**3GPP TSG RAN WG1 #102-e R1-200xxxx**

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

Source: moderator (vivo)

Title: Email discussion #01 for remaining issues on URLLC enhanced configured grant transmission

Agenda Item: 7.2.5.6

Document for: Discussion and Decision

1. Introduction

Based on the phase 1 discussions, Chairman allocates following email discussion for eCG for URLLC. In this contribution, contributions submitted in AI 7.2.5.6 are summarized.

[102-e-NR-L1enh-URLLC-eCG-01] Remaining issues on URLLC eCG – Lihui (vivo)

* Cancellation and initial transmission occasion of RV0
* Clarification the intra-UE prioritization is per actual or per nominal repetition for PUSCH with repetition Type B
* RRC parameter corrections
* Discussion/Agreements by 8/21, TPs by 8/28

1. Discussions
   1. Cancellation and initial transmission occasion of RV0

[Ericsson, R1-2005511] and [Apple, R1-2006493] discussed the similar issue about the understanding on the cancellation/prioritization order and initial transmission occasion associated with RV0. [Ericsson, R1-2005511] proposed to clarify that for CG with repetitions, UE should check the condition of repetition series start described in 6.1.2.3.1 and then cancel the occasion(s) due to intra UE or inter UE prioritization. The TP is proposed as below

----------------------------------------Start of TP of section 6.1.2.3.1 in TS 38.214 ---------------------------------

**6.1.2.3.1 Transport Block repetition for uplink transmissions of PUSCH repetition Type A with a configured grant**

<Unchanged Text Omitted>

If a configured grant configuration is configured with Configuredgrantconfig-StartingfromRV0 set to ‘off’, the initial transmission of a transport block may only start at the first transmission occasion of the K repetitions. Otherwise, the initial transmission of a transport block may start at

- the first transmission occasion of the K repetitions if the configured RV sequence is {0,2,3,1},

- any of the transmission occasions of the K repetitions that are associated with RV=0 if the configured RV sequence is {0,3,0,3},

- any of the transmission occasions of the K repetitions if the configured RV sequence is {0,0,0,0}, except the last transmission occasion when K≥8.

A UE may further omit configured grant transmission according to the conditions in Clause 9, Clause 11.1, Clause 11.2A of [6, TS38.213].

----------------------------------------End of TP for TS 38.214 -------------------------------------------------------

* **FL suggestions:** based on the phase 1 discussions, following was already captured in TS 38.214 v16.2.0, see below

Therefore, it is straightforward to add following to include the inter-UE and intra-UE prioritization case. In addition, a similar clause can also be added for CG with PUSCH repetition Type B in 6.1.2.1 where the feature of PUSCH repetition Type B is described.

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| 6.1.2.3.1 Transport Block repetition for uplink transmissions of PUSCH repetition Type A with a configured grant  [omit the irrelevant part]  A Type 1 or Type 2 PUSCH transmission with a configured grant in a slot is omitted according to the conditions in Clause 11.1 of [6, TS38.213].  [omit the irrelevant part] |

* + 1. Proposal 1

**Proposal 1: adopt following TP for section 6.1.2.1 and section 6.1.2.3.2 in TS 38.214**

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| --- |
| 6.1.2.1 Resource allocation in time domain  [omit the irrelevant part]  For PUSCH repetition Type B, after determining the invalid symbol(s) for PUSCH repetition type B transmission for each of the *K* nominal repetitions, the remaining symbols are considered as potentially valid symbols for PUSCH repetition Type B transmission. If the number of potentially valid symbols for PUSCH repetition type B transmission is greater than zero for a nominal repetition, the nominal repetition consists of one or more actual repetitions, where each actual repetition consists of a consecutive set of all potentially valid symbols that can be used for PUSCH repetition Type B transmission within a slot. An actual repetition with a single symbol is omitted except for the case of L=1. An actual repetition is omitted according to the conditions in Clause 9, Clause 11.1, Clause 11.2A of [6, TS38.213].  [omit the irrelevant part]  6.1.2.3.1 Transport Block repetition for uplink transmissions of PUSCH repetition Type A with a configured grant  [omit the irrelevant part]  A Type 1 or Type 2 PUSCH transmission with a configured grant in a slot is omitted according to the conditions in Clause 9, Clause 11.1, Clause 11.2A of [6, TS38.213].  [omit the irrelevant part] |

Any comments?

