3GPP TSG RAN WG1 #110 R1-220xxxx

**Toulouse, France, August 22nd – 26th, 2022**

**Agenda Item: 7.2.5**

**Source: Sharp**

**Title: Summary of views on R1-2207270 and R1-2207271: Corrections on presence of the RV field and the HPN field of DCI formats 0\_2/1\_2 for PDCCH validation**

**Document for: Discussion** **and Decision**

# Introduction

This contribution collects companies views on [R1-2207270](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_110/Docs/R1-2207270.zip) [1] and [R1-2207271](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_110/Docs/R1-2207271.zip) [2] regarding corrections on presence of the RV field and the HPN field in DCI formats 0\_2/1\_2 for PDCCH validation for DL SPS, UL grant Type 2 and SP-CSI.

# Discussions

## 2.1 Issue description

In Rel-16 URLLC WI, 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. That is, the RV field and/or the HPN fields can be absent in DCI formats 0\_2/1\_2. However, regarding the PDCCH validation for DL SPS and UL grant Type 2 in clause 10.2 of TS 38.213, 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 field and the HPN fields are assumed to be always present and set to all ‘0’s. Likewise, regarding the PDCCH validation for SP-CSI in clause 5.2.1.5.2 of TS 38.214, it was specified that, validation of a DCI format is achieved if ALL special fields are set to specific values according to Tables 5.2.1.5.2-1 – 5.2.1.5.2-2 where the RV field and the HPN field are assumed to be always present and set to all ‘0’s.

Therefore, it is not clear on the PDCCH validation for DL SPS, UL grant Type 2 and SP-CSI when the RV field and/or the HPN field are absent in the DCI formats 0\_2/1\_2. The draft CRs [R1-2207270](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_110/Docs/R1-2207270.zip) [1] and [R1-2207271](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_110/Docs/R1-2207271.zip) [2] have the following proposed changes for TS38.213 and TS38.214 respectively 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, otherwise the RV/HPN fields in corresponding Tables are not used for PDCCH validation for DL SPS, UL grant Type 2, or SP-CSI.

**TP#1 from** [R1-2207270](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_110/Docs/R1-2207270.zip) [1]

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| **(TS38.213 V16.10.0)**10.2 PDCCH validation for DL SPS and UL grant Type 2**<Unchanged parts are omitted>**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 |

**<Unchanged parts are omitted>** |

**TP#2 from** [R1-2207271](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_110/Docs/R1-2207271.zip) [2]

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **(TS38.214 V16.10.0)**5.2.1.5.2 Semi-persistent CSI/Semi-persistent CSI-RS**<Unchanged parts are omitted>**If validation is achieved, the UE considers the information in the DCI format as a valid activation or valid release of semi-persistent CSI transmission on PUSCH, and the UE activates or deactivates a CSI Reporting Setting indicated by CSI request field in the DCI. If validation is not achieved, the UE considers the DCI format as having been detected with a non-matching CRC.**Table 5.2.1.5.2-1: Special fields for semi-persistent CSI activation PDCCH validation**

|  |  |
| --- | --- |
|  | **DCI format 0\_1/0\_2**  |
| HARQ process number(if present) | set to all '0's |
| Redundancy version(if present) | set to all '0's |

**Table 5.2.1.5.2-2: Special fields for semi-persistent CSI deactivation PDCCH validation**

|  |  |
| --- | --- |
|  | **DCI format 0\_1/0\_2**  |
| HARQ process number(if present) | set to all '0's |
| Modulation and coding scheme | set to all '1's |
| Resource block assignment | If higher layer configures RA type 0 only, set to all '0's;If higher layer configures RA type 1 only, set to all '1's;If higher layer configures dynamic switch between RA type 0 and 1, then if MSB is'0', set to all '0's; else, set to all '1's For DCI 0\_1, if higher layer configures RA type 2, set to all '1's if *µ* = 0; set to all '0's if *µ* = 1 |
| Redundancy version(if present) | set to all '0's |

**<Unchanged parts are omitted>** |

## 2.2 Initial company views

Companies please provide your views on the following question 1.

**Question 1: Do you agree with the above TP #1 in [1] and TP#2 [2].**

|  |  |  |
| --- | --- | --- |
| **Company** | **Agree or not** | **Comments** |
| Sharp | Agree | We support the TP#1 and TP#2 to clarify the spec. It should be noted that a similar situation exists in spec as below for PDCCH validation for SL configured grant Type 2 where frequency resource assignment field can be absent.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Table 10.2A-2: Special fields for SL configured grant Type 2 scheduling release PDCCH validation

|  |  |
| --- | --- |
|  | DCI format 3\_0  |
| HARQ process number | set to all '1's |
| Frequency resource assignment (if present) | set to all '1's |

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# Conclusion

TBD.

# References

1. [R1-2207270](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_110/Docs/R1-2207270.zip) “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”, RAN1#110, Sharp.
2. [R1-2207271](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_110/Docs/R1-2207271.zip) “Corrections on presence of redundancy version field and HARQ process number field of DCI format 0\_2 for semi-persistent CSI activation or deactivation PDCCH validation”, RAN1#110, Sharp.