MIMO Comments file

Template:

# Xnnn

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| RIL Id | WI | Class | Title | Tdoc | Delegate | Misc | File version | Status |
| Xnnn |  |  |  |  |  |  | vnnn | ToDo |

 **[Description]**:

**[Proposed Change]**:

**[Comments]**:

Instructions:

1. Copy the template RIL comments fields above (including the Heading Xnnn)
2. Paste the RIL comments fields at its position while **respecting the order of the RILs in the Review file (i.e. keep the order of the spec).**
3. Fill in the fields, see R19 ASN.1 Guideline.
4. Companies may comment whether they agree or disagree.
5. Can copy spec text and use Word “Track changes”, etc.
6. Do not delete text added by other companies.

# S001

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| RIL Id | WI | Class | Title | Tdoc | Delegate | Misc | File version | Status |
| S001 | MIMO | 2 | Wrong place of cri-TypeI-SinglePanelRI-Restriction-r19 |  | Samsung (Shiyang) |  | V002 | ToDo |

 **[Description]**: cri-TypeI-SinglePanelRI-Restriction-r19 is used for Rel-15 codebook type 'typeI-SinglePanel' as specified in TS 38.214 clause 5.2.1.4.2:

- A *CSI-ReportConfig* can be configured with separate RI restrictions for each of the CSI-RS resources, by higher layer parameter *cri-typeI-SinglePanel-ri-restriction-r19* or *cri-typeII-ri-restriction-r19*, for *codebookType* set to 'typeI-SinglePanel' or 'typeII-r16', respectively.

However, currently cri-TypeI-SinglePanelRI-Restriction-r19 is placed under Rel-19 codebooktype typeI-SinglePanel-r19, which is wrong. According to RAN1, for CSI-CRI either Rel-15 single panel Type-I or Rel-16 Type-II codebook should be configured for all resources, in addition, the new resource-specific parameters are introduced, which are not intended for Rel-19 codebooktype typeI-SinglePanel-r19 or etypeII-r19, but applied with legacy Rel-15/16 codebook.

**[Proposed Change]**:

Move cri-TypeI-SinglePanelRI-Restriction-r19 to the block of Rel-15 codebooktype “typeI-SinglePanel” by adding an extention of the Rel-15 codebook block.

**[Comments]**:

# S002

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| RIL Id | WI | Class | Title | Tdoc | Delegate | Misc | File version | Status |
| S002 | MIMO | 2 | Wrong place of cri-TypeI-SinglePanelN1-N2-CBSR-r19 |  | Samsung (Shiyang) |  | V002 | ToDo |

 **[Description]**: cri-TypeI-SinglePanelN1-N2-CBSR-r19 is used for Rel-15 codebook type 'typeI-SinglePanel' as specified in TS 38.214 clause 5.2.1.4.2:

- A *CSI-ReportConfig* can be configured with separate Codebook Subset Restrictions for each of the CSI-RS resources, by higher layer parameter *cri-typeI-SinglePanel-CBSR-r19* or *cri-typeII-CBSR-r19*, for *codebookType* set to 'typeI-SinglePanel' or 'typeII-r16', respectively. For *codebookType* set to 'typeII-r16', *cri-typeII-CBSR-r19* is configured as described in Clause 5.2.2.2.5, where only the bit values '00' or '11' of Table 5.2.2.2.5-6 are configurable.

However, currently cri-TypeI-SinglePanelN1-N2-CBSR-r19 is placed under Rel-19 codebooktype typeI-SinglePanel-r19, which is wrong. According to RAN1, for CSI-CRI either Rel-15 single panel Type-I or Rel-16 Type-II codebook should be configured for all resources, in addition, the new resource-specific parameters are introduced, which are not intended for Rel-19 codebooktype typeI-SinglePanel-r19 or etypeII-r19, but applied with legacy Rel-15/16 codebook.

