**3GPP TSG RAN WG1 Meeting #104b-e R1-210xxxx**

**e-Meeting, April 12th–20th, 2021**

**Source: Moderator (ZTE)**

**Title: Editorial changes on [104b-e-NR-7.1CRs-09]**

**Agenda item: 7.1**

**Document for:** **Discussion/Decision**

# Introduction

In RAN1#104b-e, based on Mr Chairman’s guidance, the editorial corrections (Issue#4 [1], Issue#7 [2], Issue#13 [3], Issue#19 [4], Issue#22 [5, 6], Issue#29 [7]) is handled under this single email discussion. The outcome of the email discussion will be captured in Chairman Notes as recommendations for the editors (no CRs).

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| [104b-e-NR-7.1CRs-09] Issue#4, Issue#7, Issue#13, Issue#19, Issue#22, Issue#29 (for Rel-16 only) – Bo (ZTE) by April 14 |

# Summary on editorial spec changes

**Issue #4 Draft CR on PUCCH power control [1]**

***TP 1-1:*** *{38.213: 7.2.1 UE behaviour}* ***for Rel-15***

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| 7.2.1 UE behaviour**<Unchanged parts are omitted>**- For the PUCCH power control adjustment state  for active UL BWP  of carrier  of primary cell  and PUCCH transmission occasion -  is a TPC command value and is included in a DCI format 1\_0 or DCI format 1\_1 for active UL BWP  of carrier  of the primary cell  that the UE detects for PUCCH transmission occasion  or is jointly coded with other TPC commands in a DCI format 2\_2 with CRC scrambled by TPC-PUCCH-RNTI [5, TS 38.212], as described in Clause 11.3-  if the UE is provided *twoPUCCH-PC-AdjustmentStates* and *PUCCH-SpatialRelationInfo* and  if the UE is not provided *twoPUCCH-PC-AdjustmentStates* or *PUCCH-SpatialRelationInfo*- If the UE obtains a TPC command value from a DCI format 1\_0 or a DCI format 1\_1 and if the UE is provided *PUCCH-SpatialRelationInfo*, the UE obtains a mapping, by an index provided by *p0-PUCCH-Id*, between a set of *pucch-SpatialRelationInfoId* values and a set of values for *closedLoopIndex* that provide the  value(s). If the UE receives an activation command indicating a value of *pucch-SpatialRelationInfoId*, the UE determines the value *closedLoopIndex* that provides the value of  through the link to a corresponding *p0-PUCCH-Id* index - If the UE obtains one TPC command from a DCI format 2\_2 with CRC scrambled by a TPC-PUCCH-RNTI, the  value is provided by the closed loop indicator field in DCI format 2\_2 |

***TP 1-2:*** *{38.213: 7.2.1 UE behaviour}* ***for Rel-16***

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| - For the PUCCH power control adjustment state  for active UL BWP  of carrier  of primary cell  and PUCCH transmission occasion -  is a TPC command value included in a DCI format scheduling a PDSCH reception for active UL BWP  of carrier  of the primary cell  that the UE detects for PUCCH transmission occasion , or is jointly coded with other TPC commands in a DCI format 2\_2 with CRC scrambled by TPC-PUCCH-RNTI [5, TS38.212], as described in Clause 11.3-  if the UE is provided *twoPUCCH-PC-AdjustmentStates* and *PUCCH-SpatialRelationInfo* and  if the UE is not provided *twoPUCCH-PC-AdjustmentStates* or *PUCCH-SpatialRelationInfo*- If the UE obtains a TPC command value from a DCI format scheduling a PDSCH reception and if the UE is provided *PUCCH-SpatialRelationInfo*, the UE obtains a mapping, by an index provided by *p0-PUCCH-Id*, between a set of *pucch-SpatialRelationInfoId* values and a set of values for *closedLoopIndex* that provide the  value(s). If the UE receives an activation command indicating a value of *pucch-SpatialRelationInfoId*, the UE determines the value *closedLoopIndex* that provides the value of  through the link to a corresponding *p0-PUCCH-Id* index  |

