**3GPP TSG RAN WG1 Meeting #103-e *<TDoc#>***

**E-meeting, October 26th – November 13th, 2020**

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **36.213** | **CR** | **<CR#>** | **rev** | **-** | **Current version:** | **v16.3.0** |  |
|  | | | | | | | | |
| *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:*** | Clarification on the subcarrier allocation for sub-PRB in CE Mode B | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Ericsson | | | | | | | | | |
| ***Source to TSG:*** | RAN1 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | LTE\_eMTC4-Core | | | | |  | ***Date:*** | | | 2020-10-29 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***Release:*** | | | Rel-15 |
|  | *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)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | For sub-PRB in both CE Mode A and CE Mode B, the allocated number of subcarriers is obtained using Table 8.1.6-1, which applies a modulo operation on the variable “”. The variable “” consists of 6-bits for CE Mode A and 4-bits for CE Mode B and is obtained respectively from the 'resource allocation' field in the scheduling grant. However, for CE Mode B, the variable “” is currently undefined. | | | | | | | | |
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| ***Summary of change:*** | | The variable “” obtained from the 'resource allocation' field in the scheduling grant has been defined for CE Mode B. | | | | | | | | |
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| ***Consequences if not approved:*** | | If “” remains undefined for CE Mode B, it won’t be possible to apply the modulo operation in Table 8.1.6-1, hence it won’t be possible to allocate subcarriers in CE Mode B. | | | | | | | | |
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| ***Clauses affected:*** | | 8.1.6 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | |  | | | | | | | | |

----------------------------------------------------------------- Text Starts -----------------------------------------------------------------

### 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 where  is the value of the 'resource allocation' field in the scheduling grant.

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.

----------------------------------------------------------------- Text Ends -----------------------------------------------------------------