**3GPP TSG RAN WG1 #109-e** **R1-2205343**

e-Meeting, May 9th – 20th, 2022

**Agenda item:** 7.2.5

**Source:** Moderator (Samsung)

**Title:** Summary of [109-e-R16-URLLC-06] Issue#9 & Issue#11: Editorial corrections for recommendations to editors

**Document for:** Discussion and Decision

# Introduction

This contribution provides the summary for the following email discussion in RAN1#109-e:

[109-e-R16-URLLC-06] Issue#9 & Issue#11: Editorial corrections for recommendations to editors by May 11 – Sa (Samsung)

* [R1-2203851](file:///D%3A%5CDocuments%5C3GPP%20documents%5CRAN1%5CTSGR1_109-e%5CDocs%5CR1-2203851.zip): proposal 4 in section 2.3
* [R1-2204438](file:///D%3A%5CDocuments%5C3GPP%20documents%5CRAN1%5CTSGR1_109-e%5CDocs%5CR1-2204438.zip)

Section 3 captures the detailed email discussions. Section 4 summarizes the outcome of the email discussion.

# Contact Points

Respondents to the email discussion are kindly asked to fill in the following table.

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| --- | --- | --- |
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# Email Discussion

## First round

### **3.1.1 #Issue 9**

We have the following agreement in RAN1#102-e.

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| **Agreement**Confirm the following working assumption and remove the brackets as follows:* A UE behavior of handling intra-UE prioritization/multiplexing for overlapping UL transmissions on semi-static flexible symbols is not affected by UL cancellation due to dynamic SFI or ~~[~~DL grant~~]~~
* Note: The UE performs prioritization/multiplexing first and once done applies dynamic SFI
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When capturing the above agreement in the spec, PUCCH repetition related procedure was not considered. The current spec is not clear about the order of resolving overlapping PUCCH with repetitions and dynamic SFI cancellation. Samsung [1] proposed a TP to capture the section index of “9.2.6” in sections 11.1 and 11.1.1 of TS38.213 to fix the issue. In the prepare phase, a clear majority companies are fine with the TP proposed by Samsung.

**Proposal 1: Adopt the following TP for sections 11.1 and 11.1.1 of TS 38.213.**

-------------------------------------------------- Start of text proposal ------------------------------------------------------

**11.1 Slot configuration**

<Unchanged text omitted>

For operation on a single carrier in unpaired spectrum, if a UE is configured by higher layers to transmit SRS, or PUCCH, or PUSCH, or PRACH in a set of symbols of a slot and the UE detects a DCI format indicating to the UE to receive CSI-RS or PDSCH in a subset of symbols from the set of symbols, then

- If the UE does not indicate the capability of [partialCancellation], the UE does not expect to cancel the transmission of the PUCCH or PUSCH or PRACH in the set of symbols if the first symbol in the set occurs within $T\_{proc,2 }$ relative to a last symbol of a CORESET where the UE detects the DCI format; otherwise, the UE cancels the PUCCH, or the PUSCH, or an actual repetition of the PUSCH [6, TS38.214], determined from clauses 9, ~~and~~ 9.2.5 and 9.2.6 or clause 6.1 of [6, TS38.214], or the PRACH transmission in the set of symbols.

- If the UE indicates the capability of [partialCancellation], the UE does not expect to cancel the transmission of the PUCCH or PUSCH or PRACH in symbols from the set of symbols that occur within $T\_{proc,2}$ relative to a last symbol of a CORESET where the UE detects the DCI format. The UE cancels the PUCCH, or the PUSCH, or an actual repetition of the PUSCH [6, TS 38.214], determined from clauses 9, ~~and~~ 9.2.5 and 9.2.6 or clause 6.1 of [6, TS 38.214], or the PRACH transmission in remaining symbols from the set of symbols.

<Unchanged text omitted>

**11.1.1 UE procedure for determining slot format**

<Unchanged text omitted>

If a UE is configured by higher layers to transmit SRS, or PUCCH, or PUSCH, or PRACH in a set of symbols of a slot and the UE detects a DCI format 2\_0 with a slot format value other than 255 that indicates a slot format with a subset of symbols from the set of symbols as downlink or flexible, or the UE detects a DCI format indicating to the UE to receive CSI-RS or PDSCH in a subset of symbols from the set of symbols, then

- If the UE does not indicate the capability of [partialCancellation], the UE does not expect to cancel the transmission of the PUCCH or PUSCH or PRACH in the set of symbols if the first symbol in the set occurs within $T\_{proc,2}$ relative to a last symbol of a CORESET where the UE detects the DCI format; otherwise, the UE cancels the PUCCH, or the PUSCH, or an actual repetition of the PUSCH [6, TS38.214], determined from clauses 9, ~~and~~ 9.2.5 and 9.2.6 or clause 6.1 of [6, TS38.214], or the PRACH transmission in the set of symbols.

