**3GPP TSG-RAN WG1 Meeting #102-eR1-2007309**

**e-Meeting, August 17th – 28th, 2020**

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| *CR-Form-v12.0* |
| **CHANGE REQUEST** |
|  |
|  | **36.213** | **CR** | **1356** | **rev** | **-** | **Current version:** | **16.2.0** |  |
|  |
| *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 |  |

|  |
| --- |
|  |
| ***Title:***  | Missing ‘else’ in RV determination in UL multi-TB scheduling in LTE-MTC |
|  |  |
| ***Source to WG:*** | Moderator (Ericsson) |
| ***Source to TSG:*** |  |
|  |  |
| ***Work item code:*** | LTE\_eMTC5-Core |  | ***Date:*** | 2020-08-26 |
|  |  |  |  |  |
| ***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 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-12 (Release 12)**Rel-13 (Release 13)Rel-14 (Release 14)Rel-15 (Release 15)Rel-16 (Release 16)* |
|  |  |
| ***Reason for change:*** | There is a missing ‘else’ in the RV determination procedure for UL multi-TB scheduling in LTE-MTC.This issue was discussed in RAN1 email discussion [102-e-LTE-eMTC5-04] captured as Issue #5 in [R1-2007305](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_102-e/Docs/R1-2007305.zip). |
|  |  |
| ***Summary of change:*** | Insert the missing ‘else’ and fix a spelling mistake on the same row. |
|  |  |
| ***Consequences if not approved:*** | Unclear or incorrect UE behavior for RV determination for UL multi-TB scheduling in LTE-MTC |
|  |  |
| ***Clauses affected:*** | 8.6.1 |
|  |  |
|  | **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:*** |  |

### 8.6.1 Modulation order and redundancy version determination

For a non-BL/CE UE and for , the modulation order (****) is determined as follows, where ****= **** unless specified otherwise:

- If the UE is capable of supporting 64QAM in PUSCH and is not capable of supporting 256QAM in PUSCH and has not been configured by higher layers to transmit only QPSK and 16QAM, the modulation order is given by ****in Table 8.6.1-1.

- If the UE is capable of supporting 256QAM in PUSCH, and has not been configured by higher layers to transmit only QPSK and 16QAM and has not been configured with higher layer parameter *Enable256QAM*, the modulation order is given by ****in Table 8.6.1-1.

- If the UE is capable of supporting 256QAM in subframe-PUSCH and configured with higher layer parameter *Enable256QAM*, the modulation order is given by ****in Table 8.6.1-3 for subframe-PUSCH ,

- if higher layer parameter *tpc-SubframeSet* is configured, higher layer parameter *subframeSet1-DCI-Format0=TRUE*, the associated DCI is of format 0/0A/0B mapped onto the UE specific search space and with CRC scrambled by the C-RNTI, and the subframe of the PUSCH belongs to uplink power control subframe set 1, or,

- if higher layer parameter *tpc-SubframeSet* is configured, higher layer parameter *subframeSet1-DCI-Format4=TRUE*, the associated DCI is of format 4/4A/4B mapped onto the UE specific search space and with CRC scrambled by the C-RNTI, and the subframe of the PUSCH belongs to uplink power control subframe set 1, or,

- if higher layer parameter *tpc-SubframeSet* is configured, higher layer parameter *subframeSet2-DCI-Format0=TRUE*, the associated DCI is of format 0/0A/0B mapped onto the UE specific search space and with CRC scrambled by the C-RNTI, and the subframe of the PUSCH belongs to uplink power control subframe set 2, or,

- if higher layer parameter *tpc-SubframeSet* is configured, higher layer parameter *subframeSet2-DCI-Format4=TRUE*, the associated DCI is of format 4/4A/4B mapped onto the UE specific search space and with CRC scrambled by the C-RNTI, and the subframe/slot/subslot of the PUSCH belongs to uplink power control subframe set 2, or,

- if higher layer parameter *tpc-SubframeSet* is not configured, higher layer parameter *dci-Format0=TRUE*, and the associated DCI is of format 0/0A/0B mapped onto the UE specific search space and with CRC scrambled by the C-RNTI, or,

- if higher layer parameter *tpc-SubframeSet* is not configured, higher layer parameter *dci-Format4=TRUE*, and the associated DCI is of format 4/4A/4B mapped onto the UE specific search space and with CRC scrambled by the C-RNTI,

- otherwise, the modulation order is given by in Table 8.6.1-1 for subframe-PUSCH.