|  |  |
| --- | --- |
| Company | Comments |
| Nokia, NSB | Support |
| Sony | Support |
| MediaTek | Fine with the proposal |
| Sharp | We support the proposal. |
| Samsung | Support |
| Huawei, HiSilicon | We are fine with the proposal. |
| CATT | Proposal TP is unnecessary because current spec is clear in TS38.213&TS38.214.  We needn't concentrate on describing cancellation conditions in section 6 of TS 38.214.  For clause 11.1 related omitted conditions, we can refer to corresponding description in 6.1.2.1& 6.1.2.3.1 of TS38.214.  For clause 9 and 11.2A related omitted conditions, we can directly refer to corresponding description in clause 9 and clause 11.2A of TS 38.213.  In addition, above proposed modification is incomplete. I find out other 2 similar descriptions in 6.1.2.1 of TS38.214 g20 as below.  For PUSCH repetition Type A, a PUSCH transmission in a slot of a multi-slot PUSCH transmission is omitted according to the conditions in Clause 11.1 of [6, TS38.213].  For PUSCH repetition Type B carrying semi-persistent CSI report(s) without a corresponding PDCCH after being activated on PUSCH by a *CSI request* field on a DCI, if the first nominal repetition is not the same as the first actual repetition, the first nominal repetition is omitted; otherwise, the first nominal repetition is omitted according to the conditions in Clause 11.1 of [6, TS38.213].  For the completeness of modification, whether we need add clause 9 and clause 11.2A to above two places or not? |
| Spreadtrum | We are fine with the proposal |
| ZTE | We are fine with the proposal. But as CATT pointed out, it seems we also need to update other places. |
| Panasonic | We support the proposal. |
| LG | We are fine with the proposal. |
| DOCOMO | We support the proposal |
| Intel | Fine |
| Qualcomm | It the proposal means that we keep the behavior defined in Rel. 15, and cancellation is added separately (i.e., does not have an impact on the Rel. 15 rules, e.g., does not change in which occasion CG transmission should start), then we are fine.  FL replies: Yes, your understanding is correct that the determination of the initial transmission occasion is not affected by UL CI, dynamic SFI and intra-UE multiplexing/prioritization. |
| vivo | Support the proposal. |

* + 1. Summary for proposal 1

Almost all companies are fine with the proposal. CATT further identified two places need to be updated. So, I would like to ask companies views for following additional corrections highlighted in yellow:

**Proposal 1: adopt following TP for section 6.1.2.1 and section 6.1.2.3.2 in TS 38.214**

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| --- |
| 6.1.2.1 Resource allocation in time domain  [omit the irrelevant part]  When transmitting MsgA PUSCH, if the UE is not configured with *startSymbolAndLengthMsgA-PO*, and if the TDRA list *PUSCH-TimeDomainResourceAllocationList* is provided in *PUSCH-ConfigCommon*, the UE shall use *msgA-PUSCH-TimeDomainAllocation* to indicate which values are used in the list. If *PUSCH-TimeDomainResourceAllocationList* is not provided in *PUSCH-ConfigCommon*, the UE shall use parameters *S* and *L* from table 6.1.2.1.1-2 where *msgA-PUSCH-TimeDomainAllocation* indicates which values are used in the list. The time offset for PUSCH transmission is described in [6, TS38.213].  For PUSCH repetition Type A, a PUSCH transmission in a slot of a multi-slot PUSCH transmission is omitted according to the conditions in in Clause 9, Clause 11.1, Clause 11.2A of [6, TS38.213].  [omit the irrelevant part]  For PUSCH repetition Type B, after determining the invalid symbol(s) for PUSCH repetition type B transmission for each of the *K* nominal repetitions, the remaining symbols are considered as potentially valid symbols for PUSCH repetition Type B transmission. If the number of potentially valid symbols for PUSCH repetition type B transmission is greater than zero for a nominal repetition, the nominal repetition consists of one or more actual repetitions, where each actual repetition consists of a consecutive set of all potentially valid symbols that can be used for PUSCH repetition Type B transmission within a slot. An actual repetition with a single symbol is omitted except for the case of L=1. An actual repetition is omitted according to the conditions in Clause 9, Clause 11.1, Clause 11.2A of [6, TS38.213].  [omit the irrelevant part]  For PUSCH repetition Type B, when a UE receives a DCI that schedules aperiodic CSI report(s) or activates semi-persistent CSI report(s) on PUSCH with no transport block by a *CSI request* field on a DCI, the number of nominal repetitions is always assumed to be 1, regardless of the value of *numberofrepetitions*. When the UE is scheduled to transmit a PUSCH repetition Type B with no transport block and with aperiodic or semi-persistent CSI report(s) by a *CSI request* field on a DCI, the first nominal repetition is expected to be the same as the first actual repetition. For PUSCH repetition Type B carrying semi-persistent CSI report(s) without a corresponding PDCCH after being activated on PUSCH by a *CSI request* field on a DCI, if the first nominal repetition is not the same as the first actual repetition, the first nominal repetition is omitted; otherwise, the first nominal repetition is omitted according to the conditions in Clause 9, Clause 11.1, Clause 11.2A of [6, TS38.213].  [omit the irrelevant part]  6.1.2.3.1 Transport Block repetition for uplink transmissions of PUSCH repetition Type A with a configured grant  [omit the irrelevant part]  A Type 1 or Type 2 PUSCH transmission with a configured grant in a slot is omitted according to the conditions in Clause 9, Clause 11.1, Clause 11.2A of [6, TS38.213].  [omit the irrelevant part] |