**[Proposed Change]**:

Move cri-TypeI-SinglePanelN1-N2-CBSR-r19 to the block of Rel-15 codebooktype “typeI-SinglePanel” by adding an extention of the Rel-15 codebook block.

**[Comments]**:

# S003

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| RIL Id | WI | Class | Title | Tdoc | Delegate | Misc | File version | Status |
| S003 | MIMO | 2 | Wrong place of cri-TypeII-RI-Restriction-r19 |  | Samsung (Shiyang) |  | V002 | ToDo |

 **[Description]**: cri-TypeII-RI-Restriction-r19 is used for Rel-16 codebook type 'typeII-r16' as specified in TS 38.214 clause 5.2.1.4.2:

- A *CSI-ReportConfig* can be configured with separate RI restrictions for each of the CSI-RS resources, by higher layer parameter *cri-typeI-SinglePanel-ri-restriction-r19* or *cri-typeII-ri-restriction-r19*, for *codebookType* set to 'typeI-SinglePanel' or 'typeII-r16', respectively.

However, currently cri-TypeII-RI-Restriction-r19 is placed under Rel-19 codebooktype etypeII-r19, which is wrong. According to RAN1, for CSI-CRI either Rel-15 single panel Type-I or Rel-16 Type-II codebook should be configured for all resources, in addition, the new resource-specific parameters are introduced, which are not intended for Rel-19 codebooktype typeI-SinglePanel-r19 or etypeII-r19, but applied with legacy Rel-15/16 codebook.

**[Proposed Change]**:

Move cri-TypeII-RI-Restriction-r19 to the block of Rel-16 codebooktype 'typeII-r16' by adding an extention of the Rel-16 codebook block.

**[Comments]**:

# S004

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| RIL Id | WI | Class | Title | Tdoc | Delegate | Misc | File version | Status |
| S004 | MIMO | 2 | Wrong place of cri-TypeII-N1-N2-CBSR-r19 |  | Samsung (Shiyang) |  | V002 | ToDo |

 **[Description]**: cri-TypeII-N1-N2-CBSR-r19 is used for Rel-16 codebook type 'typeII-r16' as specified in TS 38.214 clause 5.2.1.4.2:

- A *CSI-ReportConfig* can be configured with separate Codebook Subset Restrictions for each of the CSI-RS resources, by higher layer parameter *cri-typeI-SinglePanel-CBSR-r19* or *cri-typeII-CBSR-r19*, for *codebookType* set to 'typeI-SinglePanel' or 'typeII-r16', respectively. For *codebookType* set to 'typeII-r16', *cri-typeII-CBSR-r19* is configured as described in Clause 5.2.2.2.5, where only the bit values '00' or '11' of Table 5.2.2.2.5-6 are configurable.

However, currently cri-TypeII-N1-N2-CBSR-r19 is placed under Rel-19 codebooktype etypeII-r19, which is wrong. According to RAN1, for CSI-CRI either Rel-15 single panel Type-I or Rel-16 Type-II codebook should be configured for all resources, in addition, the new resource-specific parameters are introduced, which are not intended for Rel-19 codebooktype typeI-SinglePanel-r19 or etypeII-r19, but applied with legacy Rel-15/16 codebook.

**[Proposed Change]**:

Move cri-TypeII-N1-N2-CBSR-r19 to the block of Rel-16 codebooktype 'typeII-r16' by adding an extention of the Rel-16 codebook block.

**[Comments]**:

# S005

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| RIL Id | WI | Class | Title | Tdoc | Delegate | Misc | File version | Status |
| S005 | MIMO | 2 | Inconsistent value of paramCombination-r19 |  | Samsung (Shiyang) |  | V002 | ToDo |

 **[Description]**: paramCombination-r19 is used for both codebook type etypeII-r19 and typeII-FePortSelection-r19, however the value range for etypeII-r19 is INTEGER (1..8), the value range for typeII-FePortSelection-r19 is INTEGER (1..7). For the same parameter, the value range should be consistent.