- If the UE indicates the capability of [partialCancellation], the UE does not expect to cancel the transmission of the PUCCH or PUSCH or PRACH in symbols from the set of symbols that occur within $T\_{proc,2}$ relative to a last symbol of a CORESET where the UE detects the DCI format. The UE cancels the PUCCH, or the PUSCH, or an actual repetition of the PUSCH [6, TS 38.214], determined from clauses 9, ~~and~~ 9.2.5 and 9.2.6 or clause 6.1 of [6, TS 38.214], or the PRACH transmission in remaining symbols from the set of symbols.

<Unchanged text omitted>

- if the UE is configured by higher layers to transmit SRS, or PUCCH, or PUSCH, or PRACH in the set of symbols of the slot and the UE is not provided *enableConfiguredUL*, then

- if the UE does not indicate the capability of [partialCancellation], the UE does not expect to cancel the transmission of the PUCCH, or the PUSCH, or an actual repetition of the PUSCH [6, TS 38.214], as determined in clauses 9, ~~and~~ 9.2.5 and 9.2.6 or in clause 6.1 of [6. TS 38.214], or the PRACH in the slot if the first symbol of the PUCCH or the PUSCH or actual repetition of the PUSCH or the PRACH in the slot occurs within $T\_{proc,2}$ relative to a last symbol of a CORESET where the UE is configured to monitor PDCCH for DCI format 2\_0; otherwise, the UE cancels the PUCCH, or the PUSCH, or an actual repetition of the PUSCH [6, TS 38.214], as determined in clauses 9, ~~and~~ 9.2.5 and 9.2.6 or in clause 6.1 of [6. TS 38.214], or the PRACH in the slot;

- if the UE indicates the capability of [partialCancellation], the UE does not expect to cancel the transmission of the PUCCH, or the PUSCH, or an actual repetition of the PUSCH [6, TS 38.214], as determined in clauses 9, ~~and~~ 9.2.5 and 9.2.6 or in clause 6.1 of [6. TS 38.214], or the PRACH in symbols from the set of symbols that occur within $T\_{proc,2}$ relative to a last symbol of a CORESET where the UE is configured to monitor PDCCH for DCI format 2\_0. The UE cancels the PUCCH, or the PUSCH, or an actual repetition of the PUSCH [6, TS 38.214], as determined in clauses 9, ~~and~~ 9.2.5 and 9.2.6 or in clause 6.1 of [6. TS 38.214], or the PRACH transmission in remaining symbols from the set of symbols;

<Unchanged text omitted>

----------------------------------------------------- End of text proposal ------------------------------------------------------

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| Company | View |
| CATT | We support the TP. |
| OPPO | Support |
| vivo | We are fine with the TP. |
| ZTE | Support |
| HW/HiSi | We are ok. |
| Qualcomm | We are fine with the TP.  |
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### **3.1.2 #Issue 11**

ETSI [2] proposed a TP to align the parameter name between TS 38.213 and TS 38.331. However, the issue was resolved in RAN1#108e and does not exist in the TS 38.213 v16.9.0. From moderator’s understanding, there is no need to further discuss this issue for Rel-16 maintenance. The issue can be discussed under A.I. 8.3.1 or email discussion of Rel-17 alignment CR.

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| [108-e-R16-NR-U-05] Email discussion on editorial changes to be recommended to the specification editors on issues T4 (change #2), E2 and E3 in R1-2202492 by February 25 – Jing (Qualcomm)R1-2202686 Email discussion summary for editorial changes to be recommended to the specification editors for NR-U Moderator (Qualcomm Incorporated)The following TPs are adopted in principle and the editors of the corresponding specifications are requested to capture the corrections in the next update provided by them.* TP for 38.213 in R1-2201990 for change #2 only
* TP for 38.214 in R1-2201325
* TP for 38.213 in R1-2201396
* TP for 37.213 in R1-2201397
 |

**Question 1: Do you agree not to further discuss the issue for Rel-16 maintenance? If the answer is NO, please clarify the reason.**

