## Introduction

The goal of this offline discussion is to converge on the response to all the topics listed in section 2 as early as possible, preferably before March 8th. This is to facilitate providing a response to RAN2 LS on the maintenance-level RRC issues R2-2302295 [1].

## Questions raised in R2-2302295

## Question 1

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| **Q#1** | **UL power control configuration in IE TCI-State**  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*.  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.  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*. – TCI-UL-State The IE *TCI-UL-State* indicates the TCI state information for UL transmission.  *TCI-UL-State* information element  -- ASN1START  -- TAG-TCI-UL-STATE-START  TCI-UL-State-r17 ::= SEQUENCE {  tci-UL-State-Id-r17 TCI-UL-State-Id-r17,  servingCellId-r17 ServCellIndex OPTIONAL, -- Need R  bwp-Id-r17 BWP-Id OPTIONAL, -- Cond CSI-RSorSRS-Indicated  referenceSignal-r17 CHOICE {  ssb-Index-r17 SSB-Index,  csi-RS-Index-r17 NZP-CSI-RS-ResourceId,  srs-r17 SRS-ResourceId  },  additionalPCI-r17 AdditionalPCIIndex-r17 OPTIONAL, -- Need R  ul-powerControl-r17 Uplink-powerControlId-r17 OPTIONAL, -- Need R  pathlossReferenceRS-Id-r17 PathlossReferenceRS-Id-r17 OPTIONAL, -- Cond Mandatory  ...    }  -- TAG-TCI-UL-STATE-STOP  -- ASN1STOP   |  | | --- | | ***servingCellId***  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-UL-State* is applied by the UE. | | ***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. | | ***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. |     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 in IE TCI-State or not, or respectively the field *servingCellId* in IE TCI-UL-State or not.  2) When the field *cell* is configured in IE TCI-State(or the field *servingCellId* in IE TCI-UL-State), *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* (or *servingCellId* ). When *cell* (or *servingCellId* ) 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* (or *servingCellId)* ). is **~~absent~~present**, it may be necessary to add a new field to indicate in which UL BWP the list is to be found.  **Question 1**  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* (or *servingCellId* ) is present .  **FL Note: After discussing with RAN2 moderator, a typo is corrected in red accordingly as above.** |

**Table 1**

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| **Company** | **Input** |
| **Mod V00** | **Discussion: For *TCI-state*, *cell* (and *bwp-Id*) are actually in the QCL-info, and then they only refer to the RS in the *QCL-Info*; then, similarly, for *TCI-UL-State-r17*, *servingCellId-r17* (and *bwp-Id-r17*) only refer to the RS for determining spatial filtering. That is, they should be decoupled with PL-RS configuration, cross-CC indication of which is based on *pathlossReferenceLinking*.**  **Therefore, compared with 2), it seems 1) is more reasonable, although since now we do not have the corresponding agreement of being based on ‘the UL BWP and serving cell where the TCI state is applied’ for PL-RS, if my understanding is correct. Otherwise, we may need to consider to introducing new RRC parameters dedicated to providing cell/bwp-id corresponding to *pathlossReferenceRS-Id.***  **Proposed answer to Question 1:**   * **RAN1 confirms that 1) is the correct understanding for pathlossReferenceRS-Id** |
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## Question 2

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| **Q#2** | **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* (or *servingCellId* ) is configured or not.  2) When the field *cell* (or *servingCellId* ) is configured, *ul-powerControl* is an index referring to a list element in a list configured in the serving cell indicated by *cell* (or *servingCellId* ). When *cell* (or *servingCellId* ) 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*? |

**Table 2**

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| **Company** | **Input** |
| **Mod V00** | **Discussion: Due to the same reason as in Q#1, it seems that 2) may not be correct. But, considering the *ul-powerControl* is just relevant to the configuration of value(s) of P0/alpha/closed loop (rather than RS indication), individual configuration of lists of *ul-powerControl* for each CC/BWP may be redundant. Therefore, we may suggest to go with 1) but with update “***ul-powerControl* is an index referring to a list element in a list configured in the serving cell where the TCI state is ~~applied~~ configured, regardless if the field *cell* (or *servingCellId* ) is configured or not**”*.***  **Proposed answer to Question 2:**   * **RAN1 confirms that, for ul-powerControl, ul-powerControl is an index referring to a list element in a list configured in the serving cell where the TCI state is configured, regardless if the field cell (or servingCellId ) is configured or not.** |
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## Reply LS to RAN2 on RRC

**Table 3**

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| **Company** | **Input** |
| **Mod V00** | **Draft reply LS (**[**v0**](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_112/Inbox/drafts/8.1(NR_feMIMO)/Reply%20LS%20to%20RAN2%20on%20RRC/R1-230xxxx%20Draft%20reply%20LS%20to%20RAN2%20on%20RRC_v0.docx)**) to RAN2 on RRC is provided in**  **https://www.3gpp.org/ftp/tsg\_ran/WG1\_RL1/TSGR1\_112/Inbox/drafts/8.1(NR\_feMIMO)/Reply%20LS%20to%20RAN2%20on%20RRC** |
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# References

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| 1 | R2-2302295 | LS on further questions on feMIMO RRC parameters | RAN2 |
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