**3GPP TSG- Meeting #**

**Toulouse, France, –**

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| *CR-Form-v12.1* |
| **DRAFT CHANGE REQUEST** |
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|  |  | **CR** |   | **rev** |  | **Current version:** |  |  |
|  |
| *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:***  | Corrections on presence of redundancy version field and HARQ process number field of DCI formats 0\_2/1\_2 for validation of activation and release DCI format |
|  |  |
| ***Source to WG:*** |  |
| ***Source to TSG:*** |  |
|  |  |
| ***Work item code:*** |  |  | ***Date:*** |  |
|  |  |  |  |  |
| ***Category:*** |  |  | ***Release:*** |  |
|  | *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-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)* |
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| ***Reason for change:*** | Configurable number of bits including 0 bit for the redundancy version (RV) field and the HARQ process number (HPN) field in DCI formats 0\_2/1\_2 are supported in Rel-16 URLLC. That is, the RV/HPN fields can be absent in DCI formats 0\_2/1\_2. However, in clause 10.2, it was specified that, validation of a DCI format is achieved if ALL fields are set to specific values according to Tables 10.2-1 - 10.2-4 where the RV/HPN fields are assumed to be always present. |
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| ***Summary of change:*** | Add ‘if present’ for the RV/HPN fields in each table of clause 10.2 to clarify that, if the RV/HPN fields in the DCI formats 0\_2/1\_2 are present, the present RV/HPN fields are used for determining the validation of activation or release DCI format, else the RV/HPN fields in the tables are not used for validation. |
|  |  |
| ***Consequences if not approved:*** | The UE/gNB behaviour is not clear on how the UE/gNB consider whether the validation of the DCI formats 0\_2/1\_2 is achieved according to Tables 10.2-1 - 10.2-4 if the RV/HPN fields are not present. |
|  |  |
| ***Clauses affected:*** | 10.2 |
|  |  |
|  | **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:*** |  |

##  10.2 PDCCH validation for DL SPS and UL grant Type 2

A UE validates, for scheduling activation or scheduling release, a DL SPS assignment PDCCH or a configured UL grant Type 2 PDCCH if

- the CRC of a corresponding DCI format is scrambled with a CS-RNTI provided by *cs-RNTI*, and

- the new data indicator field in the DCI format for the enabled transport block is set to '0', and

- the DFI flag field, if present, in the DCI format is set to '0', and

- if validation is for scheduling activation and if the PDSCH-to-HARQ\_feedback timing indicator field in the DCI format is present, the PDSCH-to-HARQ\_feedback timing indicator field does not provide an inapplicable value from *dl-DataToUL-ACK-r16*.

If a UE is provided a single configuration for UL grant Type 2 PUSCH or for SPS PDSCH, validation of the DCI format is achieved if all fields for the DCI format are set according to Table 10.2-1 or Table 10.2-2.

If a UE is provided more than one configurations for UL grant Type 2 PUSCH or for SPS PDSCH, a value of the HARQ process number field in a DCI format indicates an activation for a corresponding UL grant Type 2 PUSCH or for a SPS PDSCH configuration with a same value as provided by *ConfiguredGrantConfigIndex* or by *sps-ConfigIndex*, respectively. Validation of the DCI format is achieved if the RV field for the DCI format is set as in Table 10.2-3.

If a UE is provided more than one configuration for UL grant Type 2 PUSCH or for SPS PDSCH

- if the UE is provided *ConfiguredGrantConfigType2DeactivationStateList* or *sps-ConfigDeactivationStateList*, a value of the HARQ process number field in a DCI format indicates a corresponding entry for scheduling release of one or more UL grant Type 2 PUSCH or SPS PDSCH configurations

- if the UE is not provided *ConfiguredGrantConfigType2DeactivationStateList* or *sps-ConfigDeactivationStateList*, a value of the HARQ process number field in a DCI format indicates a release for a corresponding UL grant Type 2 PUSCH or for a SPS PDSCH configuration with a same value as provided by *ConfiguredGrantConfigIndex* or by *sps-ConfigIndex*, respectively

Validation of the DCI format is achieved if all fields for the DCI format are set according to Table 10.2-4.