**Issue#7: Corrections to TS 38.213 [2]**

***TP 2-1:*** *{38.213: 9.1.2.1 Type-1 HARQ-ACK codebook in physical uplink control channel}* ***for Rel-15***

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| 9.1.2.1 Type-1 HARQ-ACK codebook in physical uplink control channel< Unchanged part is omitted >A UE determines  HARQ-ACK information bits, for a total number of  HARQ-ACK information bits, of a HARQ-ACK codebook for transmission in a PUCCH according to the following pseudo-code. In the following pseudo-code, if the UE does not receive a transport block or a CBG, due to the UE not detecting a corresponding DCI format 1\_0 or DCI format 1\_1, the UE generates a NACK value for the transport block or the CBG. The cardinality of the set  defines a total number  of occasions for PDSCH reception or SPS PDSCH release for serving cell  corresponding to the HARQ-ACK information bits. |

***TP 2-2:*** *{38.213: 9.1.2.1 Type-1 HARQ-ACK codebook in physical uplink control channel}* ***for Rel-16***

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| 9.1.2.1 Type-1 HARQ-ACK codebook in physical uplink control channel< Unchanged part is omitted >A UE determines  HARQ-ACK information bits, for a total number of  HARQ-ACK information bits, of a HARQ-ACK codebook for transmission in a PUCCH according to the following pseudo-code. In the following pseudo-code, if the UE does not receive a transport block or a CBG, due to the UE not detecting a corresponding DCI format, the UE generates a NACK value for the transport block or the CBG. The cardinality of the set  defines a total number  of occasions for PDSCH reception or SPS PDSCH release for serving cell  corresponding to the HARQ-ACK information bits. |

***TP 3-1:*** *{38.213: 11.3 Group TPC commands for PUCCH/PUSCH}* ***for Rel-15***

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| 11.3 Group TPC commands for PUCCH/PUSCHFor PUCCH transmission on a serving cell, a UE can be provided- a TPC-PUCCH-RNTI for a DCI format 2\_2 by *tpc-PUCCH-RNTI*- a field in DCI format 2\_2 is a TPC command of 2 bits mapping to  values as described in Clause 7.2.1- an index for a location in DCI format 2\_2 of a first bit for a TPC command field for the Pcell, or for a carrier of the Pcell by *tpc-IndexPCell*- an index for a location in DCI format 2\_2 of a first bit for a TPC command field for the PUCCH-Scell or for a carrier for the PUCCH-Scell by *tpc-IndexPUCCH-Scell*- a mapping for the PUCCH power control adjustment state , by a corresponding {0, 1} value of a closed loop index field that is appended to the TPC command field in DCI format 2\_2 if the UE indicates a capability to support two PUCCH power control adjustment states by *twoDifferentTPC-Loop-PUCCH*, and if the UE is configured for two PUCCH power control adjustment states by *twoPUCCH-PC-AdjustmentStates* |

***TP 3-2:*** *{38.213: 11.3 Group TPC commands for PUCCH/PUSCH}* ***for Rel-16***

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| 11.3 Group TPC commands for PUCCH/PUSCHFor PUCCH transmission on a serving cell, a UE can be provided- a TPC-PUCCH-RNTI for a DCI format 2\_2 by *tpc-PUCCH-RNTI*- a field in DCI format 2\_2 is a TPC command of 2 bits mapping to  values as described in Clause 7.2.1- an index for a location in DCI format 2\_2 of a first bit for a TPC command field for the PCell, or for a carrier of the PCell by *tpc-IndexPCell*- an index for a location in DCI format 2\_2 of a first bit for a TPC command field for the PUCCH-SCell or for a carrier for the PUCCH-SCell by *tpc-IndexPUCCH-Scell*- a mapping for the PUCCH power control adjustment state , by a corresponding {0, 1} value of a closed loop index field that is appended to the TPC command field in DCI format 2\_2 if the UE indicates a capability to support two PUCCH power control adjustment states by *twoDifferentTPC-Loop-PUCCH*, and if the UE is configured for two PUCCH power control adjustment states by *twoPUCCH-PC-AdjustmentStates* |

