**3GPP TSG RAN WG1 #118bis R1-2409062**

**Hefei, China, October 14th – 18th, 2024**

**Agenda item:** 9.2.2

**Source:** Moderator (Samsung)

**Title:** Moderator Summary for 2nd offline on Rel-19 CSI enhancements

**Document for:** Discussion and Decision

## Introduction

The following proposals were discussed.

## Summary of proposals

### Issue 1 (WID objective 2a and 2b): Type-I and Type-II codebook refinement for up to 128 CSI-RS ports

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| 1.2.3 | **[117] Agreement**For the Rel-19 Type-I SP and Type-II codebook refinements (except based on Rel-18 Type-II Doppler) for 48, 64, and 128 CSI-RS ports, regarding CPU occupation* For Capability 1 timeline: OCPU = ceil(P/32)
* For Capability 2 timeline: OCPU = 1

**Proposal 1.B.3**: For the Rel-19 Type-I SP and Type-II codebook refinements (except based on Rel-18 Type-II Doppler) for 48, 64, and 128 CSI-RS ports, to match Capability 2 timeline, scale the associated CSI reference resource slot location nCSI\_ref by ceil(P/32)**FL assessment**: The above issue needs some discussion.  | **Support/fine:** vivo, Spreadtrum, Samsung (open), HONOR (open), Fraunhofer IIS/HHI (open), Qualcomm, TCL (open), Tejas (open),**Not support:** ZTE, CMCC, Nokia/NSB (not sure but ok to discuss), Ericsson (ok to dis-cuss), OPPO, Google |

### Issue 2 (WID objective 2c): CRI-based CSI for hybrid beamforming (HBF)

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### Issue 3 (WID objective 3): CJT calibration reporting for non-ideal synchronization and backhaul

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| 3.3.9 | **Question 3.C.9**: For the Rel-19 aperiodic standalone CJT calibration (CJTC) reporting, when linking CJTC Dd and Rel-18 eType-II CJT CSI reports is configured with two separate triggers, please share your views, if any, on:* Whether an additional UE procedure is needed when the reported DO value is ‘out of range’
	+ Yes: Google, NEC, HONOR, Lenovo/MotM, Ericsson (discuss), Samsung (discuss),
	+ No: TCL, ZTE, vivo, Nokia/NSB, Sony, OPPO, NTT DOCOMO,

Alt3. When at least one of the NTRP reported delay offset (DO) values in a linked CJTC Dd report is ‘out of range’, the UE does not perform DO compensation on the triggered Rel-18 eType-II CJT CSI associated with TRP(s) that are ‘out of range’* Yes: Huawei, Qualcomm, Samsung, Ericsson, Sony, Lenovo, Xiaomi, NEC, HONOR, OPPO,
* No: Nokia, vivo, ZTE, Apple, IDC, NTT DOCOMO,

**FL assessment**: The above two issues need some discussion. For a given issue, if there is no consensus on ‘Yes’, we will assume that the answer is ‘No’ |

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| 3.3.12 | **Proposal 3.C.12**: For the Rel-19 aperiodic standalone CJT calibration (CJTC) reporting, when linking CJTC Dd and Rel-18 eType-II CJT CSI reports is configured with two separate triggers, (see below) to indicate whether or not the UE should perform delay offset (DO) compensation based on the *latest linked* CJTC Dd report when calculating the Rel-18 Type-II CJT CSI.Without increasing the bit-width of the CSI request field of the DCI triggering a Rel-18 CJT eType-II CJT CSI report, 1 bit [FFS: per resource vs. for all NTRP resources] RRC parameter (functioning as a flag) per CSI trigger state* FFS when >1 reports are associated with a single state

Nokia, Ericsson, vivo, Samsung (ok), ZTE, Apple (all NTRP resources), Huawei, CATT, **FL assessment**: This issue pertains to the interpretation of the indicator. The following issues will be discussed in later rounds: 1) whether to include the indicator as a part of trigger state, or elsewhere (without introducing a new DCI field), 2) whether it is per CSI-RS resource or for all resources (TRPs)  |
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| 3.3.10 | **Question 3.C.10**: For the Rel-19 aperiodic standalone CJT calibration (CJTC) reporting, when linking CJTC Dd and Rel-18 eType-II CJT CSI reports is configured with a joint trigger, please share your views, if any, on how the timeline, CPU occupation, and/or active resource counting of the joint reporting are determined from those agreed for the CJTC Dd and the Rel-18 eType-II CJT CSI. * Alt1. Reuse the timeline, CPU occupation, and active resource counting for the Rel-18 eType-II CJT
* Alt2. Add the timeline, CPU occupation, and active resource counting for the Rel-19 CJTC to the timeline, CPU occupation, and active resource counting for the Rel-18 eType-II CJT, respectively

Alt1 (no spec impact):* Support/fine: Samsung, HONOR, Xiaomi, vivo, Ericsson, OPPO, NTT DOCOMO, Qualcomm (OCPU, ARC), Huawei/HiSi, Apple (OCPU, ARC), OPPO,
* Not support:

Alt2: * Support/fine: ZTE, MediaTek, Google, NEC, Qualcomm (timeline), Apple (timeline),
* Not support:

Alt1 for OCPU, ARCTimeline: Alt1 vs Alt2 119**FL assessment**: The baseline is to reuse those of the Rel-18 eType-II CJT CSI since this represents the worst of the two and the resulting report is analogous to Rel-18 eType-II CJT (i.e. Alt1). This implies there is no spec impact, which is the default.  |

# References