* 1. Clarification the intra-UE prioritization is per actual or per nominal repetition for PUSCH with repetition Type B

In RAN1#101 e-meeting, following conclusion was made:

**Conclusion**

In Rel.15, for a DG PUSCH scheduled by a DCI overriding a CG PUSCH configured with repetition factor K>1,

* If the HARQ process is the same between the DG and the CG, DG overrides all remaining repetition occasions after the end of PDCCH reception, under the timeline specified in TS 38.214 section 6.1.
* Otherwise, DG overrides only the CG repetition overlapped with DG, under the timeline specified in TS 38.214 section 6.1.

[Apple, R1-2006439] proposed to clarify for Rel.16, if CG and/or DG PUSCH is configured with repetition Type B, for a DG PUSCH scheduled by a DCI overriding a CG PUSCH configured with repetition factor K>1, if the HARQ process is different between the DG and the CG, under the timeline specified in TS 38.214 section 6.1, whether the actual or nominal repetition of the CG repetition that overlapped with DG, the DG will override.

It is noted that following agreements were made for the “actual” repetition cancellation in case of PUSCH configured with repetition Type B.

Agreements @ 99 meeting:

For CG PUSCH with PUSCH repetition type B, if dynamic SFI is configured, segmentation occurs at least around semi-static DL symbols, which results in actual repetitions.

* If dynamic SFI is received for the entire duration of an actual repetition, an actual repetition is not transmitted if it conflicts with a dynamic DL/flexible symbol.
* If dynamic SFI is not received for at least one symbol of an actual repetition, an actual repetition is not transmitted if it conflicts with a semi-static flexible symbol.
* FFS the handling of semi-statically configured invalid symbols for PUSCH repetition type B transmissions (if supported)

Note that the cancellation behavior is the same as Rel-15, including Rel-15 cancellation timeline

Agreements @ 98bis meeting:

* In case of PUSCH repetitions, UL CI is applied to each repetition individually (actual repetition in case of Rel-16 PUSCH repetition) that overlaps with the resource (in time and frequency) indicated by UL CI.

Therefore, it is reasonable to assume the overriding is per actual repetition. It is also noticed in TS 38.214, section 6.1.2.3.2 Transport Block repetition for uplink transmissions of PUSCH repetition Type B with a configured grant, the transmission occasion is described in terms of the actual repetition.

* **FL suggestions: following conclusion can be draw in chairman notes:**
  + 1. Proposed conclusion

**Conclusion:**

* In Rel.16, for a DG PUSCH scheduled by a DCI overriding a CG PUSCH configured with nominal repetition factor K>1,
  + If the HARQ process is the same between the DG and the CG, DG overrides all remaining repetition occasions after the end of PDCCH reception, under the timeline specified in TS 38.214 section 6.1.
  + Otherwise, DG overrides only the actual repetition(s) of the CG overlapped with DG, under the timeline specified in TS 38.214 section 6.1.
* No specification change is needed

Any comments?

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| --- | --- |
| Company | Comments |
| Nokia, NSB | Support the proposed conclusion |
| Sony | Support the proposed conclusion |
| MediaTek | Agree with the conclusion.  However, if the UE behavior (on whether the actual or nominal repetition is dropped) is not clear in the specs, specification change will be needed.  FL replies: in Rel.15 for repetition Type A, similar clarification is made and companies prefer to make a conclusion rather than CR, so for repetition Type B, we adopt the similar way. |
| Sharp | We support the proposed conclusion. |
| Samsung | Fine with the conclusion. We have sympathy on MTK’s point. If current specification may have still ambiguity on this issue, it might be better to fix it. But, if it is common understanding on that this is already clear in specification, we are okay to just have conclusion. |
| Huawei, HiSilicon | We support the proposed conclusion. |
| CATT | We are fine with FL proposal. |
| Spreadtrum | Support |
| ZTE | Support the conclusion. |
| Panasonic | We support the proposed conclusion. |
| LG | We support the proposed conclusion. |
| DOCOMO | We support the proposed conclusion |
| Intel | Support |
| Qualcomm | We are fine with the proposal. |
| vivo | Support the proposed conclusion. |
| Apple | MTK raised a good point, while at the same time we are also fine with the FL’s proposal. However it is good to check companies’ understanding on another case: HP CG overrides DG, whether and/or how to consider the collision of HARQ process ID between CG and DG should also be clarified, especially for repetition Type B. The same can be said about the case involving HP CG vs LP CG. In our contribution, we identified some cases.  In the example below, we show one example involving CGs and DG, what the overriding behavior should be is not clear.  Even for DG/CG overriding, we can also encounter another case: a LP DG overrides LP CG following the rel-15 behavior, then how about HP CG overrides the LP DG? What would be the overriding behavior? (so we have HP CG overrides LP DG which overrides a LP CG).  In Rel-16, we already agree that DG cannot override DG. However, can such a case be allowed: HP CG 1 overrides LP DG1, then HP DG 2 overrides HP CG1? Then DG overriding DG is facilitated by a CG as an intermediate transmission (In our view, such a case is not allowed but it is important to have explicit conclusion/agreement so we don’t need to wait for another release to clarify the Rel-16 behavior as we did for the Rel-15 behavior)  A picture containing screenshot  Description automatically generated |