- If the UE is capable of supporting 256QAM in slot/subslot PUSCH and configured with higher layer parameter *Enable256QAMSTTI*, the modulation order is given by ****in Table 8.6.1-3 for slot/subslot-PUSCH,

- if higher layer parameter *tpc-SubframeSet* is configured, higher layer parameter *subframeSet1-256QAM-STTI=TRUE*, the associated DCI is of format 7-0A/7-0B mapped onto the UE specific search space and with CRC scrambled by the C-RNTI, and the subframe of the slot/subslot-PUSCH belongs to uplink power control subframe set 1, or,

- if higher layer parameter *tpc-SubframeSet* is configured, higher layer parameter *subframeSet2-256QAM-STTI=TRUE*, the associated DCI is of format 7-0A/7-0B mapped onto the UE specific search space and with CRC scrambled by the C-RNTI, and the subframe of the slot/subslot PUSCH belongs to uplink power control subframe set 2, or,

- if higher layer parameter *tpc-SubframeSet* is not configured, the associated DCI is of format 7-0A/7-0B mapped onto the UE specific search space and with CRC scrambled by the C-RNTI,;

- otherwise, the modulation order is given by in Table 8.6.1-1 for slot/subslot PUSCH.

- If the UE is not capable of supporting 64QAM in PUSCH or has been configured by higher layers to transmit only QPSK and 16QAM, ****is first read from Table 8.6.1-1. The modulation order is set to **** = min(4,****)**.**

- If the parameter *ttiBundling* provided by higher layers is set to *TRUE*, then the modulation order is set to ****. Resource allocation size is restricted to  applies in this case if the UE does not indicate support by higher layers to operate without it.

- If the UE is configured with higher layer parameter *pusch-EnhancementsConfig*, and if the PDCCH corresponding to the PUSCH transmission is located in UE specific search space, then ****is first obtained according to the procedure above. The modulation order (****) is determined as follows.

- If the uplink DCI modulation override bit is set to zero, or if ****=2

- then ****=****

- otherwise

- if ****=8 then ****= 6,

- if ****=6 then ****= 4,

- if ****=4 then ****= 2.

For a non-BL/CE UE and for  the modulation order (****) is determined as follows:

- if DCI format 0/0A/0B/7-0A is used and  and *N* =1 (determined by the procedure in Subclause 8.0) or, if DCI format 4/7-0B is used and only 1 TB is enabled and for the enabled TB and the signalled number of transmission layers is 1 or if DCI format 4A/4B is used and  for both TBs and *N* =1 (determined by the procedure in Subclause 8.0), and if

- the "CSI request" bit field is 1 bit and the bit is set to trigger an aperiodic report and,  or,

- the "CSI request" bit field is 2 bits and is triggering an aperiodic CSI report for one serving cell according to Table 7.2.1-1A, and,  or,

- the "CSI request" bit field is 2 bits and is triggering an aperiodic CSI report for more than one serving cell according to Table 7.2.1-1A and,  or,

- the "CSI request" bit field is 2 bits and is triggering an aperiodic CSI report for one CSI process according to Table 7.2.1-1B and  or,

- the "CSI request" bit field is 2 bits and is triggering an aperiodic CSI report for more than one CSI process according to Table 7.2.1-1B and  or,

- the "CSI request" bit field is 2 bits and is triggering an aperiodic CSI report for one CSI process or {CSI process, CSI subframe set}-pair according to Table 7.2.1-1C and  or,

- the "CSI request" bit field is 2 bits and is triggering an aperiodic CSI report for more than one CSI process and/or {CSI process, CSI subframe set}-pair according to Table 7.2.1-1C and , or

- the "CSI request" bit field is 3 bits and is triggering an aperiodic CSI report for one CSI process according to Table 7.2.1-1D or Table 7.2.1-1E or Table 7.2.1-1F or Table 7.2.1-1G and , or

- the "CSI request" bit field is 3 bits and is triggering an aperiodic CSI report for 2 to 5 CSI processes according to Table 7.2.1-1D or Table 7.2.1-1E or Table 7.2.1-1F or Table 7.2.1-1G and , or

- the "CSI request" bit field is 3 bits and is triggering an aperiodic CSI report for more than 5 CSI processes according to Table 7.2.1-1D or Table 7.2.1-1E or Table 7.2.1-1F or Table 7.2.1-1G, or