**Issue #13: Draft CR on PDSCH default TCI state[3]**

***TP 4-1:*** *{38.214: 5.1.5 Antenna ports quasi co-location}* ***for Rel-15***

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| 5.1.5 Antenna ports quasi co-location< Unchanged part is omitted >For both the cases when *tci-PresentInDCI* is set to 'enabled' and *tci-PresentInDCI* is not configured in RRC connected mode, if the offset between the reception of the DL DCI and the corresponding PDSCH is less than the threshold *timeDurationForQCL*, the UE may assume that the DM-RS ports of PDSCH of a serving cell are quasi co-located with the RS(s) with respect to the QCL parameter(s) used for PDCCH quasi co-location indication of the CORESET associated with a monitored search space with the lowest *controlResourceSetId* in the latest slot in which one or more CORESETs within the active BWP of the serving cell are monitored by the UE. In this case, if the 'QCL-TypeD' of the PDSCH DM-RS is different from that of the PDCCH DM-RS with which they overlap in at least one symbol, the UE is expected to prioritize the reception of PDCCH associated with that CORESET. This also applies to the intra-band CA case (when PDSCH and the CORESET are in different component carriers). If none of configured TCI states for the serving cell of scheduled PDSCH contains 'QCL-TypeD', the UE shall obtain the other QCL assumptions from the indicated TCI state for its scheduled PDSCH irrespective of the time offset between the reception of the DL DCI and the corresponding PDSCH. |

***TP 4-2:*** *{38.214: 5.1.5 Antenna ports quasi co-location}* ***for Rel-16***

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| 5.1.5 Antenna ports quasi co-location< Unchanged part is omitted >- If a UE is configured with *enableTwoDefaultTCI-States*, and at least one TCI codepoint indicates two TCI states, the UE may assume that the DM-RS ports of PDSCH or PDSCH transmission occasions of a serving cell are quasi co-located with the RS(s) with respect to the QCL parameter(s) associated with the TCI states corresponding to the lowest codepoint among the TCI codepoints containing two different TCI states. When the UE is configured by higher layer parameter *repetitionScheme* set to 'tdmSchemeA' or is configured with higher layer parameter *repetitionNumber*, the mapping of the TCI states to PDSCH transmission occasions is determined according to clause 5.1.2.1 by replacing the indicated TCI states with the TCI states corresponding to the lowest codepoint among the TCI codepoints containing two different TCI states based on the activated TCI states in the slot with the first PDSCH transmission occasion. In this case, if the 'QCL-TypeD' in both of the TCI states corresponding to the lowest codepoint among the TCI codepoints containing two different TCI states is different from that of the PDCCH DM-RS with which they overlap in at least one symbol, the UE is expected to prioritize the reception of PDCCH associated with that CORESET. This also applies to the intra-band CA case (when PDSCH and the CORESET are in different component carriers)- In all cases above, if none of configured TCI states for the serving cell of scheduled PDSCH is configured with *qcl-Type* set to 'typeD', the UE shall obtain the other QCL assumptions from the indicated TCI state(s) for its scheduled PDSCH irrespective of the time offset between the reception of the DL DCI and the corresponding PDSCH. |

**Issue#19: Draft CR on prioritization between SRS and PUCCH [4]**

***TP 5-1:*** *{38.214: 6.2.1 UE sounding procedure}* ***for Rel-15***

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| 6.2.1 UE sounding procedure**---- Unchanged text are omitted ----**The SRS request field [5, TS38.212] in DCI format 0\_1, 1\_1 indicates the triggered SRS resource set given in Table 7.3.1.1.2-24 of [5, TS 38.212]. The 2-bit SRS request field [5, TS38.212] in DCI format 2\_3 indicates the triggered SRS resource set given in Clause 7.3 of [5, TS 38.212] if the UE is configured with higher layer parameter *srs-TPC-PDCCH-Group* set to ‘typeB’, or indicates the SRS transmission on a set of serving cells configured by higher layers if the UE is configured with higher layer parameter *srs-TPC-PDCCH-Group* set to ‘typeA’.For PUCCH and SRS on the same carrier, a UE shall not transmit SRS when semi-persistent or periodic SRS is configured in the same symbol(s) with PUCCH carrying only CSI report(s), or only L1-RSRP report(s). A UE shall not transmit SRS when semi-persistent or periodic SRS is configured or aperiodic SRS is triggered to be transmitted in the same symbol(s) with PUCCH carrying HARQ-ACK and/or SR. In the case that SRS is not transmitted due to overlap with PUCCH, only the SRS symbol(s) that overlap with PUCCH symbol(s) are dropped. PUCCH shall not be transmitted when aperiodic SRS is triggered to be transmitted to overlap in the same symbol with PUCCH carrying semi-persistent/periodic CSI report(s) or semi-persistent/periodic L1-RSRP report(s) only.  |