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| Company | View |
| Nokia/NSB | Strongly disagree. If this editorial correction is not needed in Rel-16 (based no moderator understanding), the relevant text should not be part of the Rel-17 specifications either. So if we think we can survive without this clarification in Rel-16, then the relevant text should be removed from the Rel-17 specifications as well. This is clearly a Rel-16 issue, so the decision should be taken in Rel-16 (including potentially agreeing a TP to Rel-17 to remove the relevant parts for the Rel-17 specifications) – as this is not a Rel-17 HARQ issue (in AI 8.3.1). [Moderator’s comment]: The intention is not to further discuss changing the RRC parameter name, but fine with fixing the 0 bit K1 field issue. |
| CATT | It is true that the wrong RRC parameter names are not in Rel-16 specification but in Rel-17 specification so the TP is for Rel-17. Instead of discussing the issue in another agenda item, it may be more efficient to discuss here to see whether the TP is agreeable for Rel-17. From our perspective, we are fine with the TP for Rel-17. |
| Qualcomm | It seems that there’re two separate issues. * One issue is for the RRC parameter alignment between 38.213 and TS 38.331 as proposed by ITRI. Since this issue was already resolved in previous meeting, we agree with the FL suggestion to not further discuss in Rel-16.
* A second issue was related to fixing the 0 bit K1 field issue. For this issue, our comment is included in the reply to Proposal 2 below.

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| OPPO | Agree. |
| vivo | We agree with moderator’s view to not discuss the RRC parameter alignment issue for Rel-16 maintenance.  |
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In the prepare phase, FL of A.I. 8.3.1 suggested to first fix the 0 bit K1 field issue in Rel-16 since the parameter dl-DataToUL-ACK-DCI-1-2 is involved. This issue has been fixed for Rel-17 spec it should be fixed for Rel-16 spec as well.

**Proposal 2: Adopt the following TP for sections 9.1.2 and 9.2.5.2 of TS 38.213.**

-------------------------------------------------- Start of text proposal ------------------------------------------------------

**9.1.2 Type-1 HARQ-ACK codebook determination**

This clause applies if the UE is configured with *pdsch-HARQ-ACK-Codebook = semi-static*.

A UE does not expect to be configured with *pdsch-HARQ-ACK-Codebook = semi-static* for a codebook if a UE is provided *subslotLength-ForPUCCH* for the codebook.

A UE reports HARQ-ACK information for a corresponding PDSCH reception or SPS PDSCH release only in a HARQ-ACK codebook that the UE transmits in a slot indicated by a value of a PDSCH-to-HARQ\_feedback timing indicator field in a corresponding DCI format or provided by *dl-DataToUL-ACK* or *dl-DataToUL-ACK-r16* or *dl-DataToUL-ACK-DCI-1-2* if the PDSCH-to-HARQ\_feedback timing indicator field is not present in the DCI format as described in clause 9.2.3. The UE reports NACK value(s) for HARQ-ACK information bit(s) in a HARQ-ACK codebook that the UE transmits in a slot not indicated by a value of a PDSCH-to-HARQ\_feedback timing indicator field in a corresponding DCI format.

If a UE is not provided *pdsch-HARQ-ACK-OneShotFeedback*, the UE does not expect to receive a PDSCH scheduled by a DCI format that the UE detects in any PDCCH monitoring occasion and includes a PDSCH-to-HARQ\_feedback timing indicator field providing an inapplicable value from *dl-DataToUL-ACK-r16*.

If the UE is provided *pdsch-AggregationFactor-r16* in *SPS-Config* or *pdsch-AggregationFactor* in *PDSCH-Config* and no entry in *pdsch-TimeDomainAllocationList* and *pdsch-TimeDomainAllocationListDCI-1-2* includes *repetitionNumber* in *PDSCH-TimeDomainResourceAllocation-r16*, $N\_{PDSCH}^{repeat,max}$ is a maximum value of *pdsch-AggregationFactor-r16* in *SPS-Config* or *pdsch-AggregationFactor* in *PDSCH-Config*; otherwise $N\_{PDSCH}^{repeat,max}=1$. The UE reports HARQ-ACK information for a PDSCH reception

- from DL slot $n\_{D}-N\_{PDSCH}^{repeat}+1$ to DL slot $n\_{D}$, if $N\_{PDSCH}^{repeat}$ is provided by *pdsch-AggregationFactor* or *pdsch-AggregationFactor-r16* [6, TS 38.214], or