* + 1. Summary for the proposed conclusion

All companies agree with the proposed conclusion. So, it can be considered as stable.

**Conclusion:**

* In Rel.16, for a DG PUSCH scheduled by a DCI overriding a CG PUSCH configured with nominal repetition factor K>1,
  + If the HARQ process is the same between the DG and the CG, DG overrides all remaining repetition occasions after the end of PDCCH reception, under the timeline specified in TS 38.214 section 6.1.
  + Otherwise, DG overrides only the actual repetition(s) of the CG overlapped with DG, under the timeline specified in TS 38.214 section 6.1.
* No specification change is needed
  1. RRC parameter corrections in RAN1 specifications

[ZTE, 5418], [CATT, 5677], [vivo, 6657] proposed following corrections to align the RRC parameters used in RAN1 specification with RAN2. **FL suggestion is to agree following corrections.**

* + 1. **Proposal 2**
* **Proposal 2: Adopt following TPs for TS 38.214 to align 38.214 and 38.331.**

----------------------------------------Start of TP for TS 38.214 -------------------------------------------------------

**6 Physical uplink shared channel related procedure**

**6.1 UE procedure for transmitting the physical uplink shared channel**

PUSCH transmission(s) can be dynamically scheduled by an UL grant in a DCI, or the transmission can correspond to a configured grant Type 1 or Type 2. The configured grant Type 1 PUSCH transmission is semi-statically configured to operate upon the reception of higher layer parameter of *configuredGrantConfig* including *rrc-ConfiguredUplinkGrant* without the detection of an UL grant in a DCI. The configured grant Type 2 PUSCH transmission is semi-persistently scheduled by an UL grant in a valid activation DCI according to Clause 10.2 of [6, TS 38.213] after the reception of higher layer parameter *configuredGrantConfig* not including *rrc-ConfiguredUplinkGrant*. If *configuredGrantConfigToAddModList* is configured, more than one configured grant configuration of configured grant Type 1 and/or configured grant Type 2 may be active at the same time on an active BWP of a serving cell.

For the PUSCH transmission corresponding to a Type 1 configured grant or a Type 2 configured grant activated by DCI format 0\_0 or 0\_1, the parameters applied for the transmission are provided by *configuredGrantConfig* except for *dataScramblingIdentityPUSCH*, *txConfig*, *codebookSubset*, *maxRank*, *scaling of UCI-OnPUSCH*, which are provided by *pusch-Config*. For the PUSCH transmission corresponding to a Type 2 configured grant activated by DCI format 0\_2, the parameters applied for the transmission are provided by *configuredGrantConfig* except for *dataScramblingIdentityPUSCH*, *txConfig*,  *codebookSubsetForDCI-Format0-2*,  *maxRankForDCI-Format0-2*, *scaling* of *UCI-OnPUSCH*, *resourceAllocationType1GranularityForDCI-Format0-2* provided by *pusch-Config*.If the UE is provided with *transformPrecoder* in *configuredGrantConfig*, the UE applies the higher layer parameter *tp-pi2BPSK*, if provided in *pusch-Config*, according to the procedure described in Clause 6.1.4 for the PUSCH transmission corresponding to a configured grant.