**[Proposed Change]**:

Change the value range of paramCombination-r19 for typeII-FePortSelection-r19 to INTEGER (1..8). This is aligned with RAN1 TS 38.214 clause 5.2.2.2.9a:

- The values , and are determined by the higher layer parameter *paramCombination-r19*, where the same mapping is used as in Table 5.2.2.2.7-1.

- The UE is not expected to be configured with *paramCombination-r19* equal to 8.

Note value 1..8 are listed in the legacy Table 5.2.2.2.7-1, and it has been specified by RAN1 clearly that 8 is not configured. So the RRC value range of paramCombination-r19 should be changed to INTEGER (1..8).

**[Comments]**:

# S006

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| RIL Id | WI | Class | Title | Tdoc | Delegate | Misc | File version | Status |
| S006 | MIMO | 1 | Missing information in FD of ***cri-TypeI-SinglePanelN1-N2-CBSR*** |  | Samsung (Shiyang) |  | V002 | ToDo |

 **[Description]**: FD of cri-TypeI-SinglePanelN1-N2-CBSR should be updated, to distinguish from FD of ***cri-TypeII-N1-N2-CBSR***, currently the two have exactly the same FD.

**[Proposed Change]**:

***cri-TypeI-SinglePanelN1-N2-CBSR***

Number of antenna ports in first (*n1*) and second (*n2*) dimension and resource-specific codebook subset restriction for *codebookType* set to *typeI-SinglePanel* (see TS 38.214 [19] clause 5.2.1.4.2). Value *no-cbsr* means no codebook subset restriction is configured for the n1-n2 pair.

If a codebook subset restriction is configured for the n1-n2 pair, the number of elements in *cbsr-list* is up to the number of elements of *nzp-CSI-RS-Resources* in *NZP-CSI-RS-ResourceSet(s)* indicated by *nzp-CSI-RS-ResourceSetList* in the *CSI-ResourceConfig* indicated by *resourcesForChannelMeasurement* in the *CSI-ReportConfig* in which the *CodebookConfig* is included. An element in the list corresponds to the element at the same position in *nzp-CSI-RS-Resources*.

**[Comments]**:

# S007

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| RIL Id | WI | Class | Title | Tdoc | Delegate | Misc | File version | Status |
| S007 | MIMO | 1 | Missing information in FD of cri-TypeI-SinglePanelRI-Restriction |  | Samsung (Shiyang) |  | V002 | ToDo |

 **[Description]**: FD of cri-TypeI-SinglePanelRI-Restriction should be updated, currently it does not read correctly.

**[Proposed Change]**:

***cri-TypeI-SinglePanelRI-Restriction***

Resource-specific RI restriction for *codebookType* set to *typeI-SinglePanel* (see TS 38.214 [19], clause 5.2.1.4.2).

**[Comments]**:

# S008

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| RIL Id | WI | Class | Title | Tdoc | Delegate | Misc | File version | Status |
| S008 | MIMO | 1 | Missing information in FD of cri-TypeII-N1-N2-CBSR |  | Samsung (Shiyang) |  | V002 | ToDo |

 **[Description]**: FD of cri-TypeII-N1-N2-CBSR should be updated, to distinguish from FD of cri-TypeI-SinglePanelN1-N2-CBSR, currently the two have exactly the same FD.

**[Proposed Change]**:

***cri-TypeII-N1-N2-CBSR***

Number of antenna ports in first (*n1*) and second (*n2*) dimension and resource-specific codebook subset restriction for *codebookType* set to *typeII-r16* (see TS 38.214 [19] clause 5.2.1.4.2). Value *no-cbsr* means no codebook subset restriction is configured for the n1-n2 pair.

