**3GPP TSG RAN WG1#111 R1-22xxxxx**

**Toulouse, FR November 14 – 18, 2022**

**Agenda Item: 8.2**

**Source: Qualcomm Incorporated (Moderator)**

**Title: Preparation Phase discussion on FR2-2 Maintenance**

**Document for: Discussion, Decision**

# Introduction

The feature leads summarized the issues submitted to RAN1 #111 on FR2-2 maintenance.

# Issues for PDCCH monitoring enhancements [1]

|  |  |
| --- | --- |
| **Issue#** | **Issue** |
| PDCCH-1  | PDCCH monitoring occasion for DCI format 2\_1 |
| PDCCH-2 | Definition of configured DL-CCs number for BD/CCE budge |
| PDCCH-3 | Clarification of multi-slot monitoring in groups of slots |

Please provide your view on if you think we should which issue. Please mark a “Y” for the one you believe discussion is necessary.

|  |  |  |  |
| --- | --- | --- | --- |
| Company | PDCCH-1 | PDCCH-2 | PDCCH-3 |
| DOCOMO | Y | Y | Y |
| LG Electronics | L | Y | Y |

Additional comments

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| --- | --- |
| Company | Comments |
| LG Electronics | PDCCH-1: Not essential. Not a correction.PDCCH-2: Agree with FL initial assessmentPDCCH-3: Agree with FL initial assessment. By the way, since L is already used in the same section, it may be necessary to find another proper wording to avoid confusion. |

# Issues identified for scheduling and HARQ [2]

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| **Issue#** | **Issue** |
| HARQ-1 | Last DCI determination for multi-PDSCH scheduling and single PDSCH scheduling in same MO |
| HARQ-2 | Frequency hopping for PUSCH and SRS in FR2-2 |

Please provide your view on if you think we should which issue. Please mark a “Y” for the one you believe discussion is necessary.

|  |  |  |
| --- | --- | --- |
| Company | HARQ-1 | HARQ-2 |
| DOCOMO |  | Y |
| LG Electronics | Y | Y |

Additional comments

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| --- | --- |
| Company | Comments |
| DOCOMO | We hope HARQ-2 is considered just straightforward.  |

# Issues identified for beam management [3]

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| --- | --- |
| **Issue#** | **Issue** |
| BM-1 | multi-PUSCH scheduling in unified TCI in FR2-2 |

Please provide your view on if you think we should which issue. Please mark a “Y” for the one you believe discussion is necessary.

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| --- | --- |
| Company | BM-1 |
| DOCOMO | Y |
| LG Electronics | N |

Additional comments

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| --- | --- |
| Company | Comments |
| DOCOMO | As per the previous discussion, we view some difference between multi-PDSCH scheduling with Rel-15 spatial relation and Rel-17 unified TCI framework, which we believe should be applied to multi-PUSCH scheduling as well. Considering there is a difference from multi-PUSCH scheduling with Rel-15 spatial relation, this clarification in the CR is needed in our view.  |
| LG Electronics | Current specification seems sufficient.

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| --- |
| 5.1.5 Antenna ports quasi co-location<Unrelated parts are omitted>When the UE would transmit the last symbol of a PUCCH with HARQ-ACK information corresponding to the DCI carrying the TCI State indication and without DL assignment, or corresponding to the PDSCH scheduling by the DCI carrying the TCI State indication, and if the indicated TCI State is different from the previously indicated one, the indicated *DLorJointTCIState* or *UL-TCIstate* should be applied starting from the first slot that is at least $BeamAppTime\\_r17$ symbols after the last symbol of the PUCCH. The first slot and the $BeamAppTime\\_r17$ symbols are both determined on the carrier with the smallest SCS among the carrier(s) applying the beam indication. |

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# Issues identified for channel access aspect [4]

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| **Issue#** | **Issue** |
| CA-1 | Control of SCSt based msg1/msgA transmission |
| CA-2 | Channel Access Type upgrade within gNB COT  |
| CA-3 | Channel Access Type for resuming UE COT after a gap |
| CA-4 | Independent Per Beam LBT procedure in a multi-Beam COT |
| CA-5 | DCI Format 0\_2, 1\_2 |
| CA-6 | Exclude CSI-RS validation when in discovery burst |
| CA-7 | PDCCH ordered PRACH  |
| CA-8 | TCI State for L3-RSSI measurement |
| CA-9 | Channel measurement and Interference Measurement subject to validation |
| CA-10 | Cg-minDFI-Delay in FR2-2 |
| CA-11 | *Channel Occupancy Duration* maximum value |
| CA-12 | Channel Access Procedure after failure of Type 2 channel access  |

Please provide your view on if you think we should which issue. Please mark a “Y” for the one you believe discussion is necessary.

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Company | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| DOCOMO | Y | Y | Y | N | Y | Y | Y | N | Y | N | N | N |
| LG Electronics | Y | Y | Y | N | Y | N | N | Y | Y | Y | N | N |

Additional comments

|  |  |
| --- | --- |
| Company | Comments |
| DOCOMO | 1 (and 2, 3 as well) seems the highest priority (even across all sub-agendas). If nothing is achieved in this meeting, the issue should not be pursued in the future. For 8, it should be ok to leave it to implementation/operation. 10 is ok, the reason of N is it seems editorial.  |
| LG Electronics | Issues CA-1, 2, and 3 should be treated with the highest priority and it is okay as long as it is introduced whether it is supported by a unified solution or separately. For CA-7, Type 1 channel access is a baseline and, if supported, Type 2 switching via LBT upgrade seems sufficient. |

# References

[1]. R1-221xxxx, FL Summary for B52.6 GHz PDCCH monitoring enhancements, Moderator (Lenovo)

[2]. R1-221xxxx, Summary #1 of PDSCH/PUSCH enhancements (Scheduling/HARQ), Moderator (LGE)

[3]. R1-221xxxx, FL Summary of beam management for FR2-2 maintenance, Moderator (InterDigital)

[4]. R1-221xxxx, FL summary on Maintenance of Channel Access Mechanisms for NR in 52.6 to 71GHz band, ver01, Moderator (Qualcomm)