- from DL slot $ n\_{D}-repetitionNumber+1$ to DL slot $n\_{D}$, if the time domain resource assignment field in the DCI format scheduling the PDSCH reception indicates an entry containing *repetitionNumber,* or

- in DL slot $n\_{D}$, otherwise

only in a HARQ-ACK codebook that the UE includes in a PUCCH or PUSCH transmission in slot $n+k$, where $n$ is the last UL slot overlapping with DL slot $n\_{D}$ and $k$ is a number of slots indicated by the PDSCH-to-HARQ\_feedback timing indicator field in a corresponding DCI format or provided by *dl-DataToUL-ACK* or *dl-DataToUL-ACK-r16* or *dl-DataToUL-ACK-DCI-1-2* if the PDSCH-to-HARQ\_feedback timing indicator field is not present in the DCI format. If the UE reports HARQ-ACK information for the PDSCH reception in a slot other than slot $n+k$, the UE sets a value for each corresponding HARQ-ACK information bit to NACK.

<Unchanged text omitted>

If a UE has HARQ-ACK, SR and sub-band CSI reports to transmit and the UE determines a PUCCH resource with PUCCH format 3 or PUCCH format 4, where

- the UE determines the PUCCH resource using the PUCCH resource indicator field [5, TS 38.212] in a last of a number of DCI formats with a value of a PDSCH-to-HARQ\_feedback timing indicator field indicating a same slot for the PUCCH transmission, or by a value provided by *dl-DataToUL-ACK* or *dl-DataToUL-ACK-r16* or *dl-DataToUL-ACK-DCI-1-2*  if the PDSCH-to-HARQ\_feedback timing indicator field is not present in the last DCI format, from a PUCCH resource set provided to the UE for HARQ-ACK transmission, and

- the UE determines the PUCCH resource set as described in clause 9.2.1 and clause 9.2.3 for  UCI bits

<Unchanged text omitted>

If a UE is provided a first interlace of $M\_{Interlace,0}^{PUCCH}$ PRBs by *interlace0* in *InterlaceAllocation*, the UE has HARQ-ACK, SR and sub-band CSI reports to transmit, and the UE determines a PUCCH resource with PUCCH format 3, where

- the UE determines the PUCCH resource using the PUCCH resource indicator field in a last of a number of DCI formats that have a value of a PDSCH-to-HARQ\_feedback timing indicator field indicating a same slot for the PUCCH transmission, or a value provided by *dl-DataToUL-ACK* or *dl-DataToUL-ACK-r16* or *dl-DataToUL-ACK-DCI-1-2* if the PDSCH-to-HARQ\_feedback timing indicator field is not present in the last DCI format, from a PUCCH resource set provided to the UE for HARQ-ACK transmission, and

- the UE determines the PUCCH resource set as described in clauses 9.2.1 and 9.2.3 for $O\_{UCI}$ UCI bits

<Unchanged text omitted>

----------------------------------------------------- End of text proposal ------------------------------------------------------