If a codebook subset restriction is configured for the n1-n2 pair, the number of elements in *cbsr-list* is up to the number of elements of *nzp-CSI-RS-Resources* in *NZP-CSI-RS-ResourceSet(s)* indicated by *nzp-CSI-RS-ResourceSetList* in the *CSI-ResourceConfig* indicated by *resourcesForChannelMeasurement* in the *CSI-ReportConfig* in which the *CodebookConfig* is included. An element in the list corresponds to the element at the same position in *nzp-CSI-RS-Resources*.

**[Comments]**:

# S009

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| RIL Id | WI | Class | Title | Tdoc | Delegate | Misc | File version | Status |
| S009 | MIMO | 1 | Missing information in FD of cri-TypeII-ri-Restriction |  | Samsung (Shiyang) |  | V002 | ToDo |

 **[Description]**: FD of cri-TypeII-ri-Restriction should be updated, currently it does not read correctly.

**[Proposed Change]**:

***cri-TypeII-ri-Restriction***

Resource-specific RI restriction for *codebookType* set to *typeII-r16* (see TS 38.214 [19], clause 5.2.1.4.2).

**[Comments]**:

# S010

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| RIL Id | WI | Class | Title | Tdoc | Delegate | Misc | File version | Status |
| S010 | MIMO | 1 | Wording in FD of delayOffsetCompensation |  | Samsung (Shiyang) |  | V002 | ToDo |

 **[Description]**: Wording in FD of delayOffsetCompensation should be updated.

**[Proposed Change]**:

***delayOffsetCompensation***

Indicates whether the UE should perform delay offset compensation based on the latest linked report with *reportQuantity* set to 'cjtc-Dd' when codebook type is set to *typeII-CJT* as specified in TS 38.214 [19] clause 5.2.1.4.2.

**[Comments]**:

# S011

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| RIL Id | WI | Class | Title | Tdoc | Delegate | Misc | File version | Status |
| S011 | MIMO | 1 | FD of mr-SelectedResources not correct |  | Samsung (Shiyang) |  | V002 | ToDo |

 **[Description]**: FD of mr-SelectedResources is not correct. The parameter is applied for codebooktype Rel-15 'typeI-SinglePanel' and Rel-16 'typeII-r16', not for the Rel-19 codebook, according to TS 38.214 clause 5.2.1.4.2:

- The CSI report contains CSIs, where the sets of CSI parameters other than CRI, RI/LI (if applicable)/PMI/CQI, are independently calculated and indicated for each of the selected CSI-RS resources. Subject to UE capability, a UE can be configured with and , if *codebookType* is set to 'typeI-SinglePanel', and with and , if *codebookType* is set to 'typeII-r16'.

- If and *codebookType* is set to 'typeII-r16', each CSI-RS resource shall contain at most 16 ports and the higher layer parameter *numberOfPMI-SubbandsPerCQI-Subband* is set to '1'.

- the CSI report contains CRIs with the exception that, for aperiodic reporting and subject to UE capability, if *CSI-ReportConfig* is configured with higher layer parameter *mrSelectedResources* indicating CSI-RS resources to be selected for reporting, CRIs are reported. if *codebookType* is set to 'typeI-SinglePanel' and , if *codebookType* is set to 'typeII-r16'.

**[Proposed Change]**:

***mr-SelectedResources***

Indicates one or two resources to be selected among eight CSI-RS resources. This field is only configured for *codebookType* set to *typeI-SinglePanel* or *typeII-r16*. This field is used in clause 5.2.1.4.2 in TS 38.214 [19].

**[Comments]**:

# S012

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| RIL Id | WI | Class | Title | Tdoc | Delegate | Misc | File version | Status |
| S012 | MIMO | 2 | Missing field for resourcesForChannelCJTC-r19  |  | Samsung (Shiyang) |  | V002 | ToDo |

 **[Description]**: for resourcesForChannelCJTC-r19, qcl-info is needed for each resource set which is similar to legacy resourcesForChannel. According to TS 38.214 clause 5.2.1.4.1:

