**3GPP TSG-RAN WG4 Meeting #112 R4-2414044**

**Maastricht, Netherlands, 19th – 23rd August, 2024**

**Title:** WF on core maintenance and performance maintenance for multi-Rx

**Agenda Item:** 5.13.4

**Source:** vivo

**Document for:** Approval

# Agreements for core maintenance

Issue 1-1: Measurement restriction relaxation requirements

For FR2-1, there is no measurement restriction allowed for UE supporting [TBD - multi-rx capability], according to the conditions described in clause 3.6.x, and the UE is required to measure both the CSI-RS for RLM and the other CSI-RS for RLM, BFD or L1-RSRP measurement, while meeting requirements in clause 8.1.3.2, provided the following conditions are met:

-     Both CSI-RSs are not in any CSI-RS resource set with repetition ON, and

-     One CSI-RS has same QCL source as either

* + the active TCI state of a PDSCH scheduled in the same OFDM symbol or
	+ the QCL source based on the default QCL assumption to be applied in the same OFDM symbol according to 38.214 clause 5.1.5, and

-     the other CSI-RS has same QCL source as either

* + the active TCI state of a PDSCH scheduled in the same OFDM symbol or
	+ the QCL source based on the default QCL assumption to be applied in the same OFDM symbol according to 38.214 clause 5.1.5, and

-     Resources of the active TCI states of the two PDSCHs, ~~and~~ or QCL sources of the default QCL assumption, or the active TCI state of PDSCH and QCL source of the default QCL assumption have been reported as a resource group in Rel-17 group-based RSRP report.

Issue 1-3: Scheduling restriction relaxation requirements

For mDCI case:

* The CSI-RS and both of the PDSCHs are on the same OFDM symbol(s), or the CSI-RS and one of the PDSCHs with different QCL typeD are on the same OFDM symbol(s) when partially overlapping PDSCHs are scheduled.

Issue 1-4: DCI based dual TCI state switch delay for m-DCI

this issue is closed.

Issue 1-8: MRTD for multi-Rx

Remove “Note 1: CP length dependency on SCS is FFS” from the Table.

Issue 1-2: TRP specific BFD measurement requirements

Follow same principle as for issue 1-1 (Measurement restriction relaxation requirements).

# Agreements for performance maintenance

Issue 2-1: 3AoAs setup 6

* [qualified AoA pairs] is replaced with “the AoA pairs, i.e., (AoA1, AoA2), that can support 2 AoA reception [simultaneously].”
* Specify the AoA numbering and their description in the test set up.
* The UE positioning shall be such that the UE passes both spherical coverage requirements.
	+ FFS whether and how to capture it in RAN4 spec.

Issue 2-3: Test setup for dual TCI state switching for m-DCI

Use the following proposals as starting point, and further check when drafting the CR:

* + P1: When three probes are used to transmit four RS, the test probe transmitting more than one RS should emulate different DL transmit beams by transmitting different RS [with different power and delay]. This will ensure that the UE has done a time/frequency synchronization with the target RS before switching to the target TCI state when receiving a DCI command for a TCI state switch
	+ P2: In m-DCI TCI state switching test case, because support of simultaneous PDCCH reception is not mandatory for a Rel-18 UE, the TE shall send the two DCIs to switch to the target TCI states in consecutive slots n and n+1. The UE shall be able to receive the target TCI states simultaneously at slot n + 1 + *timeDurationForQCL*.
	+ P3: Distinguish PDCCH and PDSCH TCI states clearly in the m-DCI TCI state switching test case. The TCI states and associated probes and SSBs should be
		- TCI states before TCI state swtiching:
			* For CORESETPoolIndex 0
				+ PDCCH TCI state: TCI state 0 (probe 0, SSB0)
				+ [FFS PDSCH TCI states: TCI state 0 (probe 0, SSB0)]
			* For CORESETPoolIndex 1
				+ PDCCH TCI state: TCI state 1 (probe 1, SSB1)
				+ [FFS PDSCH TCI states: TCI state 1 (probe 1, SSB1)]
		- TCI states after TCI state swtiching:
			* For CORESETPoolIndex 0
				+ PDCCH TCI state: TCI state 0 (probe 0, SSB0)
				+ PDSCH TCI states: TCI state 3 (probe 0, SSB3)
			* For CORESETPoolIndex 1
				+ PDCCH TCI state: TCI state 1 (probe 1, SSB1)
				+ PDSCH TCI states: TCI state 2 (probe 2, SSB2)

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