Companies are to share their inputs on the excel spreadsheet in /tsg\_ran/WG1\_RL1/TSGR1\_106b-e/Inbox/drafts/8.1.1/RRC parameters/ herein.

## Inputs on version 00

Please share your inputs, if any, in the following table

Table 1 Inputs: Initial version

|  |  |
| --- | --- |
| **Company** | **Input** |
| vivo | One general comment: all the RRC parameters should be per BWP if not explicitly stated otherwise.‘tci-StateType’ should be deleted. DL TCI state and UL TCI state can be activated and indicated based on network implementation from a R17 TCI pool. For exmpale, the TCI state with SRS used as spatial source RS is activated or indicated as UL TCI state. The RRC parameter to explicitly define type of a TCI state is unnecessary. Regarding ‘qcl-Type’, QCL-TypeB, QCL-TypeC also need to be included. Not sure why they are left out. This parameter is per TCI state.Regarding ‘InterCellReportType’, it can be configured using the exsiting parameter in CSI framework. This parameter is unnessisary.Regarding ‘InterCellMeasurementRS’, we don’t think this is needed explicitly since Rel-16 measurement RS indication for ‘SSB-Index’ can be re-used with additional PCI or non-serving cell information.Regarding ‘InterCellAdditionalPCI’, whether to directly adding PCI into ‘SSB-Index\_r17’ or to add a new IE to indicate the non-serving cell information the SSB resource associates with can be further discussed. This is also related to TCI state association with non-serving cell information. This parameter should be configured per SSB. |
| Ericsson | Overall, if we do not increase the number of configured TCI states, the field tci-StateId can be reused. This means that several of the RRC parameters in the list are unnecessary. For now, we suggest skipping parameters where the only change is tci-StateId-> tci-StateId\_r17For RAN2 to design the RRC signalling, we should state there are two types of TCI states: DL/joint TCI and UL TCI. The properties/contents of each type of TCI state should be described. This means that ‘tci-StateType’ is not needed.With the recent agreement that all QCL relations are inherited from R16 and that the R17 DL TCI state can be configured in place of a R16 TCI state, all QCL types must be supported.There is also a need to associate the other cell information with a TCI state. The details for this can be left to RAN2, but the relevant information is contained in the corresponding IE from the mult-TRP AI.The PC parameter structures are unnecessarily complicated. We should state that there will be a list of PC parameter sets, and that PUCCH, PUSCH and SRS can use different sets. We also need to describe that it should be possible to associate a PC parameter set with a TCI state, but also that ‘no association’, i.e., all TCI states use the same PC parameter set, should be efficiently supported.InterCellBeamMetrics is not needed - we reuse nrofReportedRS in CSI-ReportConfigInterCellMeasurementRS – here it is better to extend CSI-SSB-ResourceSet with other cell informationInterCellReportType is not needed - we reuse reportConfigType in CSI-ReportConfigInterCellAdditionalPCI – if this is the number of additional PCIs, then we propose to reuse NumberOfAdditionalPCI from mTRP AI.QCL-Info\_NeighbourCell – suggest reusing AdditionalPCIInfo from mTRP AI – this includes the quantities that are neededTCI-StateIndicationType – not needed. RAN2 will need to design two MAC CEs to support ‘joint’ and ‘separate’, and the type of TCI state(s) that are activated will be determined by which MAC CE is used.TimeDurationForQCL\_r17 is an unfortunate name, since TimeDurationForQCL is a UE capability.Change in ControlResourceSet is unnecessary in any case: TCI states cannot be configured per CORESET, and will not be activated per CORESET.TCI-StateSharingList and ApplyTCI-State-r17forSRS – unclear what this is |
| Qualcomm | On row #5, suggest to use a separate row for PL RS, or redefine field name as QCL\_PL\_RS\_Info-r17. They are different concepts to our understandingSuggest to delete row #15 on “Additional PCIs for inter-cell beam management measurement and reporting”, and add the PCI field to row #11 [valid SSB-Index values and corresponding PCI values if different from serving cell PCI] |
| MediaTek | 1. For Rel-17 unified TCI, we also prefer to reuse parameters for Rel-15/16 DL TCI as much as possible. RAN1 can just describe what functionalities need to be supported for Rel-17 unified TCI (like those comments in the table) and let RAN2 decides the parameters and structures. The following three parameters can be removed, and corresponding comments can be combined in the 2nd row.
* ~~tci-StateId\_r17~~
* ~~tci-StateType~~
* ~~QCL-Info\_r17~~
1. On TCI-StateIndicationType, we think this parameters is necessary since switching between two modes/types is done by RRC instead of MAC-CE, as RAN1 concluded.
2. On TimeDurationForQCL\_r17, we also prefer to change the name, e.g., beamApplicationTime\_r17.
3. On ControlResourceSet, we also think additional TCI pool for CORESET is not needed.
4. According to current agreements for Rel-17 unified TCI framework, the following RSs “can share”, i.e., optionally, the same indicated Rel-17 TCI state as UE-dedicated data and control channels in a CC.
* SRS resource set for CSI (including CB, NCB, antenna switching)
* Aperiodic CSI-RS resources for CSI
* Aperiodic CSI-RS resources for BM
* Aperiodic SRS resources or resource sets for BM
* DMRS(s) associated with non-UE-dedicated reception on CORESET(s) and the associated PDSCH

