**3GPP TSG-RAN WG2 Meeting #121R2-220xxxx**

**Athens, Feb-March 2023**

**Title: DRAFT**LS on further questions on feMIMO RRC parameters

**Response to: -**

**Release:** Rel-17

**Work Item:** NR\_feMIMO-Core

**Source:** ERICSSON to be replaced by 3GPP TSG-RAN WG2

**To:** 3GPP TSG-RAN WG1

**Contact Person:**

#### Name: Helka-Liina Määttänen

E-mail Address: Helka-liina.maattanen@ericsson.com

**Send any reply LS to: 3GPP Liaisons Coordinator,** **mailto:3GPPLiaison@etsi.org**

**Attachments:** None

1. **Overall Description:**

**UL power control configuration**

RAN2 discussed the field description of *pathlossReferenceRS-Id* and *ul-powerControl* in *TCI-state* (for Rel-17 joint TCI states) and *cell* in *QCL-Info* in *TCI-State*. Same issue and questions apply to the field description of *pathlossReferenceRS-Id* and *ul-powerControl* in *TCI-UL-state* and *servingCellId* in *TCI-UL-State*.

We present the question with TCI-State IE:

TCI-State ::= SEQUENCE {

 tci-StateId TCI-StateId,

 qcl-Type1 QCL-Info,

 qcl-Type2 QCL-Info OPTIONAL, -- Need R

 ...,

 [[

 additionalPCI-r17 AdditionalPCIIndex-r17 OPTIONAL, -- Need R

 pathlossReferenceRS-Id-r17 PUSCH-PathlossReferenceRS-Id OPTIONAL, -- Cond JointTCI

 ul-powerControl-r17 Uplink-powerControlId-r17 OPTIONAL -- Cond JointTCI

 ]]

}

QCL-Info ::= SEQUENCE {

 cell ServCellIndex OPTIONAL, -- Need R

 bwp-Id BWP-Id OPTIONAL, -- Cond CSI-RS-Indicated

 referenceSignal CHOICE {

 csi-rs NZP-CSI-RS-ResourceId,

 ssb SSB-Index

 },

 qcl-Type ENUMERATED {typeA, typeB, typeC, typeD},

 ...

}

The current field descriptions states:

***ul-PowerControl***

Configures power control parameters for PUCCH, PUSCH and SRS for this TCI state. The field is present here only if *ul-powerControl* is not configured in any *BWP-Uplink-Dedicated* of this serving cell.

***pathlossReferenceRS-Id***

The ID of the reference signal (e.g. a CSI-RS or a SS block) used for PUSCH, PUCCH and SRS path loss estimation.

***cell***

The UE's serving cell in which the *referenceSignal* is configured. If the field is absent, it applies to the serving cell in which the *TCI-State* is configured. The RS can be located on a serving cell other than the serving cell in which the *TCI-State* is configured only if the *qcl-Type* is configured as *typeC* or *typeD*. See TS 38.214 [19] clause 5.1.5.

RAN2 would like to check the understanding of the *pathlossReferenceRS-Id* and *ul-powerControl* fields.

For *pathlossReferenceRS-Id*, RAN2 considered two possibilities:

1) *pathlossReferenceRS-Id* is an index referring to a list element in a list configured in the UL BWP and serving cell where the TCI state is applied, regardless if the field *cell* is configured or not.

2)When the field *cell* is configured, *pathlossReferenceRS-Id* is an index referring to a list element in a list configured in an UL BWP of the serving cell indicated by *cell* . When *cell* is absent, *pathlossReferenceRS-Id* is an index referring to a list element in a list configured in the UL BWP and serving cell where the TCI state is applied.

In 2), when *cell* is absent, it may be necessary to add a new field to indicate in which UL BWP the list is to be found.

Is 1) or 2) or yet another alternative the correct understanding for *pathlossReferenceRS-Id*? If it is 2), please indicate how to know the UL BWP when the field *cell* is present.

For *ul-powerControl*, RAN2 considered two possibilities:

1) *ul-powerControl* is an index referring to a list element in a list configured in the serving cell where the TCI state is applied, regardless if the field *cell* is configured or not.

2) When the field *cell* is configured, *ul-powerControl* is an index referring to a list element in a list configured in the serving cell indicated by *cell* . When *cell* is absent, *ul-powerControl* is an index referring to a list element in a list configured in the serving cell where the TCI state is applied.

**Question 2**

Is 1) or 2) or yet another alternative the correct understanding for *ul-powerControl*?

**BWP-id and cell for QCL**

According to TS 38.214 clause 5.1.5:

“When the *bwp-id* or *cell* for QCL-TypeA/D source RS in a QCL-Info of the TCI state is not configured, the UE assumes that QCL-TypeA/D source RS is configured in the CC/DL BWP where TCI state applies”.

Absent BWP is useful when using the TCI state list from a different cell/BWP as it allows the cell/BWP to be the one where the TCI state is applied.

However, in the TS 38.331 v17.3.0, the bwp-Id field in QCL-Info is mandatory present when the reference signal is CSI-RS.

**Question 2**

RAN2 would like to ask RAN1:

1. Would it be possible to move this configuration restriction to TS 38.331 and delete from TS 38214?
2. TBA?

**2. Actions:**

**To RAN1 group:**

**ACTION:** RAN2 respectfully asks RAN1 to provide responses to above questions.

**3. Date of Next TSG-RAN WG2 Meetings:**

TSG-RAN WG2 Meeting #121b-e April 2023 Electronic

TSG-RAN WG2 Meeting #122 May 2023 Korea