**3GPP TSG RAN WG1 #110bis-e R1-220xxxx**

**e-Meeting, October 10th – 19th, 2022**

**Source: Moderator (Intel Corporation)**

**Title: Moderator Summary for Rel. 18 NR DSS (Round 0)**

**Agenda item: 9.17**

**Document for: Discussion and Decision**

# Introduction

A moderator summary of maintenance issues related to Rel-18 DSS based on contributions submitted to RAN1#110b-e AI 9.17 is provided below. In the following, the alternatives are not meant to be mutually exclusive options, please consider that one or more alternatives could be feasible.

# Maintenance Issues

* 1. NW indication of CE or Tx scheme

The following is proposed in tdocs from Spreadrum, vivo, DOCOMO, Nokia/NSB

* + 1. Round 0

Table 1: Summary of Issue 1

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| **Issue#** | **Description** | **Company position** |
| 1 | Alt 1: Specify NW indication of channel estimation method for NR PDCCH candidates that overlap with LTE CRS REs  Alt 2: Specify NW indication of transmission scheme for NR-PDCCH candidates that overlap with LTE-CRS REs (e.g. puncture or superposition) | * **Support (Alt-1, Alt-2):** * **Not Support (Alt-1, Alt-2):** |

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| **Company Name** | **Company inputs** |
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* 1. Restriction on LTE CRS pattern lists

The following is proposed in tdocs from Spreadrum, vivo, DOCOMO

* + 1. Round 0

Table 2: Summary of Issue 2

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| **Issue#** | **Description** | **Company position** |
| 2 | Reception of NR PDCCH candidates overlapped with LTE CRS REs from 2 LTE CRS pattern lists that overlap in frequency (lte-CRS-PatternList1-r16 and lte-CRS-PatternList2-r16 or lte-CRS-PatternList3-r18 and lte-CRS-PatternList4-r18) is not supported | * **Support:** * **Not Support** |

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| **Company Name** | **Company inputs** |
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* 1. Restriction on SS sets

The following is proposed in tdocs from Spreadrum, vivo, Xiaomi.

* + 1. Round 0

Table 3: Summary of Issue 3

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| **Issue#** | **Description** | **Company position** |
| 3 | Reception of NR PDCCH candidates in Type 0/0A/1/2 CSS overlapped with LTE CRS REs is not supported | * **Support:** * **Not Support:** |

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| **Company Name** | **Company inputs** |
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* 1. UE capabilities

The following is proposed in tdocs from vivo, Qualcomm, Nokia/NSB

* + 1. Round 0

Table 3: Summary of Issue 3

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| **Issue#** | **Description** | **Company position** |
| 4 | Introduce UE capabilities to indicate the supported CE methods (details to be discussed during UE capability) | * **Support:** * **Not support:** |

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| **Company Name** | **Company inputs** |
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* 1. Restriction on symbols

The following is proposed in tdocs from Xiaomi, DOCOMO, Spreadtrum.

* + 1. Round 0

Table 3: Summary of Issue 3

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| **Issue#** | **Description** | **Company position** |
| 5 | Alt-1: Specify restrictions on certain symbols where reception of NR PDCCH overlapped with LTE CRS REs is not supported e.g. symbol#0  Alt-2: Specify NW indication of location of LTE PDCCH | * **Support (Alt-1, Alt-2):** * **Not Support (Alt-1, Alt-2):** |

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| **Company Name** | **Company inputs** |
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* 1. RRC parameters

The following is proposed in tdocs from Huawei/HiSilicon, Nokia/NSB.

* + 1. Round 0

Table 3: Summary of Issue 3

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| **Issue#** | **Description** | **Company position** |
| 6 | Alt-1: A new RRC parameter to enable reception of NR PDCCH candidates overlapped with LTE CRS REs  Alt-2: Specify configuration of PDCCH candidates/aggregation levels of a search space that is to be monitored when overlapped with LTE CRS REs  Alt-3: Specify that PDCCH aggregation levels higher than the aggregation levels employed in the CSS during the transition from RRC Idle to RRC connected state are assumed to be monitored | * **Support (Alt-1, Alt-2, Alt-3):** * **Not Support (Alt-1, Alt-2, Alt-3):** |

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| **Company Name** | **Company inputs** |
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* 1. Relaxation for PDCCH-DMRS in REG bundle

The following is proposed in tdocs from Qualcomm.

* + 1. Round 0

Table 3: Summary of Issue 3

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| **Issue#** | **Description** | **Company position** |
| 7 | For a CORESET with precoderGranularity = sameAsREG-bundle and if CE on clean symbol(s) only is applicable for PDCCH-DMRS the UE is not required to monitor a PDCCH candidate if there is no clean symbol(s) for channel estimation within the set of REGs of the PDCCH candidate | * **Support** * **Not support** |

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| **Company Name** | **Company inputs** |
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* 1. Relaxation for PDCCH-DMRS WB

The following is proposed in tdocs from vivo, Qualcomm.

* + 1. Round 0

Table 3: Summary of Issue 3

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| **Issue#** | **Description** | **Company position** |
| 8 | For a CORESET with precoderGranularity = allContiguousRBs  Alt1: if CE on clean symbol(s) only is applicable for PDCCH-DMRS the UE does not expect to be configured such that there is no clean symbol(s) for channel estimation within all the REGs of the contiguous RBs in the CORESET where the UE attempts to decode a PDCCH candidate  Alt2: if CE on clean symbol(s) only is applicable for PDCCH-DMRS the UE does not monitor a PDCCH candidate if there is no clean symbol(s) for channel estimation within all the REGs of the contiguous RBs in the CORESET where the UE attempts to decode the PDCCH candidate  Alt3: NR PDCCH candidates is not expected to be overlapped with LTE CRS REs | * **Support (Alt-1, Alt-2, Alt-3):** * **Not Support (Alt-1, Alt-2, Alt-3)** |

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| **Company Name** | **Company inputs** |
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* 1. Clean symbol determination

The following is proposed in tdocs from Qualcomm.

* + 1. Round 0

Table 3: Summary of Issue 3

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| **Issue#** | **Description** | **Company position** |
| 9 | if CE on clean symbol(s) only is applicable for PDCCH-DMRS, the UE determines clean symbol(s) based on  Alt1: LTE-CRS pattern(s) of all configured LTE-CRS pattern list(s)  Alt2: LTE-CRS pattern(s) of configured LTE-CRS pattern depending on whether crs-RateMatchPerCoresetPoolIndex is configured | * **Support:** * **Not Support:** |

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| **Company Name** | **Company inputs** |
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# References

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| --- | --- | --- | --- |
|  | R1-2208491 | Discussion on remaining issues for Rel-18 DSS | ZTE |
|  | R1-2208578 | Maintenance for Rel-18 DSS | Spreadtrum Communications |
|  | R1-2208675 | Remaining issues on NR Dynamic spectrum sharing | vivo |
|  | R1-2208859 | Discussion on remaining issues in Rel-18 eDSS | OPPO |
|  | R1-2209275 | Discussion on NR PDCCH reception in symbols with LTE CRS REs | Xiaomi |
|  | R1-2209814 | Remaining issues on NR PDCCH reception in symbols with LTE CRS REs | Huawei, HiSilicon |
|  | R1-2209929 | Remaining issues on NR PDCCH reception in symbols with LTE CRS REs | NTT DOCOMO, INC. |
|  | R1-2210017 | Maintenance for Rel-18 DSS | Qualcomm Incorporated |
|  | R1-2210193 | [eDSS] RRC configuration and UE capability for PDCCH on CRS | Nokia, Nokia Shanghai Bell |