<Unchanged Text Omitted>

**6.1.1.1 Codebook based UL transmission**

<Unchanged Text Omitted>

For codebook based transmission, the UE determines its codebook subsets based on TPMI and upon the reception of higher layer parameter *codebookSubset* in *pusch-Config* for PUSCH associated with DCI format 0\_1 and *codebookSubsetForDCI-Format0-2* in *pusch-Config* for PUSCH associated with DCI format 0\_2 which may be configured with *'*fullyAndPartialAndNonCoherent*'*, or *'*partialAndNonCoherent*'*, or 'nonCoherent' depending on the UE capability. When higher layer parameter *ul-FullPowerTransmission* is set to '*fullpowerMode2'* and the higher layer parameter *codebookSubset* or the higher layer parameter *codebookSubsetForDCI-Format0-2* is set to *'*partialAndNonCoherent', and when the SRS-resourceSet with usage set to "codebook" includes at least one SRS resource with 4 ports and one SRS resource with 2 ports, the codebookSubset associated with the 2-port SRS resource is 'nonCoherent'. The maximum transmission rank may be configured by the higher layer parameter *maxRank* in *pusch-Config* for PUSCH scheduled with DCI format 0\_1 and *maxRankForDCI-Format0-2* for PUSCH scheduled with DCI format 0\_2*.*

A UE reporting its UE capability of 'partialAndNonCoherent' transmission shall not expect to be configured by either *codebookSubset* or *codebookSubsetForDCI-Format0-2* with 'fullyAndPartialAndNonCoherent*'*.

A UE reporting its UE capability of 'nonCoherent' transmission shall not expect to be configured by either *codebookSubset* or *codebookSubsetForDCI-Format0-2* with *'*fullyAndPartialAndNonCoherent*'* or with *'*partialAndNonCoherent'.

A UE shall not expect to be configured with the higher layer parameter *codebookSubset* or the higher layer parameter *codebookSubsetForDCI-Format0-2* set to *'*partialAndNonCoherent' when higher layer parameter *nrofSRS-Ports* in an *SRS-ResourceSet* with *usage* set to 'codebook' indicates that the maximum number of the configured SRS antenna ports in the *SRS-ResourceSet* is two.

<Unchanged Text Omitted>

A UE shall not expect to be configured with higher layer parameter *ul-FullPowerTransmission* set to '*fullpowerMode1'* and *codebookSubset* or *codebookSubsetForDCI-Format0-2* set to *'fullyAndPartialAndNonCoherent'* simultaneously.

<Unchanged Text Omitted>

**6.1.2 Resource allocation**

**6.1.2.1 Resource allocation in time domain**

<Unchanged Text Omitted>

* for PUSCH scheduled by DCI format 0\_1, if *pusch-RepTypeIndicatorForDCI-Format0-1* is set to '*pusch-RepTypeB*', the UE applies PUSCH repetition Type B procedure when determining the time domain resource allocation. For PUSCH scheduled by DCI format 0\_2, if *pusch-RepTypeIndicatorForDCI-Format0-2* is set to '*pusch-RepTypeB*', the UE applies PUSCH repetition Type B procedure when determining the time domain resource allocation. Otherwise, the UE applies PUSCH repetition Type A procedure when determining the time domain resource allocation for PUSCH scheduled by PDCCH.

<Unchanged Text Omitted>

**6.1.2.2.2 Uplink resource allocation type 1**

<Unchanged Text Omitted>

When the scheduling grant is received with DCI format 0\_2, an uplink type 1 resource allocation field consists of a resource indication value (*RIV*) corresponding to a starting resource block group *RBGstart*=0, 1, …, *NRBG*-1 and a length in terms of virtually contiguously allocated resource block groups *LRBGs*=1, …, *NRBG*, where the resource block groups are defined as in 6.1.2.2.1 with *P* defined by *resourceAllocationType1GranularityForDCI-Format0-2* if the UE is configured with higher layer parameter  *resourceAllocationType1GranularityForDCI-Format0-2* , and *P*=1 otherwise*.* The resource indication value is defined by

<Unchanged Text Omitted>

**6.1.2.3 Resource allocation for uplink transmission with configured grant**

<Unchanged Text Omitted>

- For the determination of the PUSCH repetition type, if the higher layer parameter  *pusch-RepTypeIndicator*  in *rrc-ConfiguredUplinkGrant* is configured and set to '*pusch-RepTypeB*', PUSCH repetition type B is applied; otherwise, PUSCH repetition type A is applied;

- For PUSCH repetition type A, the selection of the time domain resource allocation table follows the rules for DCI format 0\_0 on UE specific search space, as defined in Clause 6.1.2.1.1.

- For PUSCH repetition type B, the selection of the time domain resource allocation table is as follows:

- If *pusch-RepTypeIndicatorForDCI-Format0-1* in *pusch-Config* is configured and set to *'pusch-RepTypeB'*, *pusch-TimeDomainAllocationListForDCI-Format0-1* in *pusch-Config* is used;

- Otherwise,  *pusch-TimeDomainAllocationListForDCI-Format0-2* in *pusch-Config* is used.

- It is not expected that *pusch-RepTypeIndicator* in *rrc-ConfiguredUplinkGrant* is configured with *'pusch-RepTypeB'* when none of  *pusch-RepTypeIndicatorForDCI-Format0-1* and  *pusch-RepTypeIndicatorForDCI-Format0-2* in *pusch-Config* is set to *'pusch-RepTypeB'*.