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| Company | View |
| CATT | We support the intention of the TP and propose the following additional changes highlighted in yellow. The first one seems also needed for Rel-17.**9.1.2 Type-1 HARQ-ACK codebook determination**This clause applies if the UE is configured with *pdsch-HARQ-ACK-Codebook = semi-static*.A UE does not expect to be configured with *pdsch-HARQ-ACK-Codebook = semi-static* for a codebook if a UE is provided *subslotLength-ForPUCCH* for the codebook.A UE reports HARQ-ACK information for a corresponding PDSCH reception or SPS PDSCH release only in a HARQ-ACK codebook that the UE transmits in a slot indicated by a value of a PDSCH-to-HARQ\_feedback timing indicator field in a corresponding DCI format or provided by *dl-DataToUL-ACK* or *dl-DataToUL-ACK-r16* or *dl-DataToUL-ACK-DCI-1-2* if the PDSCH-to-HARQ\_feedback timing indicator field is not present in the DCI format as described in clause 9.2.3. The UE reports NACK value(s) for HARQ-ACK information bit(s) in a HARQ-ACK codebook that the UE transmits in a slot not indicated by a value of a PDSCH-to-HARQ\_feedback timing indicator field in a corresponding DCI format or provided by *dl-DataToUL-ACK* or *dl-DataToUL-ACK-r16* or *dl-DataToUL-ACK-DCI-1-2* if the PDSCH-to-HARQ\_feedback timing indicator field is not present in the DCI format as described in clause 9.2.3. <text omitted>9.1.3.1 Type-2 HARQ-ACK codebook in physical uplink control channelA UE determines monitoring occasions for PDCCH with DCI format scheduling PDSCH receptions or SPS PDSCH release or indicating SCell dormancy on an active DL BWP of a serving cell $c$, as described in clause 10.1, and for which the UE transmits HARQ-ACK information in a same PUCCH in slot $n$ based on- PDSCH-to-HARQ\_feedback timing indicator field values, or a *dl-DataToUL-ACK*, or *dl-DataToUL-ACK-r16*, or *dl-DataToUL-ACKForDCIFormat1\_2* value if the PDSCH-to-HARQ\_feedback timing indicator field is not present in a DCI format, for PUCCH transmission with HARQ-ACK information in slot $n$ in response to PDSCH receptions, SPS PDSCH release or SCell dormancy indication- slot offsets $K\_{0}$ [6, TS 38.214] provided by time domain resource assignment field in a DCI format scheduling PDSCH receptions and by *pdsch-AggregationFactor*, or *pdsch-AggregationFactor-r16*, or *repetitionNumber*, when provided.<text omitted>9.2.5.2 UE procedure for multiplexing HARQ-ACK/SR/CSI in a PUCCH<text omitted>If a UE is provided a first interlace of $M\_{Interlace,0}^{PUCCH}$ PRBs by *interlace0* in *InterlaceAllocation*, the UE has HARQ-ACK, SR and wideband or sub-band CSI reports to transmit, and the UE determines a PUCCH resource with PUCCH format 2, or the UE has HARQ-ACK, SR and wideband CSI reports to transmit and the UE determines a PUCCH resource with PUCCH format 3, where - the UE determines the PUCCH resource using the PUCCH resource indicator field in a last of a number of DCI formats with a value of a PDSCH-to-HARQ\_feedback timing indicator field indicating a same slot for the PUCCH transmission, or a value provided by *dl-DataToUL-ACK* or *dl-DataToUL-ACK-r16* or *dl-DataToUL-ACK-ForDCI-Format1-2* if the PDSCH-to-HARQ\_feedback timing indicator field is not present in a DCI format, from a PUCCH resource set provided to the UE for HARQ-ACK transmission, and - the UE determines the PUCCH resource set as described in clauses 9.2.1 and 9.2.3 for $O\_{UCI}$ UCI bits |
| Qualcomm | Agree with the intention of the TP from FL of A.I. 8.3.1. **One clarification question on the following TP from FL of AI 8.3.1**: this is different from the Rel-17 counter-part. Is there a particular reason for such discrepancy?“If a UE has HARQ-ACK, SR and sub-band CSI reports to transmit and the UE determines a PUCCH resource with PUCCH format 3 or PUCCH format 4, where - the UE determines the PUCCH resource using the PUCCH resource indicator field [5, TS 38.212] in a last of a number of DCI formats with a value of a PDSCH-to-HARQ\_feedback timing indicator field indicating a same slot for the PUCCH transmission, or by a value provided by *dl-DataToUL-ACK* or *dl-DataToUL-ACK-r16* or *dl-DataToUL-ACK-DCI-1-2*  if the PDSCH-to-HARQ\_feedback timing indicator field is not present in the last DCI format, from a PUCCH resource set provided to the UE for HARQ-ACK transmission, and - the UE determines the PUCCH resource set as described in clause 9.2.1 and clause 9.2.3 for  UCI bits<Unchanged text omitted>”[Moderator] Could you point out the difference?**On the 3 TPs from CATT:*** For the first TP, we don’t think it is necessary. In case k1 field has 0 bit, UE only need to generate HARQ-ACK CB for one slot indicated by the k1 in RRC, and no need to generate NACKs for other k1 values (since other k1 values do not exist).
* For 2nd TP, we are fine. This is also based on Rel-17 spec.
* For 3rd TP, it seems already captured in the TP from FL of AI 8.3.1. Did we miss anything?
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| OPPO | Agree with the TP from FL and CATT’s 2nd TP.  |
| vivo | We agree with the TP from FL.We are fine with the 2nd and 3rd TP from CATT. For the first TP, we also think it is unnecessary to generate NACKs. |
| Qualcomm2 | To clarify our comment in Round 1, regarding the TP in Proposal 2 in Section 9.2.5.2 from FL, we noticed that there’re some inconsistencies between different portions of the standard in the same section. They clearly should mean exactly the same thing, but for some reason we have now three different text:E.g., we have “If a UE has HARQ-ACK, SR and wideband or sub-band CSI reports to transmit and the UE determines a PUCCH resource with PUCCH format 2, or the UE has HARQ-ACK, SR and wideband CSI reports [6, TS 38.214] to transmit and the UE determines a PUCCH resource with PUCCH format 3 or PUCCH format 4, where - the UE determines the PUCCH resource using the PUCCH resource indicator field [5, TS 38.212] in a last of a number of DCI formats with a value of a PDSCH-to-HARQ\_feedback timing indicator field, if present, or a value of *dl-DataToUL-ACK*, or *dl-DataToUL-ACK-r16*, or *dl-DataToUL-ACK-DCI-1-2*, indicating a same slot for the PUCCH transmission, from a PUCCH resource set provided to the UE for HARQ-ACK transmission,”and we have“If a UE is provided a first interlace of $M\_{Interlace,0}^{PUCCH}$ PRBs by *interlace0* in *InterlaceAllocation*, the UE has HARQ-ACK, SR and wideband or sub-band CSI reports to transmit, and the UE determines a PUCCH resource with PUCCH format 2, or the UE has HARQ-ACK, SR and wideband CSI reports to transmit and the UE determines a PUCCH resource with PUCCH format 3, where - the UE determines the PUCCH resource using the PUCCH resource indicator field in a last of a number of DCI formats with a value of a PDSCH-to-HARQ\_feedback timing indicator field, or a value provided by *dl-DataToUL-ACK* or *dl-DataToUL-ACK-r16* or *dl-DataToUL-ACK-ForDCI-Format1-2* if the PDSCH-to-HARQ\_feedback timing indicator field is not present in a DCI format, indicating a same slot for the PUCCH transmission, from a PUCCH resource set provided to the UE for HARQ-ACK transmission,” And in the new TP in Proposal 2, we are now using “If a UE has HARQ-ACK, SR and sub-band CSI reports to transmit and the UE determines a PUCCH resource with PUCCH format 3 or PUCCH format 4, where - the UE determines the PUCCH resource using the PUCCH resource indicator field [5, TS 38.212] in a last of a number of DCI formats with a value of a PDSCH-to-HARQ\_feedback timing indicator field indicating a same slot for the PUCCH transmission, or by a value provided by *dl-DataToUL-ACK* or *dl-DataToUL-ACK-r16* or *dl-DataToUL-ACK-DCI-1-2*  if the PDSCH-to-HARQ\_feedback timing indicator field is not present in the last DCI format, from a PUCCH resource set provided to the UE for HARQ-ACK transmission, “ These differences may not affect the interpretability of the standard, it’s just that it could cause confusion why different texts are used to say the same thing. With this said, we are fine with the TP in Proposal 2 if this is the majority view.  |
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## Second round

