Start TP3 for TS 38.213 sub-clause 12 ---------------------------------------

12 Bandwidth part operation

<Unchanged parts omitted>

For unpaired spectrum operation, a non-dormant DL BWP from the set of configured DL BWPs with index provided by BWP-Id is linked with an UL BWP from the set of configured UL BWPs, with index provided by BWP-Id when the DL BWP index and the UL BWP index are same. For unpaired spectrum operation, a UE does not expect to receive a configuration where the center frequency for a DL BWP is different than the center frequency for an UL BWP when the BWP-Id of the DL BWP is same as the BWP-Id of the UL BWP.

<Unchanged parts omitted>

--------------------------------- end TP3 for TS 38.213 sub-clause 12 ---------------------------------------

Q: Is it OK to agree to above TP3 for 38.213 sub-clause 12?

*Note: For background related to the TP, please see [4]*

Please provide your input preferably by 04/21 (evening PST).

|  |  |  |
| --- | --- | --- |
| **Company Name** | **Yes/No** | **Comments (TP3)** |
| vivo | Yes |  |
| ZTE | Yes | The TP seems fine to us.  Note: If the above TP is endorsed, then the following spec in Section 5.15 of TS38.321 also needs updates.  *For unpaired spectrum, a DL BWP is paired with a UL BWP, and BWP switching is common for both UL and DL.* |
| Huawei, HiSi | NO | Not yet fully understand the issue. Perhaps even with RAN2 agreements no UL behaviour for UL BWP defined, it is still possible to configure a TDD DL BWP as dormant without impact on UL BWP configuration (only ID is the same). What may be the potential problem? |
| Nokia, NSB | Yes | RAN2 agreed that no dormant UL BWP is configured. The piece of specification text above says that each DL BWP has corresponding UL BWP. But if UE is in dormant DL BWP, there should be no UL BWP with corresponding UL index configured (as per RAN2 agreement). Therefore, the above change is needed in our opinion. |
| Samsung | No | We think the CR is not needed. The related RAN2 agreement just mentions that “no UL dormant BWP” is defined and only UL behavior is defined in case of that dormant DL BWP is activated. This does not mean that a UL BWP cannot be linked with a dormant DL BWP, but the UE follows the UL dormancy behavior when the UL BWP linked with dormant DL BWP is activated. There is no mention such that a UL BWP linked with a dormant DL BWP is defined as a “dormant UL BWP”. Moreover, it is still open whether the UL BWP linked with the dormant DL BWP can be configured or not. This will be discussed in RAN2 when they finalize the RRC description. |
| Ericsson | No | Our understanding is that RAN2 agreed “No UL dormant BWP is defined”, but that does not mean a dormant DL BWP cannot be paired with an UL BWP. So, more discussion would be needed before making this change. |
| Qualcomm | No | RAN2 agreements about the active UL BWP UE behavior is clear when the active DL BWP is dormant. There is no need to have this change. |
| Intel | Yes |  |
| CATT | No | RAN2 agreement is no UL BWP is associated with DL dormant BWP. This is irrelevant to RAN2 agreement. |
| Spreadtrum | No | Similar reason as Ericsson. |

### 2.2 TP4

--------------------------------- Start TP4 for TS 38.213 sub-clause 9.1---------------------------------------

**9.1 HARQ-ACK codebook determination**

<Unchanged parts omitted>

In the remaining of this Clause, reference is to one HARQ-ACK codebook.

If a UE detects a DCI format 1\_1 indicating

- SCell dormancy without scheduling PDSCH, as described in Clause 10.3, and

- is provided *pdsch-HARQ-ACK-Codebook = dynamic*

the UE generates a HARQ-ACK information bit as described in Clause 9.1.3 for a DCI format 1\_1 indicating SCell dormancy and the HARQ-ACK information bit value is ACK.

If a UE is not provided *PDSCH-CodeBlockGroupTransmission*, the UE generates one HARQ-ACK information bit per transport block.

<Unchanged parts omitted>

--------------------------------- Start TP4 for TS 38.213 sub-clause 9.1---------------------------------------

Q: Is it OK to agree to above TP4 for 38.213 sub-clause 9.1?

*Note: For background related to the TP, please see [2]*

Please provide your input preferably by 04/21 (evening PST).

|  |  |  |
| --- | --- | --- |
| **Company Name** | **Yes/No** | **Comments (TP4)** |
| vivo | Yes |  |
| ZTE | Yes | The TP seems fine to us. |
| Huawei, HiSi | Yes |  |
| Nokia, NSB | Yes |  |
| Samsung | No | This is redundant. Nothing is broken without this change. |
| Ericsson | OK |  |
| Qualcomm | Yes | This change is needed to differentiate it from Case 1 SCell dormancy indication DCI based on DCI format 1\_1. |
| Intel | Yes with an update | Since NR-U introduces enhanced dynamic HARQ-ACK CB, better to treat it as well. Update the 2nd bullet as:  - is provided *pdsch-HARQ-ACK-Codebook = dynamic* or *enhancedDynamic-r16* |
| CATT | Yes |  |
| Spreadtrum | Yes |  |

# 3 Conclusions

To be updated later

# References

1. [R1-2002739](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_100b_e/Inbox/R1-2002739.zip) Summary of efficient and low latency serving cell configuration/activation/setup, Moderator (Ericsson), RAN1#100bis-e, April 2020.
2. [R1-2001542](http://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_100b_e/Docs/R1-2001542.zip) Remaining issues on SCell dormancy indication Huawei, HiSilicon
3. [R1-2002149](http://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_100b_e/Docs/R1-2002149.zip) Remaining issues on dormancy Scell Samsung
4. [R1-2002228](http://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_100b_e/Docs/R1-2002228.zip) Remaining issues on Efficient CA design Nokia, Nokia Shanghai Bell