***TP 5-2:*** *{38.214: 6.2.1 UE sounding procedure}* ***for Rel-16***

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| 6.2.1 UE sounding procedure**---- Unchanged text are omitted ----**The SRS request field [5, TS38.212] in DCI format 0\_1, 1\_1, 0\_2 (if SRS request field is present), 1\_2 (if SRS request field is present) indicates the triggered SRS resource set given in Table 7.3.1.1.2-24 of [5, TS 38.212]. The 2-bit SRS request field [5, TS38.212] in DCI format 2\_3 indicates the triggered SRS resource set given in Clause 7.3 of [5, TS 38.212] if the UE is configured with higher layer parameter *srs-TPC-PDCCH-Group* set to 'typeB', or indicates the SRS transmission on a set of serving cells configured by higher layers if the UE is configured with higher layer parameter *srs-TPC-PDCCH-Group* set to 'typeA'.For PUCCH and SRS on the same carrier, a UE shall not transmit SRS when semi-persistent or periodic SRS is configured in the same symbol(s) with PUCCH carrying only CSI report(s), or only L1-RSRP report(s), or only L1-SINR report(s). A UE shall not transmit SRS when semi-persistent or periodic SRS is configured or aperiodic SRS is triggered to be transmitted in the same symbol(s) with PUCCH carrying HARQ-ACK, link recovery request (as defined in clause 9.2.4 of [6, 38.213]) and/or SR. In the case that SRS is not transmitted due to overlap with PUCCH, only the SRS symbol(s) that overlap with PUCCH symbol(s) are dropped. PUCCH shall not be transmitted when aperiodic SRS is triggered to be transmitted to overlap in the same symbol with PUCCH carrying semi-persistent/periodic CSI report(s) or semi-persistent/periodic L1-RSRP report(s) only, or only L1-SINR report(s).  |

**Issue#22: Correction on UL DAI for Type-2 HARQ-ACK codebook [5, 6]**

***TP 6:*** *{38.213: 9.1.3.2 Type-2 HARQ-ACK codebook in physical uplink shared channel}* ***for Rel-15***

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| 9.1.3.2 Type-2 HARQ-ACK codebook in physical uplink shared channelIf a UE would multiplex HARQ-ACK information in a PUSCH transmission that is not scheduled by a DCI format or is scheduled by DCI format 0\_0, then- if the UE has not received any PDCCH within the monitoring occasions for DCI format 1\_0 or DCI format 1\_1 for scheduling PDSCH receptions or SPS PDSCH release on any serving cell  and the UE does not have HARQ-ACK information in response to a SPS PDSCH reception to multiplex in the PUSCH, as described in Clause 9.1.3.1, the UE does not multiplex HARQ-ACK information in the PUSCH transmission;- else, the UE generates the HARQ-ACK codebook as described in Clause 9.1.3.1, except that *harq-ACK-SpatialBundlingPUCCH* is replaced by *harq-ACK-SpatialBundlingPUSCH*.If a UE multiplexes HARQ-ACK information in a PUSCH transmission that is scheduled by DCI format 0\_1, the UE generates the HARQ-ACK codebook as described in Clause 9.1.3.1, with the following modifications:- For the pseudo-code for the HARQ-ACK codebook generation in Clause 9.1.3.1, after the completion of the  and  loops, the UE sets  where  is the value of the DAI field in DCI format 0\_1 according to Table 9.1.3-2- For the case of first and second HARQ-ACK sub-codebooks, DCI format 0\_1 includes a first DAI field corresponding to the first HARQ-ACK sub-codebook and a second DAI field corresponding to the second HARQ-ACK sub-codebook*- harq-ACK-SpatialBundlingPUCCH* is replaced by *harq-ACK-SpatialBundlingPUSCH*. |

***TP 7:*** *{38.213: 9.1.3.1 Type-2 HARQ-ACK codebook in physical uplink control channel}* ***for Rel-16***

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| 9.1.3.1 Type-2 HARQ-ACK codebook in physical uplink control channel**---- Unchanged text are omitted ----**if UE does not set and  end ifif end if |

