**3GPP TSG-RAN WG1 Meeting #108-e R1-220xxxx**

**e-Meeting, February 21st – March 3rd, 2022**

**Agenda item:** 8.1

**Source:** Moderator (Ericsson)

**Title:** Moderator summary for LS reply to RAN2 on feMIMO RRC parameters

**Document for:** Discussion and Decision

## Introduction

This summary includes the discussion of LS reply to the LSs from RAN2 R1-2200887 LS on feMIMO RRC parameters.

It is the understanding of the moderator that there are no RAN1 agreements for question 1.7, 1.13, 1.13-2 and 1.16 and RAN1 need to make swift agreements.

For the other issues, the moderator has provided initial answer proposals to stimulate discussion.

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1. Proposed LS reply to the question in the LSs from RAN2 R2-2200887

##  MULTIBEAM: CORESET to follow Unified TCI state

RAN2 has discussed the per CORESET RRC based indication based on RAN1 agreements.

* *For any PDCCH reception on a ‘CORESET B’ and the respective PDSCH reception, whether or not UE to apply the indicated Rel-17 TCI state associated with the serving cell is determined per CORESET by RRC*

RAN2 understands that the 1 bit RRC indication “followUnifiedTCI-State” would be needed for CORESET type “B”. RAN2 understanding is that it seems to indicate how the CORESET behaves with respect to the TCI state of PDSCH depending on the type (i.e. CSS or USS) of the SearchSpace that is linked to that CORESET. However, as in RRC there is no types of CORESETs RAN2 would like to ask RAN1 to clarify the intention of the indication in more details.

* **Question 1.1:** What is the intent behind this indication and why was it put to CORESET but not per SearchSpace?
* **Question 1.2:** Are there any limitation or conditions needs to specified for the "followUnifiedTCI-State" parameter?
* **Question 1.3:** How are the “DM-RS for non-UE dedicated PDCCH” in parameter "applyTCI-State-DL-List-r17" and the CORESET B “followUnifiedTCI-State” related?

Table 1 Companies’ inputs on the proposed LS answer to Question 1.1

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| **Company** | **Input** |
| Question | What is the intent behind this indication and why was it put to CORESET but not per SearchSpace?  |
| Mod V0 proposal for reply answer | RAN1 introduced the terms CORESET ‘A’, ‘B’ and ‘C’ for discussion purposes only, and RAN1 has no intention to introduce CORESET types in specification. The 1-bit indication was put in the CORESET to mimic legacy. RAN1 will describe in RAN1 specifications how the UE should interpret this 1- bit indication.  |
| Company X | Bla bla |
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Table 2 Companies’ inputs on the proposed LS answer to Question 1.2

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| **Company** | **Input** |
| Question  | Are there any limitation or conditions needs to specified for the "followUnifiedTCI-State" parameter? |
| Mod V0 proposal for reply answer | So far, RAN1 has not identified any additional rules. If RAN1 identified any additional rules, RAN1 will update RAN2. |
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Table 3 Companies’ inputs on the proposed LS answer to Question 1.3

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| **Company** | **Input** |
| Question  | How are the “DM-RS for non-UE dedicated PDCCH” in parameter "applyTCI-State-DL-List-r17" and the CORESET B “followUnifiedTCI-State” related? |
| Mod V0 proposal for reply answer | Whether or not a CORESET, and consequently the corresponding DM-RS, is configured to follow the unified TCI state is determined by “followUnifiedTCI-State”. The parameter "applyTCI-State-DL-List-r17" is redundant and not needed for DM-RS associated with a CORESET. |
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## 2.2 MULTIBEAM: Parameter applyTCI-StateDL-List-r17CORESET to follow Unified TCI state

RAN2 notes there is discrepancy with the description and comment related to applyTCI-State-DL-List-r17. RAN2 has baseline implementation for this functionality where 1 bit “followUnifiedTCI-State" indication is added to “AssociatedReportConfigInfo” IE where QCL per an aperiodic resource set is currently configured i.e. all resource within NZP-CSI-RS resource set follow unified TCI state in DCI.

* **Question 1.4:** Is this RRC parameter implementation is according to intended functionality or should the indication be placed per NZP-CSI-RS resource set or resource. Note that these NZP-CSI-RS resource sets and resource configurations are not specific to AP?

