3GPP TSG-RAN WG4 Meeting # 111 TDoc R4-24xxxxx

Fukuoka, Japan, May 20 – May 24, 2024

**Title: LS on delta parameter options extension for predicted PMI**

**Response to:**

**Release: Rel-18**

**Work Item: NR\_MIMO\_evo\_DL\_UL-Perf**

**Source:** **RAN WG4**

**To:** **RAN WG1**

**Cc: RAN WG2**

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**Attachments:**

# 1 Overall description

Within the Release 18 work item on NR MIMO evolution (NR\_MIMO\_evo\_DL\_UL), RAN4 has studied possible test configurations for Enhanced Type II codebook for predicted PMI. RAN4 has agreed test configurations in RAN4#110-bis meeting in April 2024 and corresponding timing diagrams are shown in Figure 1 and Figure 2.

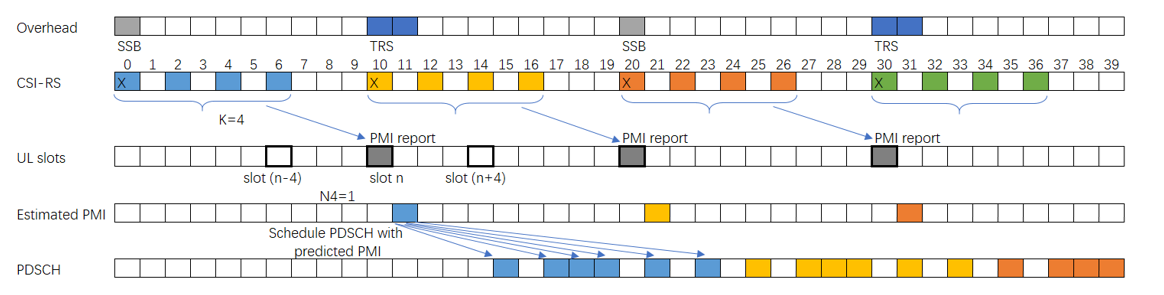


Figure 1: RAN4 agreed FDD test timing.

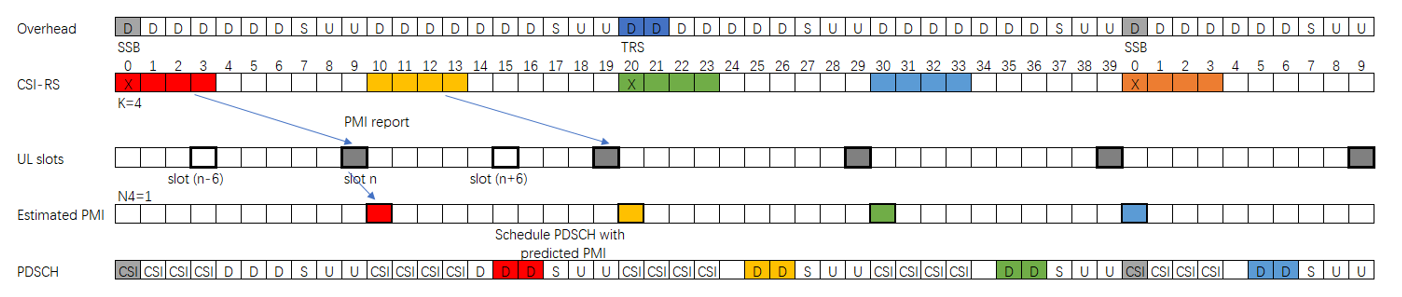


Figure 2: RAN4 agreed TDD test timing.

Based on RAN4’s evaluation, RAN4 observes that delta parameter used to UE PMI prediction timing (“Estimated PMI” in Figures) defined in RAN1 (TS38.214) and RAN2 (TS38.331) cannot match actual precoder usage timing for PDSCH due to limited options {m0, n0, n1, n2}.

|  |
| --- |
| typeII-Doppler-r18                        SEQUENCE {                  n1-n2-codebookSubsetRestriction-r18       CBSR-r18,                  paramCombination-Doppler-r18              INTEGER (1..9),                  td-dd-config-r18                          TD-DD-Config-r18,                  numberOfPMI-SubbandsPerCQI-Subband-r18    INTEGER(1..2),                  predictionDelay-r18                       ENUMERATED {m0,n0,n1,n2 },                  typeII-RI-Restriction-r18                 BIT STRING (SIZE (4))      ***predictionDelay***  Prediction delay for Doppler and Doppler port selection codebooks see TS 38.214 [19], Clause 5.2.1.4. The first value m0 means that the first slot for which the CSI corresponds to is the slot where the CSI reference resource is located at.  For the other three candidate values (n0, n1, n2), then the first slot for which the CSI corresponds to is given by l= n+delta, where delta can take on values of 0, 1, 2 and n the slot in which CSI is reported. |

RAN4 sees a mismatch causing suboptimal UE performance of predicted PMI. Therefore, RAN4 would like to inform RAN1 that to improve UE performance by solving timing mismatch and to allow network higher configuration flexibility, extending delta parameter options with larger values could be considered.

# 2 Actions

**To RAN WG1**

**ACTION:**

RAN4 kindly request RAN1 to take the above RAN4 evaluations into account.

# 3 Dates of next RAN WG 4 meetings

TSG RAN WG4 Meeting #112 19th – 23rd Aug. 2024 Maastricht, Netherlands

TSG RAN WG4 Meeting #112-bis 14th – 18th Oct. 2024 TBC, China