<Unchanged Text Omitted>

For PUSCH transmissions with a Type 1 or Type 2 configured grant, the number of (nominal) repetitions *K* to be applied to the transmitted transport block is provided by the indexed row in the time domain resource allocation table if *numberOfRepetitions* is present in the table; otherwise *K* is provided by the higher layer configured parameters *repK.*

The UE shall not transmit anything on the resources configured by *configuredGrantConfig* if the higher layers did not deliver a transport block to transmit on the resources allocated for uplink transmission without grant.

----------------------------------------End of TP for TS 38.214 -------------------------------------------------------

Any comments?

|  |  |
| --- | --- |
| Company | Comments |
| Nokia, NSB | We support aligning the RRC parameter names and are supportive. |
| MediaTek | Support the proposal. |
| Sharp | We support the proposal. |
| Samsung | Fine with the proposal |
| Huawei, HiSilicon | We are fine with the TP with the following minor revision:  “*configuredGrantConfigToAddModList-r16*” should be “*configuredGrantConfigToAddModList-r16*”  FL replies: thank you! I will correct. |
| CATT | We are fine with FL proposal. |
| Spreadtrum | Support |
| ZTE | Support |
| Panasonic | We support the proposal. |
| LG | Support |
| DOCOMO | We support the proposal |
| Intel | Support |
| Qualcomm | Support |
| vivo | Support the proposal with HW’s modifications. |
|  |  |

* + 1. Proposal 3
* **Proposal 3: Adopt following text proposal in TS 28.213.**

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| --- |
| TS 38.213  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*.  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 *Configuredgrantconfig-index* or by *SPSconfig-index*, 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~~Type2Configuredgrantconfig-ReleaseStateList~~* or *sps-ConfigDeactivationStateList ~~SPS-ReleaseStateList~~*, 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 ~~Type2Configuredgrantconfig-ReleaseStateList~~* or *sps-ConfigDeactivationStateList ~~SPS-ReleaseStateList~~*, 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 *Configuredgrantconfig-index* or by *SPSconfig-index*, respectively  [omit the unchanged part] |

Any comments?

|  |  |
| --- | --- |
| Company | Comments |
| Nokia, NSB | We support aligning the RRC parameter names and are supportive. |
| MediaTek | Support the proposal. |
| Sharp | We support the proposal. |
| Samsung | Fine with the proposal. |
| Huawei, HiSilicon | There are still some places in the above TP where further corrections are needed. Propose to adopt the following one which is further revised based on the above TP:   |  | | --- | | 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*.  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~~Type2Configuredgrantconfig-ReleaseStateList~~* or *sps-ConfigDeactivationStateList ~~SPS-ReleaseStateList~~*, 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 ~~Type2Configuredgrantconfig-ReleaseStateList~~* or *sps-ConfigDeactivationStateList ~~SPS-ReleaseStateList~~*, 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 |   FL replies: thank you! I will correct. |
| CATT | We are fine with FL proposal. |
| Spreadtrum | We are fine, and Huawei’s proposal is also supportive. |
| ZTE | Support the proposal also the further update from Huawei. |
| Panasonic | We support the FL proposal and are supportive to Huawei’s proposal. |
| LG | We are fine with both FL’s proposal and Huawei’s comment. |
| DOCOMO | We support both FL proposal and Huawei’s proposal |
| Intel | Support |
| Qualcomm | We are fine with the TP |
| vivo | Support the proposal with HW’s modifications. |

* + 1. Summary for proposal 3 and proposal 4
* **Proposal 2: Adopt following TPs for TS 38.214 to align 38.214 and 38.331.**