For aperiodic CSI, a UE configured with a *CSI-ReportConfig* with the higher layer parameter *reportQuantity* set to 'cjtc-Dd', 'cjtc-F', 'cjtc-Dd-F' or 'cjtc-P' is expected to be configured with one CSI Resource Setting (given by higher layer parameter *resourcesForChannelMeasurement*). For *reportQuantity* set to 'cjtc-Dd', 'cjtc-F' or 'cjtc-Dd-F', the CSI Resource Setting is periodic with CSI-RS Resource Sets configured with higher layer parameter *trs-Info*. For *reportQuantity* set to 'cjtc-P', the CSI Resource Setting is configured with single-port CSI-RS Resources. Each of CSI-RS Resources or Resource Sets are configured with a *TCI-state* by higher layer signalling. The UE expects that all the CSI-RS resources are configured with the same bandwidth. A UE is not expected to be configured with interference measurement on CSI-IM and/or NZP-CSI-RS.

resourcesForChannel CHOICE {

 nzp-CSI-RS SEQUENCE {

 resourceSet INTEGER (1..maxNrofNZP-CSI-RS-ResourceSetsPerConfig),

 qcl-info SEQUENCE (SIZE(1..maxNrofAP-CSI-RS-ResourcesPerSet)) OF TCI-StateId

 OPTIONAL -- Cond Aperiodic

 },

 csi-SSB-ResourceSet INTEGER (1..maxNrofCSI-SSB-ResourceSetsPerConfig)

 },

**[Proposed Change]**:

resourcesForChannelCJTC-r19 SEQUENCE {

 nzp-CSI-RS2-r19 SEQUENCE {

 resourceSet2CJTC-r19 INTEGER (1..maxNrofNZP-CSI-RS-ResourceSetsPerConfig),

 qcl-info2CJTC-r19 SEQUENCE (SIZE(1..maxNrofAP-CSI-RS-ResourcesPerSet)) OF TCI-StateId

 OPTIONAL -- Need R

 },

 nzp-CSI-RS3-r19 SEQUENCE {

 resourceSet3CJTC-r19 INTEGER (1..maxNrofNZP-CSI-RS-ResourceSetsPerConfig),

 qcl-info3CJTC-r19 SEQUENCE (SIZE(1..maxNrofAP-CSI-RS-ResourcesPerSet)) OF TCI-StateId

 OPTIONAL -- Need R

 } OPTIONAL, -- Need R

 nzp-CSI-RS4-r19 SEQUENCE {

 resourceSet4CJTC-r19 INTEGER (1..maxNrofNZP-CSI-RS-ResourceSetsPerConfig),

 qcl-info4CJTC-r19 SEQUENCE (SIZE(1..maxNrofAP-CSI-RS-ResourcesPerSet)) OF TCI-StateId

 OPTIONAL -- Need R

 } OPTIONAL -- Need R

 } OPTIONAL -- Cond CJTC

**[Comments]**:

# S013

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| RIL Id | WI | Class | Title | Tdoc | Delegate | Misc | File version | Status |
| S013 | MIMO | 2 | linkedCJTC-Report-r19 can be merged to csi-ReportCJTC-r19 |  | Samsung (Shiyang) |  | V002 | ToDo |

 **[Description]**: linkedCJTC-Report-r19 can be merged to csi-ReportCJTC-r19 since they are all for CJTC.

**[Proposed Change]**:

Move linkedCJTC-Report-r19 into csi-ReportCJTC-r19, and move the FD into the table for *CSI-ReportCJTC* field descriptions

**[Comments]**:

# S014

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| RIL Id | WI | Class | Title | Tdoc | Delegate | Misc | File version | Status |
| S014 | MIMO | 2 | Rename eventThreshold-r19 for UEIR event1 |  | Samsung (Shiyang) |  | V002 | ToDo |

 **[Description]**: eventThreshold-r19 for UEIR event1 should be renamed to distinguish from eventThreshold-r19 for event2 and event7. Update the FD that only value 16..131 can be configured according to the latest RRC parameter list.