Note that it will be RAN2 signalling design whether supporting this functionality is 1 bit indication per field X, or by maintaining lists of field X.

Table 4 Companies’ inputs on the proposed LS answer to Question 1.4

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| **Company** | **Input** |
| Question  | Is this RRC parameter implementation is according to intended functionality or should the indication be placed per NZP-CSI-RS resource set or resource. Note that these NZP-CSI-RS resource sets and resource configurations are not specific to AP? |
| Mod V0 proposal for reply answer | RAN1 has agreed that aperiodic CSI-RS for beam management and aperiodic CSI-RS for CSI acquisition can follow the unified TCI state. On the other hand, RAN1 has not agreed that periodic CSI-RS, semi-persistent CSI-RS or CSI-RS for tracking can follow the unified TCI, which can all be configured using CSI-AssociatedReportConfigInfo. Provided that these restrictions are captured in the field description of followUnifiedTCI-State in CSI-AssociatedReportConfigInfo, the proposed RRC implementation would be fine. |
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## 2.3 MULTIBEAM: Parameter ApplyTCI-State-r17forSRS

RAN2 intends to add the parameter “followUnifiedTCI-State-r17” (ApplyTCI-State-r17forSRS in RAN1 RRC parameter list) to SRS-ResourceSet IE according to RAN1 guidance.

* **Question 1.5:** Are the stated restrictions indicated in the L1 parameter excel (i.e. “This applies to the following: 1) Aperiodic SRS for BM, 2) SRS (of any time-domain behavior) for codebook, non-codebook, and antenna switching “) should be placed in TS 38.331 or these will be specified by RAN1? If they should be specified in RAN2, are there any additional restrictions that have not yet been communicated?
* **Question 1.6:** RAN2 would also like to confirm whether also semi-persistent SRS (as RAN1 mentioned “of any time-domain behaviour) will follow unified TCI state in DCI or some coordination between RRC signalling, MAC CE and DCI is needed?

Table 5 Companies’ inputs on the proposed LS answer to Question 1.5

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| **Company** | **Input** |
| Question  | Are the stated restrictions indicated in the L1 parameter excel (i.e. “This applies to the following: 1) Aperiodic SRS for BM, 2) SRS (of any time-domain behavior) for codebook, non-codebook, and antenna switching “) should be placed in TS 38.331 or these will be specified by RAN1? If they should be specified in RAN2, are there any additional restrictions that have not yet been communicated? |
| Mod V0 proposal for reply answer | RAN1 is okay to implement the stated restrictions in TS 38.331, and there are no additional restrictions. |
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Table 6 Companies’ inputs on the proposed LS answer to Question 1.6

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| **Company** | **Input** |
| Question  | RAN2 would also like to confirm whether also semi-persistent SRS (as RAN1 mentioned “of any time-domain behaviour) will follow unified TCI state in DCI or some coordination between RRC signalling, MAC CE and DCI is needed? |
| Mod V0 proposal for reply answer | For AP/SP/P SRS for codebook/non-codebook/antenna switching, it can also be configured by RRC on whether to follow Rel-17 indicated TCI. Regarding to SRS for BM, only AP SRS for BM can be configured by RRC on whether to follow Rel-17 indicated TCI. Thus, if the parameter “followUnifiedTCI-State-r17” is used, then the restriction should be captured by RAN2 that it cannot be configured or applied when the SRS for BM is transmitted in SP/P manner. |
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## 2.4 MULTIBEAM: MPE

In RAN2#116, RAN2 agreed the following

* + *4: Rel-17 MPE configuration can be included in PHR-Config. Will ask R1 whether MPE information can apply to both ICBM and mTRP*

This will impact at least the corresponding MAC CE design but potentially also configuration. Further, the parameter excel has TBD on the range for configuring the MPE resource pool. RAN2 understanding is that the MPE-ResourcePool may be a list of SSB or CSI-RS resources, which will be configured by RRC but for which RAN1 has not yet indicated maximum number. RAN2 would need to know this to derive the number of bits needed for the resource IDs in the MPE resource pool.

* **Question 1.7:** Please clarify the structure of the *mpe-ResourcePool*: Is it a list of SSB or CSI-RS resources (i.e. SSBRI or CRI), and what is the maximum number of resources configured in the pool?

