**3GPP TSG-RAN WG1 Meeting #101-eR1-20wxyz**

**e-Meeting, May 25 – June 5, 2020**

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **36.212** | **CR** |  | **rev** |  | **Current version:** | **16.1.0** |  |
|  | | | | | | | | |
| *For* [***HE******LP***](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:*** | Miscellaneous corrections for Rel-16 DL MIMO EE features in 36.212 | | | | | | | | | |
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| ***Source to WG:*** | FUTUREWEI | | | | | | | | | |
| ***Source to TSG:*** |  | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | LTE\_DL\_MIMO\_EE-Core | | | | |  | ***Date:*** | | | 2020-6-11 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | F |  | | | | | ***Release:*** | | | Rel-16 |
|  | *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 can be 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-12 (Release 12)* *Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16)* | |
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| ***Reason for change:*** | | Corrections are needed to align with 36.331 RRC parameters | | | | | | | | |
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| ***Summary of change:*** | | Update a few RRC parameter names | | | | | | | | |
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| ***Consequences if not approved:*** | | Rel-16 DL MIMO EE is incomplete | | | | | | | | |
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| ***Clauses affected:*** | | 5.3.3.1.6, 5.3.3.1.7, 5.3.3.1.7A | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | | **X** |  | Other core specifications | | | | TS 36.211, TS 36.213 | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

##### 5.3.3.1.6 Format 3

DCI format 3 is used for the transmission of TPC commands for PUCCH, SPUCCH corresponding to semi-persistently scheduled PDSCH with slot/subslot duration, semi-persistently scheduled PUSCH with slot/subslot duration, PUSCH with subframe duration with 2-bit power adjustments, and additional SRS symbols.

The following information is transmitted by means of the DCI format 3:

- TPC command number 1, TPC command number 2,…, TPC command number *N*

where , and where  is equal to the payload size of format 0 before CRC attachment when format 0 is mapped onto the common search space, including any padding bits appended to format 0. The parameter *tpc-Index* or *tpc-Index-PUCCH-SCell-r13* or *tpc-Index-SRS-Add* provided by higher layers determines the index to the TPC command for a given UE.

If , a bit of value zero shall be appended to format 3.

For BL/CE UE, *L*format 0andformat 0 are replaced by *L*format 6-0Aandformat 6-0A, respectively, in the description above.

##### 5.3.3.1.7 Format 3A

DCI format 3A is used for the transmission of TPC commands for PUCCH, SPUCCH corresponding to semi-persistently scheduled PDSCH with slot/subslot duration, semi-persistently scheduled PUSCH with slot/subslot duration, PUSCH with subframe duration with single bit power adjustments, and additional SRS symbols.

The following information is transmitted by means of the DCI format 3A:

- TPC command number 1, TPC command number 2,…, TPC command number M

where , and where  is equal to the payload size of format 0 before CRC attachment when format 0 is mapped onto the common search space, including any padding bits appended to format 0. The parameter *tpc-Index* or *tpc-Index-PUCCH-SCell-r13* or *tpc-Index-SRS-Add* provided by higher layers determines the index to the TPC command for a given UE.

For BL/CE UE, *L*format 0andformat 0 are replaced by *L*format 6-0Aandformat 6-0A, respectively, in the description above.

##### 5.3.3.1.7A Format 3B

DCI format 3B is used for the transmission of a group of TPC commands for SRS transmissions by one or more UEs. Along with a TPC command, a SRS request may also be transmitted.

The following information is transmitted by means of the DCI format 3B:

- block number 1, block number 2, …, block number 

where the starting position of a block is determined by the parameter *startingBitOfFormat3B* or *startingBitOfFormat3B-SRS-Add* provided by higher layers for the UE configured with the block.

If a UE has more than 5 TDD SCells configured without PUCCH and without PUSCH, one block is configured for the UE by higher layers, with the following fields defined for the block:

- SRS request – 0 or 2 bits. This field is present, and if present interpreted, according to the definition in Clause 8.2 of [3].

- TPC command number 1, TPC command number 2, …, TPC command number *n*

The *n* TPC command fields correspond to a set of *n* TDD SCells without PUCCH and without PUSCH, with the set indicated by the SRS request field or determined by higher layers if there is no SRS request field present. A TPC command field has 1 bit if the parameter *fieldTypeFormat3B* or *fieldTypeFormat3B-SRS-Add* provided by higher layers has a value of 1 or 3, and 2 bits if the parameter *fieldTypeFormat3B* or *fieldTypeFormat3B-SRS-Add* has a value of 2 or 4.

If a UE has up to 5 TDD SCells configured without PUCCH and without PUSCH, one or more blocks each corresponding to an SCell are configured by higher layers, with the following fields defined for each block:

- SRS request - 0, 1, or 2 bits, where the number of bits is determined in Clause 8.2 of [3].

- TPC command - 1 or 2 bits, where the number of bits is 1 if the parameter *fieldTypeFormat3B* or *fieldTypeFormat3B-SRS-Add* provided by higher layers has a value of 1 or 3, and 2 if the parameter *fieldTypeFormat3B* or *fieldTypeFormat3B-SRS-Add* has a value of 2 or 4.

The size of format 3B is equal to , and where  is equal to the payload size of format 0 before CRC attachment when format 0 is mapped onto the common search space, including any padding bits appended to format 0.