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| ----------------------------------------Start of TP for TS 38.214 -------------------------------------------------------  **6 Physical uplink shared channel related procedure**  **6.1 UE procedure for transmitting the physical uplink shared channel**  PUSCH transmission(s) can be dynamically scheduled by an UL grant in a DCI, or the transmission can correspond to a configured grant Type 1 or Type 2. The configured grant Type 1 PUSCH transmission is semi-statically configured to operate upon the reception of higher layer parameter of *configuredGrantConfig* including *rrc-ConfiguredUplinkGrant* without the detection of an UL grant in a DCI. The configured grant Type 2 PUSCH transmission is semi-persistently scheduled by an UL grant in a valid activation DCI according to Clause 10.2 of [6, TS 38.213] after the reception of higher layer parameter *configuredGrantConfig* not including *rrc-ConfiguredUplinkGrant*. If *configuredGrantConfigToAddModList* is configured, more than one configured grant configuration of configured grant Type 1 and/or configured grant Type 2 may be active at the same time on an active BWP of a serving cell.  For the PUSCH transmission corresponding to a Type 1 configured grant or a Type 2 configured grant activated by DCI format 0\_0 or 0\_1, the parameters applied for the transmission are provided by *configuredGrantConfig* except for *dataScramblingIdentityPUSCH*, *txConfig*, *codebookSubset*, *maxRank*, *scaling of UCI-OnPUSCH*, which are provided by *pusch-Config*. For the PUSCH transmission corresponding to a Type 2 configured grant activated by DCI format 0\_2, the parameters applied for the transmission are provided by *configuredGrantConfig* except for *dataScramblingIdentityPUSCH*, *txConfig*,  *codebookSubsetForDCI-Format0-2*,  *maxRankForDCI-Format0-2*, *scaling* of *UCI-OnPUSCH*, *resourceAllocationType1GranularityForDCI-Format0-2* provided by *pusch-Config*.If the UE is provided with *transformPrecoder* in *configuredGrantConfig*, the UE applies the higher layer parameter *tp-pi2BPSK*, if provided in *pusch-Config*, according to the procedure described in Clause 6.1.4 for the PUSCH transmission corresponding to a configured grant.  <Unchanged Text Omitted>  **6.1.1.1 Codebook based UL transmission**  <Unchanged Text Omitted>  For codebook based transmission, the UE determines its codebook subsets based on TPMI and upon the reception of higher layer parameter *codebookSubset* in *pusch-Config* for PUSCH associated with DCI format 0\_1 and *codebookSubsetForDCI-Format0-2* in *pusch-Config* for PUSCH associated with DCI format 0\_2 which may be configured with *'*fullyAndPartialAndNonCoherent*'*, or *'*partialAndNonCoherent*'*, or 'nonCoherent' depending on the UE capability. When higher layer parameter *ul-FullPowerTransmission* is set to '*fullpowerMode2'* and the higher layer parameter *codebookSubset* or the higher layer parameter *codebookSubsetForDCI-Format0-2* is set to *'*partialAndNonCoherent', and when the SRS-resourceSet with usage set to "codebook" includes at least one SRS resource with 4 ports and one SRS resource with 2 ports, the codebookSubset associated with the 2-port SRS resource is 'nonCoherent'. The maximum transmission rank may be configured by the higher layer parameter *maxRank* in *pusch-Config* for PUSCH scheduled with DCI format 0\_1 and *maxRankForDCI-Format0-2* for PUSCH scheduled with DCI format 0\_2*.*  A UE reporting its UE capability of 'partialAndNonCoherent' transmission shall not expect to be configured by either *codebookSubset* or *codebookSubsetForDCI-Format0-2* with 'fullyAndPartialAndNonCoherent*'*.  A UE reporting its UE capability of 'nonCoherent' transmission shall not expect to be configured by either *codebookSubset* or *codebookSubsetForDCI-Format0-2* with *'*fullyAndPartialAndNonCoherent*'* or with *'*partialAndNonCoherent'.  A UE shall not expect to be configured with the higher layer parameter *codebookSubset* or the higher layer parameter *codebookSubsetForDCI-Format0-2* set to *'*partialAndNonCoherent' when higher layer parameter *nrofSRS-Ports* in an *SRS-ResourceSet* with *usage* set to 'codebook' indicates that the maximum number of the configured SRS antenna ports in the *SRS-ResourceSet* is two.  <Unchanged Text Omitted>  A UE shall not expect to be configured with higher layer parameter *ul-FullPowerTransmission* set to '*fullpowerMode1'* and *codebookSubset* or *codebookSubsetForDCI-Format0-2* set to *'fullyAndPartialAndNonCoherent'* simultaneously.  <Unchanged Text Omitted>  **6.1.2 Resource allocation**  **6.1.2.1 Resource allocation in time domain**  <Unchanged Text Omitted>   * for PUSCH scheduled by DCI format 0\_1, if *pusch-RepTypeIndicatorForDCI-Format0-1* is set to '*pusch-RepTypeB*', the UE applies PUSCH repetition Type B procedure when determining the time domain resource allocation. For PUSCH scheduled by DCI format 0\_2, if *pusch-RepTypeIndicatorForDCI-Format0-2* is set to '*pusch-RepTypeB*', the UE applies PUSCH repetition Type B procedure when determining the time domain resource allocation. Otherwise, the UE applies PUSCH repetition Type A procedure when determining the time domain resource allocation for PUSCH scheduled by PDCCH.   <Unchanged Text Omitted>  **6.1.2.2.2 Uplink resource allocation type 1**  <Unchanged Text Omitted>  When the scheduling grant is received with DCI format 0\_2, an uplink type 1 resource allocation field consists of a resource indication value (*RIV*) corresponding to a starting resource block group *RBGstart*=0, 1, …, *NRBG*-1 and a length in terms of virtually contiguously allocated resource block groups *LRBGs*=1, …, *NRBG*, where the resource block groups are defined as in 6.1.2.2.1 with *P* defined by *resourceAllocationType1GranularityForDCI-Format0-2* if the UE is configured with higher layer parameter  *resourceAllocationType1GranularityForDCI-Format0-2* , and *P*=1 otherwise*.* The resource indication value is defined by  <Unchanged Text Omitted>  **6.1.2.3 Resource allocation for uplink transmission with configured grant**  <Unchanged Text Omitted>  - For the determination of the PUSCH repetition type, if the higher layer parameter  *pusch-RepTypeIndicator*  in *rrc-ConfiguredUplinkGrant* is configured and set to '*pusch-RepTypeB*', PUSCH repetition type B is applied; otherwise, PUSCH repetition type A is applied;  - For PUSCH repetition type A, the selection of the time domain resource allocation table follows the rules for DCI format 0\_0 on UE specific search space, as defined in Clause 6.1.2.1.1.  - For PUSCH repetition type B, the selection of the time domain resource allocation table is as follows:  - If *pusch-RepTypeIndicatorForDCI-Format0-1* in *pusch-Config* is configured and set to *'pusch-RepTypeB'*, *pusch-TimeDomainAllocationListForDCI-Format0-1* in *pusch-Config* is used;  - Otherwise,  *pusch-TimeDomainAllocationListForDCI-Format0-2* in *pusch-Config* is used.  - It is not expected that *pusch-RepTypeIndicator* in *rrc-ConfiguredUplinkGrant* is configured with *'pusch-RepTypeB'* when none of  *pusch-RepTypeIndicatorForDCI-Format0-1* and  *pusch-RepTypeIndicatorForDCI-Format0-2* in *pusch-Config* is set to *'pusch-RepTypeB'*.  <Unchanged Text Omitted>  For PUSCH transmissions with a Type 1 or Type 2 configured grant, the number of (nominal) repetitions *K* to be applied to the transmitted transport block is provided by the indexed row in the time domain resource allocation table if *numberOfRepetitions* is present in the table; otherwise *K* is provided by the higher layer configured parameters *repK.*  The UE shall not transmit anything on the resources configured by *configuredGrantConfig* if the higher layers did not deliver a transport block to transmit on the resources allocated for uplink transmission without grant.  ----------------------------------------End of TP for TS 38.214 ------------------------------------------------------- |