RAN2 was also not clear on whether the MPE reporting would apply for the mTRP PHR and whether configuration *mpe-Reporting-FR2* can apply to both BM case and mTRP case to activate the reporting, so RAN2 would like RAN1 to clarify this.

* **Question 1.8:** Does the enhanced MPE reporting applies also to mTRP operation, and, if it does, will this be configured by *mpe-Reporting-FR2* or is another RRC configuration needed?
* **Question 1.9:** RAN1 to confirm whether the RAN2 should keep the MPE-Config-FR2-r17 in the PHR-Config IE, which is per cell group, or move it to (per-cell) per BWP level as indicated in L1 parameter excel?
* **Question 1.10:** Is reporting of PCMax,f,c needed for MPE information and if it is, should it be included per indicated SSBRI/CRI value or is it cell-specific?

Table 7 Companies’ inputs on the proposed LS answer to Question 1.7

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| **Company** | **Input** |
| Question  | Please clarify the structure of the *mpe-ResourcePool*: Is it a list of SSB or CSI-RS resources (i.e. SSBRI or CRI), and what is the maximum number of resources configured in the pool? |
| Mod V0 proposal and comment. RAN1 agreement needed | It should be a list of SSB or CSI-RS resources index. There is no RAN1 agreement, on the maximum number of resources in the pool. The moderator proposal is that maximum number of resources is 64.  |
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Table 8 Companies’ inputs on the proposed LS answer to Question 1.8

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| **Company** | **Input** |
| Question  | Does the enhanced MPE reporting applies also to mTRP operation, and, if it does, will this be configured by *mpe-Reporting-FR2* or is another RRC configuration needed? |
| Mod V0 proposal for reply answer | Note that enhanced MPE reporting and the multi-TRP PHR enhancement are two different features in Rel-17. Hence, the enhanced MPE reporting cannot be combined with the multi-TRP PHR specified in Rel-17.  |
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Table 9 Companies’ inputs on the proposed LS answer to Question 1.9

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| **Company** | **Input** |
| Question  | RAN1 to confirm whether the RAN2 should keep the MPE-Config-FR2-r17 in the PHR-Config IE, which is per cell group, or move it to (per-cell) per BWP level as indicated in L1 parameter excel? |
| Mod V0 proposal for reply answer | The enhanced MPE reporting doesn't impact how the PHR-Config is provided, and RAN2 can keep the MPE-Config-FR2-r17 in the PHR-Config IE, which is per cell group |
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Table 10 Companies’ inputs on the proposed LS answer to Question 1.10

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| **Company** | **Input** |
| Question | Is reporting of PCMax,f,c needed for MPE information and if it is, should it be included per indicated SSBRI/CRI value or is it cell-specific? |
| Mod V0 proposal for reply answer | The enhanced MPE reporting doesn't impact the reporting of PCMax,f,c, which should remain as in legacy. |
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## 2.5 MULTIBEAM: BeamAppTime value range

RAN2 has been discussing on what level the BAT parameter should be configured. RAN2 has found guidance for per CCs per CSC “with the common TCI state ID update”. However, it is not clear what “common TCI state ID update” means or exactly what is the correct level for configuring the parameter.

* **Question 1.11:** RAN2 would like to further confirm whether this parameter is per-UE (i.e. applicable to all cell groups per SCS), per cell group (i.e. within the same cell group, all cells use the same values per SCS), per cell (i.e. different cells may use different value per SCS), or something else?
* **Question 1.12:** Is it correct understanding that the common TCI state ID update is when the same TCI state list is configured for multiple CCs with reference BWP/CC?
* **Question 1.13:** Please indicate what should be the value range for parameter *beamAppTime-r17?*

Table 11 Companies’ inputs on the proposed LS answer to Question 1.11

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| **Company** | **Input** |
| Question  | RAN2 would like to further confirm whether this parameter is per-UE (i.e. applicable to all cell groups per SCS), per cell group (i.e. within the same cell group, all cells use the same values per SCS), per cell (i.e. different cells may use different value per SCS), or something else? |
| Mod V0 proposal for reply answer | The BAT is the same for all the CCs configured with the common TCI state ID update |
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Table 12 Companies’ inputs on the proposed LS answer to Question 1.12