- the "CSI request" bit field in DCI format 0A/0B/4A/4B/7-0A/7-0B is set to trigger an aperiodic CSI report, or

- the "CSI request" bit field is 4 bits and is triggering an aperiodic CSI report for one CSI process according to Table 7.2.1-1H or Table 7.2.1-1I and , or

- the "CSI request" bit field is 4 bits and is triggering an aperiodic CSI report for 2 to 5 CSI processes according to Table 7.2.1-1H or Table 7.2.1-1I and , or

- the "CSI request" bit field is 4 bits and is triggering an aperiodic CSI report for more than 5 CSI processes according to Table 7.2.1-1H or Table 7.2.1-1I, or

- the "CSI request" bit field is 5 bits and is triggering an aperiodic CSI report for one CSI process according to Table 7.2.1-1J or Table 7.2.1-1K and , or

- the "CSI request" bit field is 5 bits and is triggering an aperiodic CSI report for 2 to 5 CSI processes according to Table 7.2.1-1J or Table 7.2.1-1K and , or

- the "CSI request" bit field is 5 bits and is triggering an aperiodic CSI report for more than 5 CSI processes according to Table 7.2.1-1J or Table 7.2.1-1K, or

- the "CSI request" bit field in DCI is set to trigger an aperiodic CSI report and UE is configured with higher layer parameter *advancedCodebookEnabled*,

- the "CSI request" bit field in DCI is set to trigger an aperiodic CSI report and UE is configured with higher layer parameter *FeCoMPCSIEnabled,*

then the modulation order is set to **.**

- Otherwise,

- For a cell that is not a LAA SCell, the modulation order shall be determined from the DCI transported in the latest PDCCH/EPDCCH/SPDCCH with DCI format 0/4/7-0A/7-0B for the same transport block using . If there is no PDCCH/EPDCCH/SPDCCH with DCI format 0/4/7-0A/7-0B for the same transport block using , the modulation order shall be determined from

- the most recent semi-persistent scheduling assignment PDCCH/EPDCCH/SPDCCH, when the initial PUSCH for the same transport block is semi-persistently scheduled, or,

- the random access response grant for the same transport block, when the PUSCH is initiated by the random access response grant.

- For a cell that is an LAA SCell and a UE that is configured with Partial PUSCH Mode 2 or 3, if , the modulation order shall be determined from the DCI transported in the latest PDCCH/EPDCCH with DCI format 0A/0B/4A/4B for the same transport block using .

For a cell that is not a LAA SCell, and a non-BL/CE UE,

- for subframe-PUSCH, if the UE is configured with higher layer parameter *enable256QAM-r14*, and if the PDCCH corresponding to the PUSCH transmission is located in UE specific search space with CRC scrambled by the C-RNTI, the UE shall useand Table 8.6.1-3 to determine the redundancy version (*rvidx*) to use in the physical uplink shared channel,

- if higher layer parameter *tpc-SubframeSet* is configured, higher layer parameter *subframeSet1-DCI-Format0=TRUE*, the associated DCI is of format 0/0A/0B, and the subframe of the PUSCH belongs to uplink power control subframe set 1, or,

- if higher layer parameter *tpc-SubframeSet* is configured, higher layer parameter *subframeSet1-DCI-Format4=TRUE*, the associated DCI is of format 4/4A/4B, and the subframe of the PUSCH belongs to uplink power control subframe set 1, or,

- if higher layer parameter *tpc-SubframeSet* is configured, higher layer parameter *subframeSet2-DCI-Format0=TRUE*, the associated DCI is of format 0/0A/0B, and the subframe of the PUSCH belongs to uplink power control subframe set 2, or,

- if higher layer parameter *tpc-SubframeSet* is configured, higher layer parameter *subframeSet2-DCI-Format4=TRUE*, the associated DCI is of format 4/4A/4B, and the subframe of the PUSCH belongs to uplink power control subframe set 2, or,

- if higher layer parameter *tpc-SubframeSet* is not configured, higher layer parameter *dci-Format0=TRUE*, and the associated DCI is of format 0/0A/0B, or,

- if higher layer parameter *tpc-SubframeSet* is not configured, higher layer parameter *dci-Format4=TRUE*, and the associated DCI is of format 4/4A/4B;

- otherwise, the UE shall useand Table 8.6.1-1 to determine the redundancy version (*rvidx*) to use in the physical uplink shared channel.