***TP 8:*** *{38.213: 9.1.3.2 Type-2 HARQ-ACK codebook in physical uplink shared channel}* ***for Rel-16***

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| 9.1.3.2 Type-2 HARQ-ACK codebook in physical uplink shared channelIf a UE multiplexes HARQ-ACK information in a PUSCH transmission that is scheduled by a DCI format that includes a DAI field, the UE generates the HARQ-ACK codebook as described in Clause 9.1.3.1, with the following modifications:- For the pseudo-code for the HARQ-ACK codebook generation in Clause 9.1.3.1, after the completion of the and loops, the UE sets where is the value of the DAI field according to Table 9.1.3-2- For the case of first and second HARQ-ACK sub-codebooks, the DCI format includes a first DAI field corresponding to the first HARQ-ACK sub-codebook and a second DAI field corresponding to the second HARQ-ACK sub-codebook*- harq-ACK-SpatialBundlingPUCCH* is replaced by *harq-ACK-SpatialBundlingPUSCH*.If a UE is not provided *PDSCH-CodeBlockGroupTransmission* and the UE is scheduled for a PUSCH transmission by DCI format that includes a DAI field with value and the UE has not received any PDCCH within the monitoring occasions for PDCCH with DCI format scheduling PDSCH receptions or SPS PDSCH release or indicating SCell dormancy on any serving cell and the UE does not have HARQ-ACK information in response to a SPS PDSCH reception to multiplex in the PUSCH, as described in Clause 9.1.3.1, the UE does not multiplex HARQ-ACK information in the PUSCH transmission. If a UE is provided *PDSCH-CodeBlockGroupTransmission* and the UE is scheduled for a PUSCH transmission by DCI format that includes a DAI field with first value or with second value and the UE has not received any PDCCH within the monitoring occasions for PDCCH with DCI format scheduling PDSCH receptions or SPS PDSCH release, or DCI format 1\_1 indicating SCell dormancy, on any serving cell and the UE does not have HARQ-ACK information in response to a SPS PDSCH reception to multiplex in the PUSCH, as described in Clause 9.1.3.1, the UE does not multiplex HARQ-ACK information for the first sub-codebook or for the second sub-codebook, respectively, in the PUSCH transmission.Table 9.1.3-2: Value of DAI

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| DAIMSB, LSB |   | Number of {serving cell, PDCCH monitoring occasion}-pair(s) in which PDSCH transmission(s) associated with PDCCH or PDCCH indicating SPS PDSCH release or DCI format 1\_1 indicating SCell dormancy is present, denoted as and  |
| 0,0 | 1 |  |
| 0,1 | 2 |  |
| 1,0 | 3 |  |
| 1,1 | 4 |  |

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**Issue#29: Correction on PUSCH frequency hopping in 38.214 [7]**

***TP 9:*** *{38.214: 6.3.1 Frequency hopping for PUSCH repetition Type A}* ***for Rel-16***

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| 6.3.1 Frequency hopping for PUSCH repetition Type A**<Unchanged parts are omitted>**For a PUSCH scheduled by RAR UL grant, fallbackRAR UL grant, or by DCI format 0\_0 with CRC scrambled by TC-RNTI, frequency offsets are obtained as described in clause 8.3 of [6, TS 38.213]. Otherwise, for a PUSCH scheduled by DCI format 0\_0/0\_1 or a PUSCH based on a Type2 configured UL grant activated by DCI format 0\_0/0\_1 and for resource allocation type 1, frequency offsets are configured by higher layer parameter *frequencyHoppingOffsetLists* in *pusch-Config*. For a PUSCH scheduled by DCI format 0\_2 or a PUSCH based on a Type2 configured UL grant activated by DCI format 0\_2 and for resource allocation type 1, frequency offsets are configured by higher layer parameter *frequencyHoppingOffsetListsDCI-0-2* in *pusch-Config*.- When the size of the active BWP is less than 50 PRBs, one of two higher layer configured offsets is indicated in the UL grant.- When the size of the active BWP is equal to or greater than 50 PRBs, one of four higher layer configured offsets is indicated in the UL grant.For PUSCH based on a Type1 configured UL grant the frequency offset is provided by the higher layer parameter *frequencyHoppingOffset* in *rrc-ConfiguredUplinkGrant*. For a MsgA PUSCH the frequency offset is provided by the higher layer parameter as described in [6, TS 38.213]. |

# Reference

[1] R1-2102430, Draft CR on PUCCH power control, OPPO

[2] R1-2102581, Corrections to TS 38.213, CATT

[3] R1-2102953, Draft CR on PDSCH default TCI state, ZTE

[4] R1-2103503, Draft CR on prioritization between SRS and PUCCH, LG Electronics

[5] R1-2102481, Correction on UL DAI for Type-2 HARQ-ACK codebook, ZTE

[6] R1-2102482, Correction on UL DAI for Type-2 HARQ-ACK codebook, ZTE

[7] R1-2103743, Correction on PUSCH frequency hopping in 38.214, Huawei, HiSilicon