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| **Company** | **Input** |
| Question  | Is it correct understanding that the common TCI state ID update is when the same TCI state list is configured for multiple CCs with reference BWP/CC?  |
| Mod V0 proposal for reply answer | The understanding is not correct. Common TCI state ID update can be configured not only when the same TCI state list is configured for multiple BWPs/CCs with reference BWP/CC, but also when TCI state list is provided for each BWP/CC as in Rel-15/16 |
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Table 13 Companies’ inputs on the proposed LS answer to Question 1.13

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| **Company** | **Input** |
| Question  | Please indicate what should be the value range for parameter *beamAppTime-r17?* |
| Mod V0 proposal and comment. RAN1 agreement needed | There is no RAN1 agreement on this. The moderator proposal is that the value range of beamAppTime-r17 is (7, 14, 28, 42, 56, 70, 84, 98, 112 ,224 ,336) symbols, which is the union of all submitted proposals. |
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## 2.6 MULTIBEAM: CSI-SSB-ResourceSet

* **Question 1.13 [sic!]:** Should it be possible for different SSB indexes in the same *CSI-SSB-ResourceSet* to be associated with different *additionalPCI*?

Table 14 Companies’ inputs on the proposed LS answer to Question 1.13-2

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| **Company** | **Input** |
| Question  | Should it be possible for different SSB indexes in the same CSI-SSB-ResourceSet to be associated with different additionalPCI? |
| Mod V0 proposal and comment. RAN1 agreement needed | There is no RAN1 agreement on this. The moderator proposal is ‘no’: this is not necessary. RAN1 has agreed that in one reporting instance, depending on NW configuration, beam(s) associated with a non-serving cell can be mixed with that associated with serving-cell. Since one reporting instance can contain measurements on several CSI-SSB-ResourceSet, the functionality agreed by RAN1 can be supported even when all SSB indices in one CSI-SSB-ResourceSet are associated with the same additionalPCI. |
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## 2.7 MULTIBEAM: Simultaneous usage of different operation for different serving cells

RAN2 understanding is that all channels and RS in one serving cell have to follow one TCI state framework, either Rel-17 or Rel 15/16.

* **Question 1.14:** Please confirm whether above RAN2 understanding is correct.
* **Question 1.15:** can different serving cells in a cell group use different TCI framework (Rel-16 or Rel-17)?
* **Question 1.16**: can different serving cells in a cell group use different TCI mode (joint or separate) if Rel-17 unified TCI framework is configured?

Table 15 Companies’ inputs on the proposed LS answer to Question 1.14

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| **Company** | **Input** |
| Question  | Please confirm whether above RAN2 understanding is correct. |
| Mod V0 proposal for reply answer | RAN1 confirms this understanding. |
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Table 16 Companies’ inputs on the proposed LS answer to Question 1.15

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| **Company** | **Input** |
| Question  | can different serving cells in a cell group use different TCI framework (Rel-16 or Rel-17)? |
| Mod V0 proposal for reply answer | All serving cells in the same band need to use the same TCI framework, but serving cells in different bands may use different TCI frameworks, even if they are in the same cell group. |
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Table 17 Companies’ inputs on the proposed LS answer to Question 1.16

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| **Company** | **Input** |
| Question  | can different serving cells in a cell group use different TCI mode (joint or separate) if Rel-17 unified TCI framework is configured? |
| Mod V0 proposal and comment. RAN1 agreement needed | There is no RAN1 agreement on this. The moderator proposal is that all serving cells in the same band need to use the same TCI mode, but serving cells in different bands may use different TCI mode, even if they are in the same cell group. |
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## 2.8 MULTIBEAM: BM power control configuration

In current running RRC CR the PO set(P0, alpha, closed loop index) is encoded in both UL TCI state as well in BWP-UL-Dedicated (that is outside of UL TCI state) and different values are enabled for each UL channel PUSCH, PUCCH, SRS. UE receives the UL pc configuration in either UL TCI states or in BWP UL-dedicated.

* Question 1.15 [sic!]: Is it correct understanding that network may provide UE the UL pc configuration in either UL TCI states or in BWP-UL-dedicated or should RAN2 choose one? If UL PC configuration is signalled in BWP-UL-dedicated only, how can the specific PC configuration (actually applied) be decided in PHY layer?