For a LAA SCell and DCI format 0A/4A, the redundancy version (*rvidx*) to use in the physical uplink shared channel is given by .

For a LAA SCell and DCI format 0B/4B, the redundancy version (*rvidx*) to use in the physical uplink shared channel is given by .

For a serving cell, if the UE is configured with higher layer parameter

*- shortProcessingTime* if the PDCCH with CRC scrambled by C-RNTI corresponding to the PUSCH transmission is located in UE specific search space or

*- shortTTI* and if the associated DCI is of format 7-0A/7-0B,

the redundancy version (*rvidx*) to use in the physical uplink shared channel is given by .

For a serving cell, for semi-persistently scheduled slot/subslot-PUSCH transmissions of a transport block spanning *K* consecutive PUSCH transmissions corresponding to an SPS configuration with higher layer parameters *rv-SPS-STTI-UL-Repetitions* and *totalNumberPUSCH-SPS-STTI-UL-Repetitions****,*** the redundancy version (*rvidx*) is determined according to Table 8.6.1-0 for the *k*th PUSCH transmission, using  where k=1,…,*K,,* and K=*totalNumberPUSCH-SPS-STTI-UL-Repetitions.*

For a serving cell, for semi-persistently scheduled subframe-PUSCH transmissions of a transport block spanning *K* consecutive PUSCH transmissions corresponding to an SPS configuration with higher layer parameters *rv-SPS-UL-Repetitions* and *totalNumberPUSCH-SPS-UL-Repetitions****,*** the redundancy version (*rvidx*) is determined according to Table 8.6.1-0 for the *k*th PUSCH transmission, using  where k=1,…,*K,* and K=*totalNumberPUSCH-SPS-UL-Repetitions.*

Table 8.6.1-0: Redundancy Version corresponding to different values of higher layer parameter *rv-SPS-STTI-UL-Repetitions* or *rv-SPS-UL-Repetitions*

|  |  |  |  |
| --- | --- | --- | --- |
| **Redundancy version Index*rv*** | ***rvidx* for** **rv-SPS-STTI-UL-Repetitions or** **rv-SPS-UL-Repetitions =****{0,0,0,0,0,0}** | ***rvidx* for** **rv-SPS-STTI-UL-Repetitions or** **rv-SPS-UL-Repetitions =****{0,2,3,1,0,2}** | ***rvidx* for** **rv-SPS-STTI-UL-Repetitions or** **rv-SPS-UL-Repetitions =****{0,3,0,3,0,3}** |
| 0 | 0 | 0 | 0 |
| 1 | 0 | 2 | 3 |
| 2 | 0 | 3 | 0 |
| 3 | 0 | 1 | 3 |

Table 8.6.1-1: Modulation, TBS index and redundancy version table for PUSCH

|  |  |  |  |
| --- | --- | --- | --- |
| MCS Index | Modulation Order | TBS Index | Redundancy Version*rvidx* |
| 0 | 2 | 0 | 0 |
| 1 | 2 | 1 | 0 |
| 2 | 2 | 2 | 0 |
| 3 | 2 | 3 | 0 |
| 4 | 2 | 4 | 0 |
| 5 | 2 | 5 | 0 |
| 6 | 2 | 6 | 0 |
| 7 | 2 | 7 | 0 |
| 8 | 2 | 8 | 0 |
| 9 | 2 | 9 | 0 |
| 10 | 2 | 10 | 0 |
| 11 | 4 | 10 | 0 |
| 12 | 4 | 11 | 0 |
| 13 | 4 | 12 | 0 |
| 14 | 4 | 13 | 0 |
| 15 | 4 | 14 | 0 |
| 16 | 4 | 15 | 0 |
| 17 | 4 | 16 | 0 |
| 18 | 4 | 17 | 0 |
| 19 | 4 | 18 | 0 |
| 20 | 4 | 19 | 0 |
| 21 | 6 | 19 | 0 |
| 22 | 6 | 20 | 0 |
| 23 | 6 | 21 | 0 |
| 24 | 6 | 22 | 0 |
| 25 | 6 | 23 | 0 |
| 26 | 6 | 24 | 0 |
| 27 | 6 | 25 | 0 |
| 28 | 6 | 26 | 0 |
| 29 | reserved | 1 |
| 30 | 2 |
| 31 | 3 |

For a BL/CE UE

- if the UE is configured with CEModeA, and higher layer parameter *ce-pusch-nb-maxTbs-config* configured with value '*On*', and if the MPDCCH corresponding to the PUSCH transmission is located in UE-specific search space, the modulation order is determined according to table 8.6.1-2A.

