**3GPP TSG-RAN WG4 Meeting # 104-e R4-22xxxxx**

**Electronic Meeting, 15th-26th, Aug., 2022**

**Title:** WF on FeMIMO RRM impact for unified TCI state

**Agenda item:** 9.17.2

**Source:** Intel

**Document for:** Approval

# Way Forward on Unified TCI state

### Sub-topic 1-1 Active UL TCI state

**Issue1-1-1a Whether UE need to track UL time/frequency for UL TCI state activation when DL-RS is associated with serving cell**

* Agreement
  + No, UL timing is derived from DL timing of serving cell

**Issue1-1-1b Whether UE need to track UL time/frequency for UL TCI state activation when DL-RS is associated with cell with different PCI**

* Agreement
  + No, UL timing for cell with different PCI if derived from DL timing of serving cell in Rel-17

**Issue1-1-2 PL-RS maintenance for active TCI**

* Agreement
  + LS is sent to RAN1 for clarification

**Issue1-1-3 The relation of active UL TCI state list with active DL TCI state list**

* Agreement
  + Independent for separate UL/DL TCI state list indicated by dl-orJoint-TCI-ToAddModList for DL TCI state and ul-TCI-ToAddModList for UL TCI state . But for joint TCI state the same TCI is used for UL and DL indicated by dl-orJoint-TCI-ToAddModList

### Sub-topic 1-2 MAC CE based TCI state Switching delay requirements

**Issue 1-2-1 Joint TCI switching delay requirement**

* Agreement:
  + For UL TCI state switching,
    - In case of joint TCI state switch, UE is not expected to transmit on UL before UE completes the DL and UL TCI state switch.
* Proposals:
  + For DL TCI state switching,
    - Option 1: In case of joint TCI state switch, UE is not expected to receive on DL before UE completes the DL and UL TCI state switch.
    - Option 2: In case of joint TCI state switch, UL TCI state switch delay is longer than the DL TCI state switch delay, the UE shall be able to receive on DL in the new DL TCI state switch THARQ slots before UE completes the UL TCI state switch.

**Issue 1-2-2 MAC-CE based UL TCI state switching delay when SSB is indicated as PL-RS in UL TCI state for FR2**

* Proposals
  + Option 1:
    - Longer delay is expected.
  + Option 2:
    - Reuse the existing delay requirement of MAC CE based UL TCI state switch.

**Issue 1-2-3 Wording Update of introduction for active DL/UL TCI state switch delay requirements**

* Agreement:
  + Agreed in revision of CR R4-2213482.

### Sub-topic 1-3 Common TCI state switching in CA case

**Issue 1-3-1 Known condition on shared RS in CA scenario**

* Agreement:
  + The known condition will depend on the associated RS in common TCI state.

**Issue 1-3-2 Known condition on different RS in CA scenario**

* Proposals
  + Option 1:
    - Reuse the existing known condition. If the source RS is configured per CC, then the known condition is per CC.
  + Option 2:
    - Common TCI is for intra-band CA. RAN4 may skip the case that QCL-type is configured per CC for common TCI.

**Issue 1-3-3 Common TCI state switching delay requirement**

* Proposals
  + Option 1:
    - Define the requirement without differentiating the triggering signaling, e.g. unifiedTCI-StateRef or simultaneousU-TCI-UpdateList1/2/3/4-r17.
  + Option 2:
    - Define the requirement indicated by IE simultaneousU-TCI-UpdateList1/2/3/4-r17.
  + Option 3:
    - Other options are not precluded

### Sub-topic 1-4 TCI state list update delay

**Issue 1-4-1 Whether to consider unknown TCI state in the TCI state list**

**Agreement in GTW:**

* [Longer delay applies if any TCI state is unknown in TCI state list update]. Active TCI state list can contains known and unkown TCI states.

**Issue 1-4-2 MAC CE based TCI state list update delay for unknown TCI state**

* Depends on issue 1-4-1.

### Sub-topic 1-5 Clarification on the applicable TCI after DCI BWP switching

**Issue 1-5-1 Clarification on the applicable unified TCI after DCI BWP switching**

* Agreed in revision of CR R4-2212665.