Table 18 Companies’ inputs on the proposed LS answer to Question 1.15-2

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| **Company** | **Input** |
| Question  | Is it correct understanding that network may provide UE the UL pc configuration in either UL TCI states or in BWP-UL-dedicated or should RAN2 choose one? If UL PC configuration is signalled in BWP-UL-dedicated only, how can the specific PC configuration (actually applied) be decided in PHY layer? |
| Mod V0 proposal for reply answer | RAN1 made the following agreement:**Agreement**On the setting of UL PC parameters except for PL-RS (P0, alpha, closed loop index) for Rel.17 unified TCI framework,* For each of PUSCH and PUCCH, the setting of (P0, alpha, closed loop index) can be associated with UL or (if applicable) joint TCI state per BWP.
	+ In this case, multiple settings are configured. Each setting can be associated with at least one TCI state, and, for a given TCI state, only one setting for PUSCH and only one setting for PUCCH can be associated at a time.

(Working Assumption) In this case, for each of the PUSCH and PUCCH, each of the activated UL or (if applicable) joint TCI states is associated with one of the settings.* If not associated, for each of the PUSCH and PUCCH, the setting(s) of (P0, alpha, closed loop index) per channel/signal per BWP is independent of the UL or (if applicable) joint TCI states
* FFS: If the setting of (P0, alpha, closed loop index) for SRS can also be associated with UL or (if applicable) joint TCI state.
* FFS: (to be decided in RAN1#106-e) whether to configure the same setting of (P0, alpha, closed loop index) per TCI state across channels and apply a channel dependent component, or configure a channel dependent setting of (P0, alpha, closed loop index) per TCI state

This agreement means that it should be possible to associate the UL pc configuration with a TCI state, and one way of associating the UL pc configuration with a TCI state is to include (P0, alpha, closed loop index) in the TCI state. However, the agreement also states that it should be possible to not configure any association, meaning that irrespective of which TCI state is currently indicated, the same set of PC parameters should be used. Implementing the possibility to configure the UL PC configuration in both the UL TCI state or the UL BWP provides the desired functionality. In the field descriptions, it could be stated that the NW configures the PC parameters in either the TCI states or in the UL BWP. |
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## 2.9 mTRP (PUCCH, PDCCH)

For mTRP PUCCH, RAN2 has agreed to add a new IE for power control for mTRP FR1 operation. However, RAN2 would need information on the number of power control sets to be configured with respect to the each TRP and then in relation to the corresponding MAC CE.

* **Question 2.1:** How many power control sets needs to be configured with respect to the each TRP and then in relation to the corresponding MAC CE per UE/cell/BWP?

For mTRP PDCCH, RAN1 indicates that parameter *searchSpaceLinking* is suppposed to link two SearchSpace sets by RRC configuration with various limitations. However, it was not clarified whether the linking should be applied to all SearchSpaces set under Rel-15 and Rel-16 configurations.

* **Question 2.2:** Should the *searchSpaceLinking* be applied to all or selected set of SearchSpaces under Rel-15 and Rel-16 configurations?

RAN2 agreed to have separate MAC CEs for PUSCH pathloss reference RS update:

* [060] To revise the legacy PUSCH Pathloss Reference RS Update MAC CE with additional field(s) to differentiate the TRP for mTRP PUSCH repetition, replace the Reserve bit (‘R’) to a TRP index field (‘T’) so that the MAC CE can indicate which TRP the PUSCH pathloss reference RS update can apply for.
* **Question 2.3:** How is the "TRP identity" defined for this MAC CE or other potential per TRP MAC CEs?- is it based on *SRS-ResourceSet* ID, BFD RS SET ID or something else? Note that current ASN1 does not have yet BFD RS SETs implemented.

The L1 parameter excel does not have input on how to implement beam failure detection RS sets for mTRP. There is also not information on what is the maximum number of detection resources to be configured per UE per cell or per TRP. There is also not information on what is the maximum number of recovery resources to be configured per UE per cell or per TRP.

* **Question 2.4:** Please inform how to implement beam failure detection RS sets for mTRP. Also what is the maximum number of detection resources to be configured per UE per cell or per TRP? What is the maximum number of recovery resources to be configured per UE per cell or per TRP?