**[Proposed Change]**:

eventTypeUE-IBR-r19 CHOICE {

 event1-r19 SEQUENCE {

 event1Threshold-r19 RSRP-Range

 },

 event2-r19 SEQUENCE {

 eventThreshold-r19 INTEGER (0..31)

 },

 event7-r19 SEQUENCE {

 eventThreshold-r19 INTEGER (0..31),

 valueOfQ-r19 INTEGER (1..8)

 }

 },

***csi-ReportUE-IBR***

Configures parameters used for the UE initiated CSI reporting. When this field is configured, the UE ignores *reportConfigType*. When this field is set to *event1*, *event1Threshold-r19* can only be configured with values from 16 to 113.

**[Comments]**:

# S015

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| RIL Id | WI | Class | Title | Tdoc | Delegate | Misc | File version | Status |
| S015 | MIMO | 1 | FD of fourPortSRS-3Tx is in wrong place |  | Samsung (Shiyang) |  | V002 | ToDo |

 **[Description]**: fourPortSRS-3Tx is under SRS-ResourceSet, so the FD should be moved to the table for FD of *SRS-ResourceSet*, currently it is in the table for FD of *SRS-Resource*

**[Proposed Change]**:

Move the FD of fourPortSRS-3Tx into the table for *SRS-ResourceSet* field descriptions

**[Comments]**:

# S016

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| RIL Id | WI | Class | Title | Tdoc | Delegate | Misc | File version | Status |
| S016 | MIMO | 1 | startingBitOfFormat2-3-r19xy should be startingBitOfFormat2-3-r19 |  | Samsung (Shiyang) |  | V002 | ToDo |

 **[Description]**: startingBitOfFormat2-3-r19xyshould be startingBitOfFormat2-3-r19

**[Proposed Change]**:

Remove “xy” in the suffix of startingBitOfFormat2-3-r19xy, also remove in the FD

***startingBitOfFormat2-3, startingBitOfFormat2-3-r19***

The starting bit position of a block within the group DCI with SRS request fields (optional) and TPC commands. The value 1 of the field corresponds to the first/left most bit of format2-3. The value 2 of the field corresponds to the second bit format2-3, and so on (see TS 38.212 [17], clause 7.3.1 and TS 38.213 [13], clause 11.4). The network does not configure both *startingBitOfFormat2-3* and *startingBitOfFormat2-3-r19* simultaneously.

**[Comments]**:

# S017

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| RIL Id | WI | Class | Title | Tdoc | Delegate | Misc | File version | Status |
| S017 | MIMO | 1 | Update description of *CSI-AperiodicTriggerStateList* to make it applicable to UEI-CSI |  | Samsung (Shiyang) |  | V002 | ToDo |

 **[Description]**:

For mode-A UEI-CSI reporting, CSI trigger state indication in DCI is used as similar to AP-CSI reporting. Based on RAN1 agreement, the existing CSI request field in DCI for AP-CSI reporting is reused for UEI-CSI reporting and the existing mechanism for CSI trigger state is applied, but the CSI trigger state for UEI reporting is dedicated for UEI-CSI report, not shared with AP-CSI report.

However, the currently *CSI-AperiodicTriggerStateList* is only applied for AP-CSI trigger state as specified in RRC. The description should be updated.

**[Proposed Change]**:

#### – *CSI-AperiodicTriggerStateList*

The *CSI-AperiodicTriggerStateList* IE is used to configure the UE with a list of CSI trigger states for aperiodic CSI and UE-initiated CSI reporting. Each codepoint of the DCI field "CSI request" is associated with one trigger state (see TS 38.321 [3], clause 6.1.3.13). Upon reception of the value associated with a trigger state, the UE will perform measurement of CSI-RS, CSI-IM and/or SSB (reference signals) and aperiodic/UE-initiated reporting on L1 according to all entries in the *associatedReportConfigInfoList* for that trigger state.

**[Comments]**: