**3GPP TSG RAN WG1 #110bis-eR1-2210516**

**e-Meeting, October 10th – 19th, 2022**

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| *CR-Form-v12.2* |
| **DRAFT CHANGE REQUEST** |
|  |
|  | **38.213** | **CR** | **-** | **rev** | **-** | **Current version:** | **17.3.0** |  |
|  |
| *For* [***HELP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
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| ***Proposed change affects:*** | UICC apps |  | ME | **x** | Radio Access Network | **x** | Core Network |  |

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| ***Title:***  | Draft CR for TCI state parameter name alignment in TS 38.213 |
|  |  |
| ***Source to WG:*** | Moderator(ZTE), ASUSTeK, Ericsson  |
| ***Source to TSG:*** | R1 |
|  |  |
| ***Work item code:*** | NR\_FeMIMO-Core |  | ***Date:*** | 2022-09-30 |
|  |  |  |  |  |
| ***Category:*** | **F** |  | ***Release:*** | Rel-17 |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)…Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19)* |
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| ***Reason for change:*** | RRC parameter name *TCIState* in TS 38.213 is not aligned to TS 38.331.RRC parameter name *UL-TCIState* in TS 38.213 is not aligned to TS 38.331. |
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| ***Summary of change:*** | Change “*TCIState*” to “*TCI-State*”.Change “*UL-TCIState*” to “*TCI-UL-State*”. |
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| ***Consequences if not approved:*** | Incorrectly RRC parameters cause confusion on Rel-17 TCI state. |
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| ***Clauses affected:*** | 6, 7, 9.2.2, 10.1 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

6 Link recovery procedures

<omitted>

If a UE is provided *dl-OrJoint-TCIStateList-r17* or *TCI-UL-State* indicating a unified TCI state for the PCell or the PSCell and the UE provides BFR MAC CE in Msg3 or MsgA of contention based random access procedure, after 28 symbols from the last symbol of the PDCCH reception that determines the completion of the contention based random access procedure as described in [11, TS 38.321], the UE

- if *SSB-MTC-AdditionalPCI* is not provided, monitors PDCCH in all CORESETs, and receives PDSCH and aperiodic CSI-RS resource in a CSI-RS resource set with same indicated TCI state as for the PDCCH and PDSCH using the same antenna port quasi co-location parameters as the ones associated with the corresponding index $q\_{new}$, if any

- transmits PUSCH, PUCCH and SRS that uses a same spatial domain filter with same indicated TCI state as for the PUSCH and PUCCH, using a same spatial domain filter as for the last PRACH transmission using the following parameters for determination of a corresponding power as described in clauses 7.1.1, 7.2.1, and 7.3.1

- the RS index $q\_{d}=q\_{new}$ for obtaining the downlink pathloss estimate

- the values of $P\_{O\\_UE\\_PUSCH,b,f,c}\left(j\right)$, $α\_{b,f,c}\left(j\right)$, and the PUSCH power control adjustment state $l$ provided by *p0AlphaSetforPUSCH* associated with the smallest value of *ul-powercontrolId* for the PCell or the PSCell

- the value of $P\_{O\\_PUCCH,b,f,c}\left(q\_{u}\right)$ and the PUCCH power control adjustment state $l$ provided by *p0AlphaSetforPUCCH* associated with the smallest value of *ul-powercontrolId* for the PCell or the PSCell

- the values of $P\_{O\\_SRS,b,f,c}\left(q\_{s}\right)$, $α\_{SRS,b,f,c}\left(q\_{s}\right)$, and the SRS power control adjustment state $l$ provided by *p0AlphaSetforSRS* associated with the smallest value of *ul-powercontrolId* for the PCell or the PSCell

<omitted>

If a UE is provided *dl-OrJoint-TCIStateList-r17* or *TCI-UL-State* indicating a unified TCI state, after 28 symbols from a last symbol of a PDCCH reception with a DCI format scheduling a PUSCH transmission with a same HARQ process number as for the transmission of the first PUSCH and having a toggled NDI field value, the UE

- monitors PDCCH in all CORESETs, and receives PDSCH and aperiodic CSI-RS resource in a CSI-RS resource set using the same antenna port quasi co-location parameters as the ones associated with the corresponding index $q\_{new}$, if any

- transmits PUSCH, PUCCH and SRS that uses a same spatial domain filter with same indicated TCI state as for the PUSCH and PUCCH, using a same spatial domain filter as the one corresponding to $q\_{new}$, if any, and using the following parameters for determination of a corresponding power as described in clauses 7.1.1, 7.2.1, and 7.3.1

- the RS index $q\_{d}=q\_{new}$ for obtaining the downlink pathloss estimate

- the values of $P\_{O\\_UE\\_PUSCH,b,f,c}\left(j\right)$, $α\_{b,f,c}\left(j\right)$, and the PUSCH power control adjustment state $l$ provided by *p0AlphaSetforPUSCH* associated with the smallest value of *ul-powercontrolId* for the corresponding SCell

- the value of $P\_{O\\_PUCCH,b,f,c}\left(q\_{u}\right)$ and the PUCCH power control adjustment state $l$ provided by *p0AlphaSetforPUCCH* associated with the smallest value of *ul-powercontrolId* for the corresponding SCell

- the values of $P\_{O\\_SRS,b,f,c}\left(q\_{s}\right)$, $α\_{SRS,b,f,c}\left(q\_{s}\right)$, and the SRS power control adjustment state $l$ provided by *p0AlphaSetforSRS* associated with the smallest value of *ul-powercontrolId* for the corresponding SCell

7 Uplink Power control

<omitted>

In the remaining of this clause, if a UE is provided *TCI-State* in *dl-OrJoint-TCIStateList* or *TCI-UL-State* and for an indicated *TCI-State* or *TCI-UL-State* as described in [6, TS 38.214]

- in clauses 7.1.1, 7.2.1, and 7.3.1, the RS index $q\_{d}$ for obtaining the downlink pathloss estimate for PUSCH, PUCCH, and SRS transmission is provided by *PL-RS* associated with or included in the indicated *TCI-State* or *TCI-UL-State* except for SRS transmission that is not provided *followUnifiedTCIstateSRS*

- in clause 7.1.1, if *p0AlphaSetforPUSCH* is provided, the values of $P\_{O\\_UE\\_PUSCH,b,f,c}\left(j\right)$, $α\_{b,f,c}\left(j\right)$, and the PUSCH power control adjustment state $l$ are provided by *p0AlphaSetforPUSCH* associated with the indicated *TCI-State* or *TCI-UL-State*

 in clause 7.2.1, if *p0AlphaSetforPUCCH* is provided, the values of $P\_{O\\_PUCCH,b,f,c}\left(q\_{u}\right)$ and the PUCCH power control adjustment state $l$ are provided by *p0AlphaSetforPUCCH* associated with the indicated *TCI-State* or *TCI-UL-State*

- in clause 7.3.1, if *p0AlphaSetforSRS* is provided,

 if *followUnifiedTCIstateSRS* is provided for a SRS resource set, the values of $P\_{O\\_SRS,b,f,c}\left(q\_{s}\right)$, $α\_{SRS,b,f,c}\left(q\_{s}\right)$, and SRS power control adjustment state $l$ are provided by *p0AlphaSetforSRS* associated with the indicated *TCI-State* or *TCI-UL-State*

- else, if *followUnifiedTCIstateSRS* is not provided for a SRS resource set and for a SRS resource from the SRS resource set, the values of $P\_{O\\_SRS,b,f,c}\left(q\_{s}\right)$, $α\_{SRS,b,f,c}\left(q\_{s}\right)$, and SRS power control adjustment state $l$ are provided by *p0AlphaSetforSRS* associated with *TCI-State* or *TCI-UL-State* of an SRS resource with lowest *SRS-ResourceId* in the SRS resource set and a RS index $q\_{d}$ for obtaining a pathloss estimate for the SRS transmission is provided by PL-RS associated with or included in the *TCI-State* or *TCI-UL-State* of an SRS resource with lowest *SRS-ResourceId* in the SRS resource set

9.2.2 PUCCH Formats for UCI transmission

<omitted>

A spatial setting for a PUCCH transmission by a UE is provided by

- an indicated *TCI-State* or *TCI-UL-State*, if provided, as described in [6, TS 38.214];

- *PUCCH-SpatialRelationInfo* if the UE is configured with a single value for *pucch-SpatialRelationInfoId*;

- as described in [11, TS 38.321], if the UE is provided multiple values for *PUCCH-SpatialRelationInfo*. The UE applies corresponding actions in [11, TS 38.321] and a corresponding setting for a spatial domain filter to transmit PUCCH in the first slot that is after slot $k+3⋅N\_{slot}^{subframe,μ}$ where $k$ is the slot where the UE would transmit a PUCCH with HARQ-ACK information with ACK value corresponding to a PDSCH reception providing the *PUCCH-SpatialRelationInfo*, each slot consists of $N\_{symb}^{slot}$ symbols as defined in [4, TS 38.211],and $μ$ is the SCS configuration for the PUCCH

