3GPP TSG-RAN WG2 #114 electronic R2-200xxxx

Electronic Meeting, May 19 – 27, 2021

Agenda Item: 5.4.3

Source: Ericsson

Title: Summary of offline 011 Rel-15 UE caps II

Document for: Discussion, Decision

# 1 Introduction

This contribution summarizes the following discussion:

* [AT114-e][011][NR15] UE Cap II (Ericsson)

Scope: Treat R2-2105983, R2-2105984, R2-2105406, R2-2105407, R2-2105408, R2-2106393, R2-2106394, R2-2106124, R2-2106125

Phase 1, determine agreeable parts, Phase 2, for agreeable parts Work on CRs.

Intended outcome: Report and Agreed CRs.

Deadline: Schedule A

# 2 Discussion

## 2.1 Part 1: Intended to determine agreeable parts

The proposals listed in this subsection 2.1 are merely extracted from discussion TDocs to facilitate the discussion and follow the numbering of the corresponding TDoc from which they were extracted (i.e. they do not represent actual proposals from this TDoc, which should be listed in subsection 2.2).

### 2.1.1 L1 related contributions

In [3], the following proposals are made:

**Proposal 1: It needs RAN2 to discuss that if the UE supports *multipleCORESET* and CORESET0 is not configured or associated in one BWP, how many CORESETs can be configured in this BWP. There are two options to be discussed:**

**Option 1.1: If the UE supports *multipleCORESET* and CORESET0 is not configured or associated in one BWP, up to three CORESETs can be configured in this BWP.**

**Option 1.2: If the UE supports *multipleCORESET* and CORESET0 is not configured or associated in one BWP, up to two CORESETs can be configured in this BWP.**

**Proposal 1.1: Add clarification to the current field description of *multipleCORESET* based on option 1.1.**

**Proposal 2: It needs RAN2 to discuss that if the UE does not support *multipleCORESET* and CORESET0 is not configured or associated in one BWP, how many CORESETs can be configured in this BWP. There are two options to be discussed:**

**Option 2.1: If the UE does not support *multipleCORESET* and CORESET0 is not configured or associated in one BWP, up to two CORESETs can be configured in this BWP.**

**Option 2.2: If the UE does not support *multipleCORESET* and CORESET0 is not configured or associated in one BWP, up to one CORESET can be configured in this BWP.**

**Proposal 2.1: Add clarification to the current field description of *multipleCORESET* based on option 2.1.**

**Proposal 3: Based on proposal1.1 and proposal2.1, agree the CRs in [3][4].**

We think it may be beneficial to collect views for Proposal 1 and 2 together, since they are related. Companies are invited to express which of the options above is preferred for each proposal.

**Q1 Which of the options listed above is preferred for Proposal 1 and 2?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Option preferred for each proposal** | **Comments** |
| Apple | We this no change is needed and no discussion is needed. | We think ist two CORESETs along with CORESET0. Not 3 in total without CORESET0. And the current text reflects this. |
| Qualcomm Incorporated | 1.2 and 2.2 | But it is already clear in the current specification text. |
|  |  |  |
|  |  |  |
|  |  |  |

Proposal 3 from [3] is to agree on CRs in [4] and [5]. Whether to agree or not on the CRs depend on the discussion on the question above, but if there are any immediate comments to the CRs, they can be provided below.

**Q2 Any comments on the CRs in [4] and [5]?**

|  |  |
| --- | --- |
| **Company** | **Comments** |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

The CRs in [6] and [7] intend to correct the capability on maximum number of TCI-state for PDSCH, to allow the UE to report higher values than 64 (current field description states that “The UE is mandated to set the value to 64”).

**Q3 Do companies agree with the intention of the CRs above?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Comments** |
| Apple | Yes | We are ok with this CR. |
| Qualcomm Incorporated | Yes |  |
|  |  |  |
|  |  |  |
|  |  |  |

### 2.1.2 Others

In [1], the following proposals are made:

**Proposal 1 Confirm that the union of the bandwidths of the configured (initial + dedicated) BWPs may exceed the maximum channel bandwidth supported by the UE.**

**Proposal 2 Discuss whether and how a UE supports switching to a BWP which is not within the configured channel bandwidth (down-/uplinkChannelBW-PerSCS-List).**

**Q4 Do companies agree with Proposal 1 above?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Comments** |
| Apple | Yes to P1 with comments | The UE is not required to anyway perform any checks on union of BWPs, it operates on the active BWP while using the RAN4 requirements for Rx/Tx on the active BWP using the supported and configured CH BW.  From this perspective, as long as each of the UE configured BWPs have a CH BW configured, it shoud be ok. |
| Qualcomm Incorporated | No | We do not expect that the UE is required to move the BW placement upon BWP switch outside the configured channel BW.  Note that the BW placement of the UE is not known precisely by the network when the channel BW in SIB1 is larger than the channel BW supported by the UE (TS38.331, 5.2.2.4.2). In this case, our expectation is that the network configures UE specific channel BW so that channel BW placement is clear and configure dedicated BWP within the UE specific channel BW. No need to do this if the network only uses the initial BWP. |
|  |  |  |
|  |  |  |
|  |  |  |

Proposal 2 is split into 2 questions below. As discussed in [1], for such switching the network should provide the downlinkChannelBW-PerSCS-List in the RRCReconfiguration message in which it configures this BWP and in which it commands the UE to switch to this BWP. It is not clear if DCI or timer based BWP switching are applicable to this case.

