**3GPP TSG RAN WG1 Meeting #107-e R1-2112586**

**e-Meeting, November 11th – 19th, 2021**

**Agenda Item: 8.1.4**

**Source: Huawei, HiSilicon**

**Title: (Moderator) Summary of CSI enhancements for MTRP and FDD (Round 1)**

**Document for: Discussion and Decision**

# Introduction

# Summary of CSI enhancement for Rel-17 port selection codebook

***Proposal 1:*** *The window size is min(N,N3).*

* *Note: the UCI payload of i1,6 is ceiling(log2(N-1)) bits regardless of values of N3*

***Proposal 2:*** *Support to report Port indicator, SCI, and FD indicator in Group 0*

* *FFS (to be concluded in RAN1 107): Report bitmap in Group 0 or Group 1 without bitmap partition*
* *FFS (to be concluded in RAN1 107): whether/how to deal with coefficients partition issue when ceil(KNZ/2-v) < 0*
* *The remaining indicators (except above FFS) are mapped to reporting Groups 0, 1, and 2 same as Rel-16 eType-II PS codebook.*
* *Note: It is RAN1 common understanding that when UCI omission occurs for Rel-17 PS codebook, the associated CQI does not have to be recalculated conditioned on the PMI after omission.*

# Summary of CSI enhancement for Multi-TRP

***Proposal 5:*** *For a CSI report associated with a Multi-TRP/panel NCJT measurement hypothesis configured by single CSI reporting setting:*

* ***Two CBSRs can be configured per CodebookConfig, whereas one CBSR is applied to one CMR group in a CMR resource set respectively, i.e. per TRP.***

***Proposal 7:*** *To confirm the order of UCI payload construction for reported CSIs, down-select one from the following:*

* *Support Alt 1: modify priority equation,* ***e.g.*** *Section 5.2.5 in 38.214 by introducing priority index corresponding to single-TRP or NCJT measurement hypothesis type*
  + *It also implies that one CSI reporting setting for NCJT measurement reporting can contain multiple CSI reports each of which corresponds to one single-TRP or NCJT measurement hypothesis*
* *Support Alt2+Alt 4:* 
  + *Alt 4: modify mapping order of CSI fields of one CSI report,* ***e.g.*** *Table 6.3.2.1.2-3/4/5 in 38.212* 
    - *i.e. introducing mapping order of CSI fields in the order of MTRP CSI, the first TRP CSI, and the second TRP CSI.*
  + *Alt 2: modifying the table of priority reporting levels for Part 2 CSI for prioritized single-TRP or NCJT measurement hypothesis type,* ***e.g.*** *Table 5.2.3-1 in 38.214*
    - *introducing the priority reporting level for Part 2 CSI associated with single-TRP or NCJT measurement hypothesis type in the order of:* 
      * *Alt 2-1:*
        + *Part 2 wideband CSI for CSI reports 1 to N;*
        + *Part 2 subband CSI for report 1 to N: in the order of MTRP CSI, the first TRP CSI, and the second TRP CSI within each report*
      * *Alt 2-2:*
        + *Part 2 wideband CSI for CSI reports 1 to N;*
        + *Part 2 subband CSI for report 1 to N: even subbands associated with all measurement hypotheses and then odd subbands associated with all measurement hypotheses within each report*
      * *Down-select either Alt 2-1 or Alt 2-2 in RAN1 107, if Alt 2+Alt 4 is agreed*
  + *It also implies that one CSI reporting setting for NCJT measurement reporting contains single CSI report which corresponds multiple single-TRP and/or NCJT measurement hypotheses.*

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| Company | Comments |
| **Mod** | * Alt 1: Motorola, Intel, Qualcomm, MediaTek, DoCoMo * Alt 2+Alt 4: Vivo, Nokia, Apple, Spreadtrum, CMCC * Alt 4 only as RAN1 106bis-e conclusion(almost): ZTE, Oppo, DoCoMo |