Respondents to the email discussion are kindly asked to fill in the table in section 2.

According the comments in the first round, a majority companies agree not to further discuss the RRC parameter misalignment issue. The second round will focus on the 0 bit K1 field issue.

For proposal 2, the TP from moderation seems acceptable, QC commented there is a difference from the Rel-17 counter-part, however, it is not clear to the moderator what the difference is. Companies can provide further comments for Proposal 2 in section 3.1.2.

The 2nd round discussion will focus on the additional TPs proposed by CATT. ~~The 3~~~~rd~~ ~~TP has been covered in Proposal 2.~~

**Question 2 Do you support the following TP#C1 proposed by CATT (highlight yellow part)?**

**TP#C1**

-------------------------------------------------- Start of text proposal ------------------------------------------------------

**9.1.2 Type-1 HARQ-ACK codebook determination**

This clause applies if the UE is configured with *pdsch-HARQ-ACK-Codebook = semi-static*.

A UE does not expect to be configured with *pdsch-HARQ-ACK-Codebook = semi-static* for a codebook if a UE is provided *subslotLength-ForPUCCH* for the codebook.

A UE reports HARQ-ACK information for a corresponding PDSCH reception or SPS PDSCH release only in a HARQ-ACK codebook that the UE transmits in a slot indicated by a value of a PDSCH-to-HARQ\_feedback timing indicator field in a corresponding DCI format or provided by *dl-DataToUL-ACK* or *dl-DataToUL-ACK-r16* or *dl-DataToUL-ACK-DCI-1-2* if the PDSCH-to-HARQ\_feedback timing indicator field is not present in the DCI format as described in clause 9.2.3. The UE reports NACK value(s) for HARQ-ACK information bit(s) in a HARQ-ACK codebook that the UE transmits in a slot not indicated by a value of a PDSCH-to-HARQ\_feedback timing indicator field in a corresponding DCI format or provided by *dl-DataToUL-ACK* or *dl-DataToUL-ACK-r16* or *dl-DataToUL-ACK-DCI-1-2* if the PDSCH-to-HARQ\_feedback timing indicator field is not present in the DCI format as described in clause 9.2.3.