**Q5 Do companies agree that, when configuring a UE with a dedicated BWP that is not within the channel bandwidth that the UE applied when acquiring SIB1, the network should configure the downlinkChannelBW-PerSCS-List and/or uplinkChannelBW-PerSCS-List appropriately?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Comments** |
| Apple | Yes |  |
| Qualcomm Incorporated | ? | As in our ccomment to Q4, there are cases where the network does not know the placement of channel BW by the UE. So the condition “*with a dedicated BWP that is not within the channel bandwidth that the UE applied when acquiring SIB1*“, may not be known to the netwok.  But assuming the network knows, the network should make sure all BWP are contained within the channel BW. |
|  |  |  |
|  |  |  |
|  |  |  |

**Q6 Companies are also invited to provide their views on the DCI and timer based BWP switching applicability to this case and, if applicable, how those should be handled.**

|  |  |
| --- | --- |
| **Company** | **Comments** |
| Apple | DCI/timer based BWP switching is ok, as long as the UE does not have any ambiguity on the CH BW to apply for the BWP it is switching into. But since the CH BW is based on the SCS, if the source and the target BWPs both have the same SCS, then DCI based switching is not possible if the CH BW needs to be changed for the target BWP. |
| Qualcomm Incorporated | We do not expect any BWP configuration outside UE’s channel BW. |
|  |  |
|  |  |
|  |  |

In [2], the following proposal is made:

1. Discuss how to correct or remove the inheritance of ca-ParametersNR for NR-DC.

Two options are outlined in [2] (please refer to [2] for further details on each option):

**Option 1**: Each extension to CA parameters for NR-DC is handled independently. If the UE supports a feature in CA but not in NR-DC, it shall include the parent ca-ParametersNR-ForDC(-vXXXX) but omit the capability parameter of the feature therein.

**Option 2**: The UE always reports its supported CA features for NR-DC within the NR-DC branch for CA parameters.

**Q7 Which of the options listed above is preferred?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Option** | **Comments** |
| Qualcomm Incorporated | Option 1 | We understand this is subject to NBC depending on how UE is implemented today. But it has isolated impact to the case where the UE supports the same band combination for CA and NR-DC, and the UE supports different capabilities between CA and NR-DC. |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

The CRs in [8] and [9] intend to correct the capability on supported Number of TAGs, indicating that CC(s) without UL configuration do not need to be configured to the same TAG ID of other CC(s) within the same frequency band.

**Q8 Do companies agree with the intention of the CRs above?**

|  |  |  |
| --- | --- | --- |
| **Company** | **Yes/No** | **Comments** |
| Qualcomm Incorporated | Yes | The scenario addressed by the CR seems a minor case where intra-band cells in CA are non-collocated. |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

## 2.2 Part 2: Intended to progress discussion on agreeable parts

- To be updated after discussion on part 1 -

# 3 Conclusion

- To be updated after discussion on part 1 -

# 4 References

1. R2-2105983 Allowed bandwidth in BWP configuration Ericsson, RAN2 #114-e, May 19 – 27, 2021
2. R2-2105984 Use of CA-Parameters extensions for NR-DC Ericsson, RAN2 #114-e, May 19 – 27, 2021
3. R2-2105406 Discussion on multipleCORESET ZTE Corporation, Sanechips, RAN2 #114-e, May 19 – 27, 2021
4. R2-2105407 Correction on multipleCORESET ZTE Corporation, Sanechips, CR Rel-15, RAN2 #114-e, May 19 – 27, 2021
5. R2-2105408 Correction on multipleCORESET ZTE Corporation, Sanechips, CR Rel-16, RAN2 #114-e, May 19 – 27, 2021
6. R2-2106393 Clarification on maximum number of TCI-state for PDSCH MediaTek Inc., CR Rel-15, RAN2 #114-e, May 19 – 27, 2021
7. R2-2106394 Clarification on maximum number of TCI-state for PDSCH MediaTek Inc., CR Rel-16, RAN2 #114-e, May 19 – 27, 2021
8. R2-2106124 Further clarification on supportedNumberTAG Huawei, HiSilicon, Apple., CR Rel-15, RAN2 #114-e, May 19 – 27, 2021
9. R2-2106125 Further clarification on supportedNumberTAG Huawei, HiSilicon, Apple., CR Rel-16, RAN2 #114-e, May 19 – 27, 2021