Proposal 3: Adopt following text proposal in TS 28.213.

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| TS 38.213  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*.  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 *~~Configuredgrantconfig-index~~**configuredGrantConfigIndex* or by *~~SPSconfig-index~~**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~~Type2Configuredgrantconfig-ReleaseStateList~~* or *sps-ConfigDeactivationStateList ~~SPS-ReleaseStateList~~*, 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 ~~Type2Configuredgrantconfig-ReleaseStateList~~* or *sps-ConfigDeactivationStateList ~~SPS-ReleaseStateList~~*, 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 ~~Configuredgrantconfig-index~~* or by *sps-ConfigIndex ~~SPSconfig-index~~*, respectively  [omit the unchanged part] |

# Summary

# References

1. [R1-2005418](file:///C:\Users\wanshic\OneDrive%20-%20Qualcomm\Documents\Standards\3GPP%20Standards\Meeting%20Documents\TSGR1_102\Docs\R1-2005418.zip) Remaining issues on enhancements for UL configured grant transmission ZTE
2. [R1-2005511](file:///C:\Users\wanshic\OneDrive%20-%20Qualcomm\Documents\Standards\3GPP%20Standards\Meeting%20Documents\TSGR1_102\Docs\R1-2005511.zip) Remaining Issue of Enhancements to UL Configured Grant Transmission for NR URLLC Ericsson
3. [R1-2005677](file:///C:\Users\wanshic\OneDrive%20-%20Qualcomm\Documents\Standards\3GPP%20Standards\Meeting%20Documents\TSGR1_102\Docs\R1-2005677.zip) Corrections on Enhanced UL configured grant transmission CATT
4. [R1-2006056](file:///C:\Users\wanshic\OneDrive%20-%20Qualcomm\Documents\Standards\3GPP%20Standards\Meeting%20Documents\TSGR1_102\Docs\R1-2006056.zip) Configured grant enhancements for URLLC OPPO
5. [R1-2006493](file:///C:\Users\wanshic\OneDrive%20-%20Qualcomm\Documents\Standards\3GPP%20Standards\Meeting%20Documents\TSGR1_102\Docs\R1-2006493.zip) Remaining issues on enhanced UL configured grant transmission Apple
6. [R1-2006657](file:///C:\Users\wanshic\OneDrive%20-%20Qualcomm\Documents\Standards\3GPP%20Standards\Meeting%20Documents\TSGR1_102\Docs\R1-2006657.zip) Corrections for configured grant PUSCH vivo