**3GPP TSG RAN WG1 Meeting #102-eR1-2007299**

**E-meeting, August 17–28, 2020**

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **36.213** | **CR** | **1353** | **rev** | **-** | **Current version:** | **V16.2.0** |  |
|  | | | | | | | | |
| *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:*** | Add PUR allocation procedures to UL resource allocation type 5 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Moderator (Sierra Wireless) | | | | | | | | | |
| ***Source to TSG:*** | R1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | LTE\_eMTC5 -Core | | | | |  | ***Date:*** | | | 2020-08-25 |
|  |  | | | |  | |  | | |  |
| ***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:*** | | Uplink resource allocation type 5, which is used for sub-PRB allocations, is missing PUR allocation procedures. | | | | | | | | |
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| ***Summary of change:*** | | Added PUR allocation procedures to uplink resource allocation type 5 | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | PUR transmissions using UL resource allocation type 5 would not be supported. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 8.1.6 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | |  | | |
| ***affected:*** | |  | **X** | Test specifications | | | |  | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | |  | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

< Unchanged parts are omitted >

**8.1.6 Uplink resource allocation type 5**

Uplink resource allocation type 5 is applicable for BL/CE UEs configured with higher layer parameter *ce-PUSCH-SubPRB-Config-r15* or *PUR-Config*.

The resource allocation information for uplink resource allocation type 5 indicates to a scheduled UE

- a set of contiguously allocated subcarriers within an allocated resource block of a narrowband,

- a number of resource units () determined by the 'number of resource units' field in the corresponding DCI or higher layer parameter *numRUs* in *PUR-Config* according to Table 8.1.6-2 for UE configured with CEModeA, and Table 8.1.6-3 for UE configured with CEModeB.

For a UE configured with CEModeA and the value of the 'number of resource units' field in the scheduling grant set to other than '00', the allocated resource block within a narrowband is given by  where  is the value of the 'resource allocation' field in the scheduling grant, and the allocated subcarriers within the allocated resource block is given in Table 8.1.6-1. For a UE configured with CEModeA and the value of higher layer parameter *numRUs* in *PUR-Config* set to other than '00', the allocated resource block within a narrowband is given by  where  is indicated by higher layer parameter *prb-AllocationInfo* in *PUR-Config*, and the allocated subcarriers within the allocated resource block is given in Table 8.1.6-1. For PUSCH sub-PRB allocation in CE Mode A, the UE shall consider the DCI valid even if the number of transmitted subframes is greater than *pusch-maxNumRepetitionCEmodeA*.

For a UE configured with CEModeB and the value of the 'sub-PRB allocation flag' field in the scheduling grant set to '1', the allocated resource block within a narrowband is given by the higher layer parameter *locationCE-ModeB*, and the allocated subcarriers within the allocated resource block is given in Table 8.1.6-1.

For a UE configured with CEModeB and the value of higher layer parameter *subPRB-Allocation* in *PUR-Config* set to '1', the allocated resource block within a narrowband is given by higher layer parameter *locationCE-ModeB* in *PUR-Config*, and the allocated subcarriers within the allocated resource block are indicated by the higher layer parameter *prb-AllocationInfo* in *PUR-Config* according to Table 8.1.6-1.

In Table 8.1.6-1,  is the physical-layer cell identity as given in subclause 6.11 of [3].

Table 8.1.6-1: Subcarriers allocation for BL/CE UE.

|  |  |  |
| --- | --- | --- |
| = value of resource allocation field or indicated by higher layer parameter *prb-AllocationInfo* in *PUR-Config* | Modulation | Set of Allocated subcarriers |
| 0 | π/2-BPSK |  |
| 1 | π/2-BPSK |  |
| 2 | π/2-BPSK |  |
| 3 | π/2-BPSK |  |
| 4 | QPSK | 0,1,2 |
| 5 | QPSK | 3,4,5 |
| 6 | QPSK | 6,7,8 |
| 7 | QPSK | 9,10,11 |
| 8 | QPSK | 0,1,2,3,4,5 |
| 9 | QPSK | 6,7,8,9,10,11 |

Table 8.1.6-2: Number of resource units for CEModeA.

|  |  |
| --- | --- |
| Value of 'number of resource units' field or value of higher layer parameter *numRUs* in *PUR-Config* | Number of resource units |
| '01' | 1 |
| '10' | 2 |
| '11' | 4 |

Table 8.1.6-3: Number of resource units for CEModeB.

|  |  |
| --- | --- |
| Value of 'number of resource units' field or value of higher layer parameter *numRUs* in *PUR-Config* | Number of resource units |
| '0' | 2 |
| '1' | 4 |

< Unchanged parts are omitted >