If validation is achieved, the UE considers the information in the DCI format as a valid activation or valid release of DL SPS or configured UL grant Type 2. If validation is not achieved, the UE discards all the information in the DCI format.

Table 10.2-1: Special fields for single DL SPS or single UL grant Type 2 scheduling activation PDCCH validation when a UE is provided a single SPS PDSCH or UL grant Type 2 configuration in the active DL/UL BWP of the scheduled cell

|  |  |  |  |
| --- | --- | --- | --- |
|  | DCI format 0\_0/0\_1/0\_2  | DCI format 1\_0/1\_2 | DCI format 1\_1 |
| HARQ process number(if present) | set to all '0's | set to all '0's | set to all '0's |
| Redundancy version(if present) | set to all '0's | set to all '0's | For the enabled transport block: set to all '0's |

Table 10.2-2: Special fields for single DL SPS or single UL grant Type 2 scheduling release PDCCH validation when a UE is provided a single SPS PDSCH or UL grant Type 2 configuration in the active DL/UL BWP of the scheduled cell

|  |  |  |
| --- | --- | --- |
|  | DCI format 0\_0/0\_1/0\_2  | DCI format 1\_0/1\_1/1\_2 |
| HARQ process number(if present) | set to all '0's | set to all '0's |
| Redundancy version(if present) | set to all '0's | set to all '0's |
| Modulation and coding scheme | set to all '1's | set to all '1's |
| Frequency domain resource assignment | set to all '0's for FDRA Type 2 with $μ=1$set to all '1's, otherwise | set to all '0's for FDRA Type 0 or for *dynamicSwitch*set to all '1's for FDRA Type 1 |

Table 10.2-3: Special fields for a single DL SPS or single UL grant Type 2 scheduling activation PDCCH validation when a UE is provided multiple DL SPS or UL grant Type 2 configurations in the active DL/UL BWP of the scheduled cell

|  |  |  |  |
| --- | --- | --- | --- |
|  | DCI format 0\_0/0\_1/0\_2  | DCI format 1\_0/1\_2 | DCI format 1\_1 |
| Redundancy version(if present) | set to all '0's | set to all '0's | For the enabled transport block: set to all '0's |

Table 10.2-4: Special fields for a single or multiple DL SPS and UL grant Type 2 scheduling release PDCCH validation when a UE is provided multiple DL SPS or UL grant Type 2 configurations in the active DL/UL BWP of the scheduled cell

|  |  |  |
| --- | --- | --- |
|  | DCI format 0\_0/0\_1/0\_2  | DCI format 1\_0/1\_1/1\_2 |
| Redundancy version(if present) | set to all '0's | set to all '0's |
| Modulation and coding scheme | set to all '1's | set to all '1's |
| Frequency domain resource assignment | set to all '0's for FDRA Type 2 with $μ=1$set to all '1's, otherwise | set to all '0's for FDRA Type 0 or for *dynamicSwitch*set to all '1's for FDRA Type 1 |

A UE is expected to provide HARQ-ACK information in response to a SPS PDSCH release after $N$ symbols from the last symbol of a PDCCH providing the SPS PDSCH release. If *processingType2Enabled* of *PDSCH-ServingCellConfig* is set to *enable* for the serving cell with the PDCCH providing the SPS PDSCH release, $N=5$ for $μ=0$, $N=5.5$ for $μ=1$, and $N=11$ for $μ=2$, otherwise, $N=10$ for $μ=0$, $N=12$ for $μ=1$, $N=22$ for $μ=2$, and $N=25$ for $μ=3$, wherein $μ$ corresponds to the smallest SCS configuration between the SCS configuration of the PDCCH providing the SPS PDSCH release and the SCS configuration of a PUCCH carrying the HARQ-ACK information in response to a SPS PDSCH release.