- If *PUCCH-SpatialRelationInfo* or the indicated *TCI-UL-State* provides *ssb-Index*, the UE transmits the PUCCH using a same spatial domain filter as for a reception of a SS/PBCH block with index provided by *ssb-Index* for a same serving cell or, if *servingCellId* is provided, for a serving cell indicated by *servingCellId*

- else if *PUCCH-SpatialRelationInfo* or the indicated *TCI-UL-State* provides *csi-RS-Index*, or the indicated *TCI-State* provides *csi-rs* configured with *qcl-Type* set to 'typeD', the UE transmits the PUCCH using a same spatial domain filter as for a reception of a CSI-RS with resource index provided by *csi-RS-Index* or csi-rs for a same serving cell or, if *servingCellId* or *cell* is provided, for a serving cell indicated by *servingCellId* or *cell*

- else *PUCCH-SpatialRelationInfo* or the indicated *TCI-UL-State* provides *srs*, the UE transmits the PUCCH using a same spatial domain filter as for a transmission of a SRS with resource index provided by *resource* for a same serving cell and/or active UL BWP or, if *servingCellId* and/or *uplinkBWP* are provided, for a serving cell indicated by *servingCellId* and/or for an UL BWP indicated by *uplinkBWP*

10.1 UE procedure for determining physical downlink control channel assignment

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For a CORESET with index 0,

- if the UE is provided *TCI-State* and if *followUnifiedTCIstate* = '*enabled*' for the CORESET, the UE assumes that a DM-RS antenna port for PDCCH receptions in the CORESET and a DM-RS antenna port for PDSCH receptions scheduled by DCI formats provided by PDCCH receptions in the CORESET are quasi co-located with the reference signals provided by the indicated *TCI-State* [6, TS 38.214]

- else, the UE assumes that a DM-RS antenna port for PDCCH receptions in the CORESET is quasi co-located with

- the one or more DL RS configured by a TCI state, where the TCI state is indicated by a MAC CE activation command for the CORESET, if any, or

- a SS/PBCH block the UE identified during a most recent random access procedure not initiated by a PDCCH order that triggers a contention-free random access procedure, if no MAC CE activation command indicating a TCI state for the CORESET is received after the most recent random access procedure, or a SS/PBCH block the UE identified during a most recent configured grant PUSCH transmission as described in clause 19.

For a CORESET other than a CORESET with index 0, if a UE is provided a single TCI state for a CORESET, or if the UE receives a MAC CE activation command for one or two of the provided TCI states for a CORESET, the UE assumes that the DM-RS antenna port associated with PDCCH receptions in the CORESET is quasi co-located with the one or more DL RS configured by the TCI states. For a CORESET with index 0, the UE expects that a CSI-RS configured with *qcl-Type* set to 'typeD' in a TCI state indicated by a MAC CE activation command for the CORESET is provided by a SS/PBCH block

- if the UE receives a MAC CE activation command for one of the TCI states, the UE applies the activation command in the first slot that is after slot $k+3N\_{slot}^{subframe,μ}+2^{μ}∙k\_{mac}$ where $k$ is the slot where the UE would transmit a PUCCH with HARQ-ACK information for the PDSCH providing the activation command, $μ$ is the SCS configuration for the PUCCH in the slot when the activation command is applied, and $k\_{mac}$ is a number of slots for SCS configuration $μ=0$ provided by *K-Mac* or $k\_{mac}=0$ if *K-Mac* is not provided.

If a UE is provided *TCI-State* in *dl-OrJoint-TCIStateList*, a DM-RS antenna port for PDCCH receptionsin a CORESET, other than a CORESET with index 0, associated only with USS sets and/or Type3-PDCCH CSS sets, and a DM-RS antenna port for PDSCH receptions scheduled by DCI formats provided by PDCCH receptions in the CORESET are quasi co-located with reference signals provided by the indicated *TCI-State* [6, TS 38.214].

If a UE is provided *followUnifiedTCIstate* for a CORESET, other than a CORESET with index 0, associated at least with CSS sets other than Type3-PDCCH CSS sets, and if *followUnifiedTCIstate* is set as enabled, a DM-RS antenna port for PDCCH receptions in the CORESET and a DM-RS antenna port for PDSCH receptions scheduled by DCI formats provided by PDCCH receptions in the CORESET are quasi co-located with reference signals provided by the indicated *TCI-State*.