<Unchanged text omitted>

----------------------------------------------------- End of text proposal ------------------------------------------------------

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| Company | View |
| Qualcomm | As explained in Round 1, we think this is not necessary. Copied our response in Round 1 below for reference: In case k1 field has 0 bit, UE only need to generate HARQ-ACK CB for one slot indicated by the k1 in RRC, and no need to generate NACKs for other k1 values (since other k1 values do not exist). |
| CATT | Qualcomm’s comment makes sense to us and we are fine to drop this TP.A suggestion to moderator is that without this TP, all other TPs are simply alignment with Rel-17 specification and it may be clearer to companies if moderator can provide a single TP covering all the text proposals. For example, TP#C3 proposed by us can be easily considered to be covered by the original TP from moderator since they indeed look similar but just for different paragraphs. |
|  |  |

**Question 3 Do you support the following TP#C2 proposed by CATT (highlight yellow part)?**

**TP#C2**

-------------------------------------------------- Start of text proposal ------------------------------------------------------

**9.1.3.1 Type-2 HARQ-ACK codebook in physical uplink control channel**

A UE determines monitoring occasions for PDCCH with DCI format scheduling PDSCH receptions or SPS PDSCH release or indicating SCell dormancy on an active DL BWP of a serving cell $c$, as described in clause 10.1, and for which the UE transmits HARQ-ACK information in a same PUCCH in slot $n$ based on

- PDSCH-to-HARQ\_feedback timing indicator field values, or a *dl-DataToUL-ACK*, or *dl-DataToUL-ACK-r16*, or *dl-DataToUL-ACKForDCIFormat1\_2* value if the PDSCH-to-HARQ\_feedback timing indicator field is not present in a DCI format, for PUCCH transmission with HARQ-ACK information in slot $n$ in response to PDSCH receptions, SPS PDSCH release or SCell dormancy indication

- slot offsets $K\_{0}$ [6, TS 38.214] provided by time domain resource assignment field in a DCI format scheduling PDSCH receptions and by *pdsch-AggregationFactor*, or *pdsch-AggregationFactor-r16*, or *repetitionNumber*, when provided.

<Unchanged text omitted>

----------------------------------------------------- End of text proposal ------------------------------------------------------

|  |  |
| --- | --- |
| Company | View |
| Qualcomm | We are fine with it.  |
| CATT | Support. |
| vivo | Support |
| ZTE | Support |

**Question 4 Do you support the following TP#C3 proposed by CATT (highlight yellow part)?**

**TP#C3**

-------------------------------------------------- Start of text proposal ------------------------------------------------------

**9.2.5.2 UE procedure for multiplexing HARQ-ACK/SR/CSI in a PUCCH**

<Unchanged text omitted>

If a UE is provided a first interlace of $M\_{Interlace,0}^{PUCCH}$ PRBs by *interlace0* in *InterlaceAllocation*, the UE has HARQ-ACK, SR and wideband or sub-band CSI reports to transmit, and the UE determines a PUCCH resource with PUCCH format 2, or the UE has HARQ-ACK, SR and wideband CSI reports to transmit and the UE determines a PUCCH resource with PUCCH format 3, where

- the UE determines the PUCCH resource using the PUCCH resource indicator field in a last of a number of DCI formats with a value of a PDSCH-to-HARQ\_feedback timing indicator field indicating a same slot for the PUCCH transmission, or a value provided by *dl-DataToUL-ACK* or *dl-DataToUL-ACK-r16* or *dl-DataToUL-ACK-ForDCI-Format1-2* if the PDSCH-to-HARQ\_feedback timing indicator field is not present in a DCI format, from a PUCCH resource set provided to the UE for HARQ-ACK transmission, and

- the UE determines the PUCCH resource set as described in clauses 9.2.1 and 9.2.3 for $O\_{UCI}$ UCI bits

<Unchanged text omitted>

----------------------------------------------------- End of text proposal ------------------------------------------------------

|  |  |
| --- | --- |
| Company | View |
| CATT | Support. |
| vivo | Support |
| ZTE | Support |

Based on CATT’s request, a merged TP is provided in Proposal 3, from Moderator’s understanding, this is only to align with TS 38.213 h10, the merged TP should be acceptable. Please note the RRC name is changed as highlighted in the TP.