Instead of using TCI-StateSharingList, We prefer to use a similar parameter like ApplyTCI-State-r17forSRS to indicate whether or not the above channels/RS resource sets apply the same Rel-17 TCI state indicated by Rel-17 DCI/MAC-CE TCI-based update. Thus, in addition to ApplyTCI-State-r17forSRS, we suggest add the following parameters: * ApplyTCI-State-r17forSRS (in SRS-ResourceSet)
* ApplyTCI-State-r17forCSI-RS (in NZP-CSI-RS-ResourceSet)
* ApplyTCI-State-r17forCORESET (in ControlResourceSet if associated with any CSS set)
 |
| ZTE | In general, we do not identify the necessity of tci-StateType, and if leaving all configuration is up to RAN2, we think that the suggestion of merging the corresponding description together from MediaTek makes sense.Regarding p0\_Alpha\_CLIdPUSCHSet, p0\_Alpha\_CLIdPUCCHSet, p0\_Alpha\_CLIdSRSSet, p0\_Alpha\_CLIdSetId. In our views, the design of RRC signalling is up to RRC or MAC-CE based association. * If going with MAC-CE based association, the separate UL power control parameter sets for PUSCH, PUCCH and SRS is a good way-forward solution.
* Otherwise, if RRC based association is agreed, we prefer to to introduce a function of mapping above PC parameters and unified TCI state ID. That is similar to already RRC parameter ‘SRI-PUSCH-PowerControl’ as follows:

|  |  |
| --- | --- |
| TCI-State-PUSCH-PUCCH-SRS-PowerControl | TCI-State-PUSCH-PUCCH-SRS-PowerControl includes the following fields:**tci-StateId\_r17****P0-PUSCH-AlphaSetId****PUSCH-ClosedLoopIndex** ENUMERATED { i0, i1 }**P0-PUCCH-Id****PUCCH-ClosedLoopIndex** ENUMERATED { i0, i1 }**Alpha-SRS****P0-SRS****srs-PowerControlAdjustmentStates** ENUMERATED { sameAsFci2, separateClosedLoop}**pathloss RS** - choice of {SSB-Index, NZP-CSI-RS (periodic CSI-RS)} |

Regarding InterCellAdditionalPCI, and QCL-Info\_NeighbourCell, we prefer to use the above Rel-17 TCI state to achieve this function directly. * First we have some concerns about directly adding PCI into this Rel-17 TCI state IE which is against the already agreement in inter-cell mTRP. Therefore, InterCellAdditionalPCI should be modified as interCellAdditionalNeighboringCell that contains PCI, SSB time domain location, SSB periodicity and SSB transmission power.
* Then, the discussion on whether/how to introduce QCL-Info\_NeighbourCell should be postponed and may be up to RAN2 signalling design. In technical, we should strive to have a unified solution for inter-cell beam management and inter-cell mTRP in Rel-17.

