**3GPP TSG RAN WG1 #117 R1-2405344**

**Fukuoka, Japan, May 20th – 24th, 2024**

**Source: Moderator (NTT DOCOMO)**

**Title: FL summary on Rel-18 MIMO DMRS**

**Agenda item: 8.1**

**Document for: Discussion and Decision**

# Introduction

This document contains summary of proposals for DMRS.

* **Critical (C)**: this includes high-priority issue (essential, pending issues, broken spec components) or editorial change that either enhances the clarity of the specs or corrects mistakes in the specs.
* **Non-essential (N)**: this includes all other purposes such as spec optimization and low-priority issues.
* **Editorial (E)**: this includes editorial issues that will be handled as editorial CRs.

# Discussion

The following is the summary of issues. Draft CRs with assessment = C/E will be discussed in online.

If you have any comments, please input in “Companies’ view” for each issue.

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| # | Issue | Assessment | Companies’ view (please provide your view on the assessment of each issue) |
| 1 | For 8tx PUSCH, the UE reports support for one or more of ‘codebook1’, ‘codebook2’, ‘codebook3’, or ‘codebook4’. However, the current specification for 8Tx PTRS assumes codebook subset (‘full coherent’, ‘partial coherent’, or ‘non-coherent’) (R1-2405295)  FL: The issue is valid. | E | Critical ©: Ericsson, Docomo, Google, Samsung, ZTE, Lenovo, OPPO, Xiaomi, Fujitsu (it could be editorial?), Qualcomm (Valid issue, Maybe can still be labelled as E?), Spreadtrum, CATT, vivo(Could be editorial, since what in the previous agreement is for full/partial/non coherence rather codebook1/2/3/4).  Non-essential (N):  FL: Without the change, the spec. cannot work well. In that sense, the issue is critical. However, it can be handled by editorial CR. Hence, I changed to “E”.  Ericsson: This is a correction, not editorial change. Put the CR under editorial change category will mislead readers to ignore the CR and missed the information. Full/partial/non-coherence are UE capabilities only for 2 & 4 ports, and the concept of codebook subsets that we have for 2/4 ports does not exist for 8 ports.  For example, in the 4 port case, a UE reporting ‘fully coherent’ capability can always be configured with partial or non-coherent precoders, whereas an 8 port fully coherent UE can only use fully (Ng=8) coherent precoders, unless it reports capability for any or all of the corresponding codebooks for Ng=1/2/4.  So the behavior in the spec now for coherence with PTRS is incorrect, and is representative of different UEs than were actually specified. |
| 2 | Align RRC parameter name (R1-2404157, R1-2405230).  FL: The issue is valid. Both tdocs propose the same update. | E | Editorial (E): Ericsson, vivo, Docomo, Google, Samsung, ZTE, Lenov, OPPO, Xiaomi, Fujitsu, Qualcomm, Spreadtrum, CATT  Non-essential (N):  FL: Since both CRs propose the same text, I’ll propose the first one (x4157). |
| 3 | Align UE capability name (R1-2405231).  FL: The issue is valid. | E | Editorial (E): Ericsson, Docomo, Google, Samsung, ZTE, Lenovo, OPPO, Xiaomi, Fujitsu, Qualcomm, Spreadtrum, CATT, vivo  Non-essential (N): |
| 4 | Clarify R15 DMRS port table in TS38.212 is applied when “*dmrs-TypeEnh* is not configured” (R1-2405232).  FL: The issue is valid. | E | Editorial (E): Ericsson, Docomo, Google, Samsung, ZTE, Lenovo, OPPO,Xiaomi, Fujitsu, Qualcomm, Spreadtrum, CATT, vivo  Non-essential (N): |

# Conclusion

**Proposal:**

The following draft CRs are agreed for the editor’s CR.

* R1-2405295 (TS38.214)
* R1-2404157 (TS38.214)
* R1-2405231 (TS38.214)
* R1-2405232 (TS38.212)

# References

Following draft CRs are proposed for DMRS in AI8.1 (NR\_MIMO\_evo\_DL\_UL-Core).

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| [1] | [**R1-2404157**](https://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_117/Docs/R1-2404157.zip) | Draft CR on RRC parameter correction for enhanced DMRS | vivo |
| [2] | [**R1-2405230**](https://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_117/Docs/R1-2405230.zip) | Align RRC parameters for DMRS | Ericsson |
| [3] | [**R1-2405231**](https://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_117/Docs/R1-2405231.zip) | Align UE capability parameters for DMRS | Ericsson |
| [4] | [**R1-2405232**](https://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_117/Docs/R1-2405232.zip) | Clarification on DMRS antenna port table | Ericsson |
| [5] | [**R1-2405295**](https://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_117/Docs/R1-2405295.zip) | Correction on PT-RS Coherence Conditions for 8 Tx | Ericsson |