**3GPP TSG-RAN WG4 Meeting #111 R4-2410356**

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

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

**Agenda Item:** 7.3.4

**Source:** vivo, Ericsson

**Document for:** Approval

# Agreements for core maintenance

**Issue 1-3-3: The scheduling restriction and measurement restriction relaxation for CBD**

* Remove CBD from the applicable resources for scheduling and measurement restriction relaxation.
* Remove scheduling and measurement restriction relaxation requirements for CBD.

# Agreements for performance part

**Issue 1-2: Gain accuracy in tests for verifying multi-Rx L1-RSRP accuracy requirements**

* The existing G for Rx beam peak direction for PC3 is applicable for multi-Rx UEs.
* Not add additional margin on top of the legacy methodology used in the test setup
* Define test case to verify the accuracy requirements for multi-Rx.
* If the new test case is conducted, the corresponding legacy test will be skipped.

**Issue 1-3: AoA setup for tests**

* 3AoAs for TCI state switching [and TRP specific BFD] tests with 3 or more SSBs. For the other test cases, as basline, use 2 AoAs.
* Further discussion is allowed if consensus can be reached in the future meeting.
* In the test configuration for CSI-RS based, the transmission of the two RSs is simultaneous or TDMed.
* In the test configuration for SSB based, the transmission of the two RSs is TDMed.

**Issue 2-2a: Whether and how to define new 2AoA setup for multi-Rx**

* Introduce new AoA Setup X2: 2 AoAs, both AoAs are in non Rx beam peak directions
  + The 2 AoAs for simultaneous reception with different QCL-typeD is from the set of [qualified AoA pairs] according to the spherical coverage requirement for simultaneous reception from multiple directions as defined in clause 7.3K.3 of TS 38.101-2.
  + The relative angular offset between the directions of the 2 AoAs is based on the UE’s declared orientation as defined in clause 7.3K.3 of TS 38.101-2.
  + One of the AoAs needs to satisfy the legacy spherical coverage requirement. FFS how single AoA RF test and 2 AoA RF test could ensure this.
* Work on the CR for 3AoA test setup:
  + 1 AoA is from the set of directions corresponding to the EIS spherical coverage percentile of the DUT as defined in clause 7.3.4 of TS 38.101-2 [19] for each UE power class.
  + The AoA pair for simultaneous reception with different QCL-typeD is from the set of [qualified AoA pairs] according to the spherical coverage requirement for simultaneous reception from multiple directions as defined in clause 7.3K.3 of TS 38.101-2.
    - The relative angular offset between the directions of the AoA pair is based on the UE’s declared [AoA separation and UE] orientation as defined in clause 7.3K.3 of TS 38.101-2.

**Issue 2-3: Number of probes in RRM test cases**

* RRM test cases for multi-Rx are defined with at most 3 active probes needed in the tests.

**Issue 2-7: Test case(s) for dual TCI state switching for m-DCI**

* Introduce one test case for DCI-based dual TCI state switching for m-DCI
* From [RS1, RS2] (Probe 1 and 2, no simultaneous transmission) to [RS3, RS4] (Probe 1 and 3) with 3 active probes.
  + Side conditions
    - Probe 1 & 3 shall fulfill the mRx spherical coverage EIS requirement (angular offset as declared by the UE). Note: Aligned with 2AoA selected as we agreed.
    - In addition, Probe 1 & 2 shall fulfill individually the legacy spherical coverage EIS requirement and angular offset from the legacy 2AoA table, i.e. selection is equivalent to a single pair from Setup 3
  + Signal mapping
    - RS1 & RS3 are mapped to Probe 1
    - RS2 is mapped to Probe 2
    - RS4 is mapped to Probe 3
* Not to define test case for MAC-CE based dual TCI state switch for m-DCI.

# Open issues for core maintenance

Company may bring contribution on open issues captured in Topic summary R4-2408000.

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