Regarding InterCellBeamMetrics, InterCellMeasurementRS, and InterCellReportType, the necessity of those three parameters should be justified. Alternatively, it can be achieved by the legacy CSI framework well, besides that we have a new SSB-Index\_r17 containing (interCellAdditionalNeighboringCell, SSB-index) in CSI-SSB-ResourceSet.Regarding TimeDurationForQCL\_r17, in order to improving flexibility of the application time, the parameter TimeDurationForQCL\_r17 is introduced in PDSCH-TimeDomainResourceAllocation.Regarding TCI-StateSharingList and ApplyTCI-State-r17forSRS, there may be some redundancies herein. Instead, we suggest to have similar parameter, e.g., ApplyTCI-State-r17forCSI, besides for ApplyTCI-State-r17forSRS. Bot parameter is configured per RS set, and then we can remove TCI-StateSharingList.Regarding MPE-Config-FR2-r17, mpe-ProhibitTimer-r17 and mpe-Threshold-r17, we suggest to reuse the already PHR related parameters, and these three parameters can be removed.Finally, we need to consider another new IE about candidateRsSet-MPE based on the following WA * (Working Assumption) For each P-MPR value, up to M SSBRI(s)/CRI(s), where the SSBRI(s)/CRI(s) is selected by the UE from a candidate SSB/CSI-RS resource pool (FFS: how to perform the selection)

|  |  |
| --- | --- |
| candidateRsSet-MPE | Configures a candidate SSB/CSI-RS resource pool for the selection of SSBRI(s)/CRI(s) for Rel17 MPE P-MPR in the PHR MAC control element - This can be in PHR-Config (up to RAN2)  |

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| LG | On row 5, QCL-Info\_r17 also acts as spatial relation RS for UL where the definition of QCL is not applicable. In addition, it could also include PL RS. Thus, it needs to be reworded into a general term, e.g. sourceRS-Info\_r17.On InterCellReportType, InterCellMeasurementRS, and InterCellBeamMetrics: These can be possibly reused by the existing parameter. It may be better to let RAN2 decide whether introducing new parameter or reusing legacy parameter is better.On ApplyTCI-State-r17forSRS: it seems to indicate the list of the channels/RSs for common beam applicability for UL. For the value range, it should be considered further for applying the indicated beam with configurability on SRS resource or resource set level instead of ON-OFF decision for all SRSs. Also, similar configuration parameters are required for other DL/UL target channels, e.g. for some CSI-RS resources, for some CORESETs, for some PUCCH resources, etc. |
| Apple | Tci-StateType: We think it is better to define UL/DL/Joint TCI separately. So no tci-stateType is needed.QCL-Info\_r17: We suggest reuse QCL-info in R15. UL TCI, we can introduce a new structure – spatialRelationInfoP0\_alpha\_ClId\_xxxSet: It seems all are not needed. we can reuse legacy.InterCellMeasurementRS, InterCellReportType: It looks both are not needed. we can reuse legacy.InterCellAdditionalPCI: We do not know the intention for this, but we think gNB can indicate a 3-bit indicator to indicate the physical serving cell for each SSB, which was similar to what is agreed in inter-cell mTRP (an indicator associated with TCI).QCL-Info\_NeighbourCell: This depends on RAN2’s decision for the indicator associated with TCI. We have agreed to leave it to RAN2. We can remove it.ControlResourceSet: This is not needed.Mpe-xxxx: We do not think these are needed.maxNrofTCI-state\_r17: we may need to have separate value for UL/DL/JointTCI-StateSharingList: Not neededApplyTCI-State-r17forSRS: Not needed |
| OPPO | * tci-StateId\_r17: we do not need new RRC parameter. The rel15/16 TCI state ID RRC parameter can be resused.
* tci-StateType: we might not need it if the different types of TCI states are configured in different lists
* QCL-Info\_r17: the QCL-info can be reused. And path-loss RS shall not be part of the QCL-info because it is not part of QCL. In UL TCI state: there is no QCL, we can reuse the spatialRelationInfo
* RRC parameters of PC parameters: the legacy RRC parameters for PUSCH, PUCCH and SRS can be reused.
* Configuration information of SSB of other PCI: the time location of SSB shall be provided in RRC. The UE shall not be required to read the PBCH of neighbor cell.
* ControlResourceSet: this RRC parameter is not needed.
* mpe-ProhibitTimer-r17 and mpe-Threshold-r17: The current RRC parameter can be reused. It seems no need for new parameter.
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| Futurewei | Regarding “tci-StateType”, this is related to the issue of TCI state pool for separate DL and UL TCI state update (beam indication). For the case with separate TCI state pools for DL and UL, this “tci-StateType” is not needed. Regarding “QCL-Info\_r17”, we share the same view as OPPO that PL-RS info should not be included as part of the QCL.Regarding “TCI-StateSharingList” and “ApplyTCI-State-r17forSRS”, it seems there is some overlap here. We prefer “TCI-StateSharingList” as it allows the gNB to configure the channels/signals that share the same indicated Rel-17 TCI state in one shot, instead of doing the configuration one by one for each of the channels/signals.  |
| CATT | tci-StateType: Not needed. The DL and UL TCI state could be differentiated by the source RS or QCL Type. It seems not necessary to be explicitly indicated.ControlResourceSet: Not needed. Per our understanding, there is no need to define an additional Rel-17 TCI state pool for PDCCH/CORESET. The Rel-17 TCI state pool for PDSCH could be used.ApplyTCI-State-r17forSRS: Not needed. It could be indicated by TCI-StateSharingList. InterCellBeamMetrics, InterCellMeasurementRS and InterCellReportType: we prefer to reuse the legacy parameter in Rel-15 CSI framework.For MPE, we may consider a new IE about candidateBeamRsList-MPE based on the following agreement: AgreementOn Rel.17 enhancements to facilitate MPE mitigation, confirm the following working assumption (in the midst of the previous agreement) as an agreement with the following refinement (highlighted in red):On Rel.17 enhancements to facilitate MPE mitigation, support the following enhancement on the Rel-16 event-triggered P-MPR-based reporting (included in the PHR report when a threshold is reached, reported via MAC-CE):* In addition to the existing field in the PHR MAC-CE, N≥1 P-MPR values can be reported
	+ The N P-MPR values are reported together with the following:
		- ~~(Working Assumption)~~ For each P-MPR value, up to M SSBRI(s)/CRI(s), where the SSBRI(s)/CRI(s) is selected by the UE from a candidate SSB/CSI-RS resource pool (FFS: how to perform the selection)
			* Support M=1