- if the UE is configured with higher layer parameter *ce-pdsch-puschEnhancement-config* with value 'On', and if the *Modulation order override* field in the DCI is set to 1, the modulation order is set to ****

- if the UE is configured with higher layer parameter *edt-Parameters-r15*, and if the PUSCH transmission is scheduled by the Random Access Response Grant, and the higher layers indicate EDT to the physical layer as defined in [8], or the PUSCH retransmission of the same transport block including EDT as part of the contention based random access procedure with  in the uplink scheduling grant, the modulation order is set to ****.

- if the UE is configured with higher layer parameter *ce-PUSCH-SubPRB-Config-r15*, and the PUSCH resource assignment is using uplink resource allocation type 5, the modulation order is set to  for π/2-BPSK, ****otherwise.

- otherwise, the modulation order is determined according to table 8.6.1-2.

A BL/CE UE configured with CEModeB is not expected to receive a DCI format 6-0B indicating .

For a BL/CE UE or for UEs configured with higher layer parameter *PUSCH-EnhancementsConfig*,

- if the UE is configured with higher layer parameter *ce-PUSCH-SubPRB-Config-r15*, and the PUSCH resource assignment is using uplink resource allocation type 5, the redundancy version (*rvidx*) to use for the i-th BL/CE UL subframe associated with a TB in the physical uplink shared channel is determined according to Table 7.1.7.1-2 using  where $i=0, 1, …, N-1$*,* and *N* is the number of BL/CE UL subframes associated with the TB for the PUSCH transmission as determined in subclause 8.0. For a BL/CE UE configured in CEModeA, is determined by the 'Redundancy version' field in DCI format 6-0A, if present. For a BL/CE UE configured in CEModeA, if the UE is configured with higher layer parameter *ce-PUSCH-MultiTB-Config* and multiple TB are scheduled in the corresponding DCI, and the 'Redundancy version' field for a scheduled TB is not present in the corresponding DCI,  for all TBs scheduled by the DCI. For a BL/CE UE configured with CEModeB, . For a BL/CE UE,  for a PUSCH transmission using preconfigured uplink resource.

- otherwise, the same redundancy version is applied to PUSCH associated with a TB that is transmitted in a given block of  consecutive subframes associated with a TB, including subframes that are not BL/CE UL subframes. The subframe number of the first subframe in each block of  such consecutive subframes, denoted as , satisfies . Denote  as the subframe number of the first uplink subframe intended for PUSCH associated with a TB. For BL/CE UEs, the PUSCH transmission associated with a TB spans $N\_{abs,TB}^{PUSCH}$ consecutive subframes associated with the TB, including subframes that are not BL/CE UL subframes where the PUSCH transmission is postponed and excluding subframes associated with other TBs scheduled by the DCI, if any. For the  block of consecutive subframes within the set of $N\_{abs,TB}^{PUSCH}$ subframes associated with the TB as described above, the redundancy version (*rvidx*) associated with the TB is determined according to Table 7.1.7.1-2 using , where , and$J^{PUSCH}=\left⌈\frac{N\_{abs,TB}^{PUSCH} +\left(i\_{0} mod N\_{acc}\right)}{N\_{acc}}\right⌉$. The  blocks of subframes are sequential in time, starting with  to which subframe belongs. For a BL/CE UE configured with CEModeB,  for FDD and  for TDD, and . For a UE configured with higher layer parameter *PUSCH-EnhancementsConfig*,  and  is determined by the 'Redundancy version' field in DCI format 0C. For UEs configured with higher layer parameter *PUSCH-EnhancementsConfig,*.$ N\_{abs,TB}^{PUSCH}=N\_{rep}^{PUSCH}$. For a BL/CE UE configured in CEModeA, . For a BL/CE UE configured in CEModeA, and not configured with the higher layer parameter *ce-PUSCH-MultiTB-Config*,  for a TB is determined by the 'Redundancy version' field in DCI format 6-0A.