Table 19 Companies’ inputs on the proposed LS answer to Question 2.1

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| **Company** | **Input** |
| Question  | How many power control sets needs to be configured with respect to the each TRP and then in relation to the corresponding MAC CE per UE/cell/BWP? |
| Mod V0 proposal for reply answer | The maximum number of power control sets can be the same as maxNrofPUCCH-P0-PerSet (i.e., 8). The power control sets can be configured per BWP. MAC can then activate up to two power control sets. |
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Table 20 Companies’ inputs on the proposed LS answer to Question 2.2

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| **Company** | **Input** |
| Question  | Should the *searchSpaceLinking* be applied to all or selected set of SearchSpaces under Rel-15 and Rel-16 configurations? |
| Mod V0 proposal for reply answer | In NR Rel-17, searchSpaceLinking is supported for search space sets configured in PDCCH-Config. For Rel-15 SearchSpace configuration, searchSpaceLinking should be supported for the following: • Search spaces with searchSpaceType ‘ue-specific’, and• Search spaces with searchSpaceType ‘common’ in which UE monitors for PDCCH candidates with DCI formats 2-0, 2-1, 2-2, and 2-3. For Rel-16 SearchSpace configuration, searchSpaceLinking should be supported for search spaces with searchSpaceType ‘common’ in which UE monitors for PDCCH candidates with DCI formats 2-4, 2-5, and 2-6. |
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Table 21 Companies’ inputs on the proposed LS answer to Question 2.3

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| **Company** | **Input** |
| Question  | How is the "TRP identity" defined for this MAC CE or other potential per TRP MAC CEs?- is it based on *SRS-ResourceSet* ID, BFD RS SET ID or something else? Note that current ASN1 does not have yet BFD RS SETs implemented. |
| Mod V0 proposal for reply answer | RAN1 specifications do not capture the terms ‘TRP’ or ‘TRP identity’.. Hence, these terms should be avoided in the relevant MAC CE field descriptions. RAN1 specifications use the SRS resource set to represent the TRP in case of mTRP operation for CB and NCB based PUSCH transmission. Hence, ‘SRS-ResourceSet ID’ should be used in the above MAC CE. |
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Table 22 Companies’ inputs on the proposed LS answer to Question 2.4

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| **Company** | **Input** |
| Question  | Please inform how to implement beam failure detection RS sets for mTRP. Also what is the maximum number of detection resources to be configured per UE per cell or per TRP? What is the maximum number of recovery resources to be configured per UE per cell or per TRP? |
| Mod V0 proposal for reply answer | RAN1 agreed to support both explicit and implicit beam failure detection (BFD) RS sets configurations for mTRP, and the implicit BFD RS sets can only be configured for mDCI based mTRP (i.e., when *PDCCH-Config* contains two different values of coresetPoolIndex). The two beam failure detection RS sets are to be configured per DL BWP (BWP-DonwlinkDedicated). Specifically, for explicit configuration, the UE can be provided two BFD RS sets of periodic CSI-RS resource configuration indexes. For implicit configuration, the UE determines the two BFD RS sets including periodic CSI-RS resource configuration indexes having the same values as the source RS indexes in the TCI states for the CORESETs associated with respective pool indexes 0 and 1. The maximum number of detection resources per set is still being discussed in UE feature group 23-5-2, and the maximum number of recover resources per set is being discussed in UE feature group 23-1-2. |
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## 2.10 CSI mTRP

For mTRP CSI, RAN2 was instructed to configure two codebook subset restrictions (CBSRs) per CodebookConfig, and two RI restrictions per CodebookConfig. However, it is not clear which CBSRs are intended to be used and whether there are specific restrictions to be applied for the RRC configuration.

* **Question 3.1:** Which CBSRs are intended to be used and whether there are specific restrictions to be applied for the RRC configuration? Also whether is it introduced for both typeI-SinglePanel1 and typeI-SinglePanel2 and also for both 2Tx and more than 2Tx?