For the definition of the IE, we share similar view as ZTE, i.e.,

|  |  |
| --- | --- |
| candidateBeamRsList-MPE | Configures a candidate SSB/CSI-RS resource pool for the selection of SSBRI(s)/CRI(s) for Rel17 MPE P-MPR in the PHR MAC control element - This can be in PHR-Config (up to RAN2)  |

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| Huawei, HiSilicon | We believe the list of RRC parameters will be updated based on latest agreements and comments from companies. Here are some additional input from our side. **TCI-StateIndicationType:** Support this parameter as it is aligned with the conclusion in RAN1#105e meeting listed below, which indicates that a UE can be configured with both joint TCI and separate DL/UL TCI, and the switch between joint TCI and separate DL/UL TCI is based on RRC signaling.**Conclusion**On Rel-17 unified TCI framework, for a UE configured with both joint TCI and separate DL/UL TCI, configuration of joint TCI or separate DL/UL TCI is based on RRC signaling * There is no consensus in RAN1 on how to support dynamic switching (either MAC-CE or codepoint based)

**TCI-StateSharingList:** We believe “DL DMRS for non-UE-dedicated” refers to non-UE-dedicated PDCCH/PDSCH from the serving cell only. So we suggest updating it as “DL DMRS for non-UE-dedicated PDCCH/PDSCH from the serving cell”. In addition, as DL DMRS for non-UE-dedicated PDCCH/PDSCH from the serving cell does not immediately come with a resource and/or resource set ID, we suggest splitting this part out a separate RRC parameter with candidate values of {enabled, disabled}.**Agreement**On Rel.17 unified TCI framework, for intra-cell beam indication, the following DL RSs can share the same indicated Rel-17 TCI state as UE-dedicated reception on PDSCH and for UE-dedicated reception on all or subset of CORESETs in a CC: * DMRS(s) associated with non-UE-dedicated reception on CORESET(s) and the associated PDSCH
* FFS (to be concluded in RAN1#106bis-e): Non-UE-dedicated PUCCH and non-UE-dedicated PUSCH

[Omitted] |

## Inputs on version xx

Please share your inputs, if any, in the following table

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