- if $N\_{TB}=1$ is indicated by the corresponding DCI,  for the TB is determined by the 'Redundancy version' in the ‘Scheduling TBs for Unicast’ field in DCI format 6-0A

- else if $N\_{TB}=2$ is indicated by the corresponding DCI, and the HARQ process IDs for each of the scheduled TBs are h1 and h2 (h1<h2),  of the scheduled TB with HARQ process ID h1 is determined by the ‘Redundancy version for TB 1’ in the ‘Scheduling TBs for Unicast’ field in DCI format 6-0A, and  of the scheduled TB with HARQ process ID h2 is determined by

- if the UE is configured with higher layer parameter *pusch-HoppingConfig* set to’on’ and the repetition number field in the DCI indicates PUSCH repetition, the ‘Redundancy version for TB 1’ in the ‘Scheduling TBs for Unicast’ field in DCI format 6-0A

- otherwise the ‘Redundancy version for TB 2’ in the ‘Scheduling TBs for Unicast’ field in DCI format 6-0A

- else if $N\_{TB}$ = 4 or 6,  for all scheduled TBs

- else

- if the UE is configured with higher layer parameter *pusch-HoppingConfig* set to 'on' and the repetition number field in the DCI indicates PUSCH repetition,  for all TBs

- otherwise  of all TBs is determined by the ‘Redundancy version for all TBs’ in the ‘Scheduling TBs for Unicast’ field in DCI format 6-0A.

Table 8.6.1-2: Modulation and TBS index table for PUSCH

|  |  |  |
| --- | --- | --- |
| MCS Index | Modulation Order | TBS Index |
| **0** | 2 | 0 |
| **1** | 2 | 1 |
| **2** | 2 | 2 |
| **3** | 2 | 3 |
| **4** | 2 | 4 |
| **5** | 2 | 5 |
| **6** | 2 | 6 |
| **7** | 2 | 7 |
| **8** | 2 | 8 |
| **9** | 2 | 9 |
| **10** | 2 | 10 |
| **11** | 4 | 10 |
| **12** | 4 | 11 |
| **13** | 4 | 12 |
| **14** | 4 | 13 |
| **15** | 4 | 14 |

Table 8.6.1-2A: Modulation and TBS index table for PUSCH

|  |  |  |
| --- | --- | --- |
| MCS Index | Modulation Order | TBS Index |
| **0** | 2 | 0 |
| **1** | 2 | 2 |
| **2** | 2 | 4 |
| **3** | 2 | 5 |
| **4** | 2 | 6 |
| **5** | 2 | 8 |
| **6** | 2 | 10 |
| **7** | 4 | 10 |
| **8** | 4 | 12 |
| **9** | 4 | 14 |
| **10** | 4 | 16 |
| **11** | 4 | 17 |
| **12** | 4 | 18 |
| **13** | 4 | 19 |
| **14** | 4 | 20 |
| **15** | 4 | 21 |

Table 8.6.1-3: Modulation, TBS index and redundancy version table for PUSCH

|  |  |  |  |
| --- | --- | --- | --- |
| MCS Index | Modulation Order | TBS Index | Redundancy Version*rvidx* |
| 0 | 2 | 0 | 0 |
| 1 | 2 | 2 | 0 |
| 2 | 2 | 4 | 0 |
| 3 | 2 | 6 | 0 |
| 4 | 2 | 8 | 0 |
| 5 | 2 | 10 | 0 |
| 6 | 4 | 11 | 0 |
| 7 | 4 | 12 | 0 |
| 8 | 4 | 13 | 0 |
| 9 | 4 | 14 | 0 |
| 10 | 4 | 16 | 0 |
| 11 | 4 | 17 | 0 |
| 12 | 4 | 18 | 0 |
| 13 | 4 | 19 | 0 |
| 14 | 6 | 20 | 0 |
| 15 | 6 | 21 | 0 |
| 16 | 6 | 22 | 0 |
| 17 | 6 | 23 | 0 |
| 18 | 6 | 24 | 0 |
| 19 | 6 | 25 | 0 |
| 20 | 6 | 27 | 0 |
| 21 | 6 | 28 | 0 |
| 22 | 6 | 29 | 0 |
| 23 | 8 | 30 | 0 |
| 24 | 8 | 31 | 0 |
| 25 | 8 | 32 | 0 |
| 26 | 8 | 32A | 0 |
| 27 | 8 | 33 | 0 |
| 28 | 8 | 34 | 0 |
| 29 | reserved | 1 |
| 30 | 2 |
| 31 | 3 |

Table 8.6.1-4: Void