Table 23 Companies’ inputs on the proposed LS answer to Question 3.1

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| **Company** | **Input** |
| Question  | Which CBSRs are intended to be used and whether there are specific restrictions to be applied for the RRC con-figuration? Also whether is it introduced for both typeI-SinglePanel1 and typeI-SinglePanel2 and also for both 2Tx and more than 2Tx? |
| Mod V0 proposal for reply answer | RAN1 agreed that ‘typeI -SinglePanel’ codebook is supported for mTRP CSI; hence, there is no further restriction that needs to be introduced. The mth (m=0,1) CBSR is to be used when computing the PMI corresponding to the NZP CSI-RS resource for channel measurement from the mth Resource group. The two CBSRs can be introduced for both 2Tx and more than 2Tx. |
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## 2.11 SRS

RAN2 also noted that the parameter *startPosition* was not included in the indicated Rel-17 *resourceMapping* for SRS, but it was not clear if this was intentionally or accidentally omitted from the Rel-17 SRS configuration.

* **Question 4.1:** Should the parameter *startPosition* should be included in *resourceMapping* also for Rel-17 (similarly as it was there in Rel15 and Rel 16 configurations)?

Table 24 Companies’ inputs on the proposed LS answer to Question 4.1

|  |  |
| --- | --- |
| **Company** | **Input** |
| Question  | Should the parameter *startPosition* should be included in *resourceMapping* also for Rel-17 (similarly as it was there in Rel15 and Rel 16 configurations)? |
| Mod V0 proposal for reply answer | The startPosition should be included in resourceMapping for Rel-17 which can be all symbol locations within a slot (i.e., INTEGER (0,…,13), which is same as startPosition-r16). |
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## Submitted tdocs

The following input Tdocs were submitted:

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| --- | --- | --- |
| [**R1-2200887**](https://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_108-e/Docs/R1-2200887.zip) | LS on feMIMO RRC parameters | RAN2, Ericsson |
| [**R1-2201050**](https://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_108-e/Docs/R1-2201050.zip) | Draft LS reply on feMIMO RRC parameters | vivo |
| [**R1-2201204**](https://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_108-e/Docs/R1-2201204.zip) | Draft reply LS on feMIMO RRC parameters | ZTE |
| [**R1-2201237**](https://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_108-e/Docs/R1-2201237.zip) | Discussion on LS on feMIMO RRC parameters | OPPO |
| [**R1-2201306**](https://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_108-e/Docs/R1-2201306.zip) | Draft reply LS on feMIMO RRC parameters | CATT |
| [**R1-2201307**](https://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_108-e/Docs/R1-2201307.zip) | Discussion on feMIMO RRC parameters | CATT |
| [**R1-2201455**](https://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_108-e/Docs/R1-2201455.zip) | [Draft] Reply LS on feMIMO RRC parameters | Lenovo, Motorola Mobility |
| [**R1-2201565**](https://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_108-e/Docs/R1-2201565.zip) | Draft reply LS on feMIMO RRC parameters | LG Electronics |
| [**R1-2201628**](https://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_108-e/Docs/R1-2201628.zip) | Draft reply LS on feMIMO RRC parameters | Ericsson |
| [**R1-2201629**](https://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_108-e/Docs/R1-2201629.zip) | Discussion related to LS on feMIMO RRC parameters | Ericsson |
| [**R1-2201676**](https://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_108-e/Docs/R1-2201676.zip) | Discussion on LS reply on RRC parameters for feMIMO | Intel Corporation |
| [**R1-2201748**](https://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_108-e/Docs/R1-2201748.zip) | Draft reply LS on FeMIMO RRC Parameters | Apple |
| [**R1-2201833**](https://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_108-e/Docs/R1-2201833.zip) | Discussion on RAN2 LS on feMIMO RRC parameters | CMCC |
| [**R1-2201980**](https://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_108-e/Docs/R1-2201980.zip) | Draft Reply LS on feMIMO RRC parameters | Samsung |
| [**R1-2202056**](https://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_108-e/Docs/R1-2202056.zip) | Discussion on RAN2 LS on feMIMO RRC parameters (MultiBeam) | MediaTek Inc. |
| [**R1-2202096**](https://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_108-e/Docs/R1-2202096.zip) | Draft Reply LS to RAN2 on feMIMO RRC parameters | Qualcomm Incorporated |
| [**R1-2202309**](https://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_108-e/Docs/R1-2202309.zip) | Draft LS reply on feMIMO RRC parameters | Nokia, Nokia Shanghai Bell |
| [**R1-2202470**](https://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_108-e/Docs/R1-2202470.zip) | Views on feMIMO RRC parameters | Huawei, HiSilicon |