**Proposal 3: Adopt the following TP for sections 9.1.2, 9.1.3.1 and 9.2.5.2 of TS 38.213.**

-------------------------------------------------- Start of text proposal ------------------------------------------------------

**9.1.2 Type-1 HARQ-ACK codebook determination**

This clause applies if the UE is configured with *pdsch-HARQ-ACK-Codebook = semi-static*.

A UE does not expect to be configured with *pdsch-HARQ-ACK-Codebook = semi-static* for a codebook if a UE is provided *subslotLength-ForPUCCH* for the codebook.

A UE reports HARQ-ACK information for a corresponding PDSCH reception or SPS PDSCH release only in a HARQ-ACK codebook that the UE transmits in a slot indicated by a value of a PDSCH-to-HARQ\_feedback timing indicator field in a corresponding DCI format or provided by *dl-DataToUL-ACK* or *dl-DataToUL-ACK-r16* or *dl-DataToUL-ACK-DCI-1-2* if the PDSCH-to-HARQ\_feedback timing indicator field is not present in the DCI format as described in clause 9.2.3. The UE reports NACK value(s) for HARQ-ACK information bit(s) in a HARQ-ACK codebook that the UE transmits in a slot not indicated by a value of a PDSCH-to-HARQ\_feedback timing indicator field in a corresponding DCI format.

If a UE is not provided *pdsch-HARQ-ACK-OneShotFeedback*, the UE does not expect to receive a PDSCH scheduled by a DCI format that the UE detects in any PDCCH monitoring occasion and includes a PDSCH-to-HARQ\_feedback timing indicator field providing an inapplicable value from *dl-DataToUL-ACK-r16*.

If the UE is provided *pdsch-AggregationFactor-r16* in *SPS-Config* or *pdsch-AggregationFactor* in *PDSCH-Config* and no entry in *pdsch-TimeDomainAllocationList* and *pdsch-TimeDomainAllocationListDCI-1-2* includes *repetitionNumber* in *PDSCH-TimeDomainResourceAllocation-r16*, $N\_{PDSCH}^{repeat,max}$ is a maximum value of *pdsch-AggregationFactor-r16* in *SPS-Config* or *pdsch-AggregationFactor* in *PDSCH-Config*; otherwise $N\_{PDSCH}^{repeat,max}=1$. The UE reports HARQ-ACK information for a PDSCH reception

- from DL slot $n\_{D}-N\_{PDSCH}^{repeat}+1$ to DL slot $n\_{D}$, if $N\_{PDSCH}^{repeat}$ is provided by *pdsch-AggregationFactor* or *pdsch-AggregationFactor-r16* [6, TS 38.214], or

- from DL slot $ n\_{D}-repetitionNumber+1$ to DL slot $n\_{D}$, if the time domain resource assignment field in the DCI format scheduling the PDSCH reception indicates an entry containing *repetitionNumber,* or

- in DL slot $n\_{D}$, otherwise

only in a HARQ-ACK codebook that the UE includes in a PUCCH or PUSCH transmission in slot $n+k$, where $n$ is the last UL slot overlapping with DL slot $n\_{D}$ and $k$ is a number of slots indicated by the PDSCH-to-HARQ\_feedback timing indicator field in a corresponding DCI format or provided by *dl-DataToUL-ACK* or *dl-DataToUL-ACK-r16* or *dl-DataToUL-ACK-DCI-1-2* if the PDSCH-to-HARQ\_feedback timing indicator field is not present in the DCI format. If the UE reports HARQ-ACK information for the PDSCH reception in a slot other than slot $n+k$, the UE sets a value for each corresponding HARQ-ACK information bit to NACK.

<Unchanged text omitted>

**9.1.3.1 Type-2 HARQ-ACK codebook in physical uplink control channel**

A UE determines monitoring occasions for PDCCH with DCI format scheduling PDSCH receptions or SPS PDSCH release or indicating SCell dormancy on an active DL BWP of a serving cell $c$, as described in clause 10.1, and for which the UE transmits HARQ-ACK information in a same PUCCH in slot $n$ based on

- PDSCH-to-HARQ\_feedback timing indicator field values, or a *dl-DataToUL-ACK*, or *dl-DataToUL-ACK-r16*, or *dl-DataToUL-ACK-DCI-1-2* value if the PDSCH-to-HARQ\_feedback timing indicator field is not present in a DCI format, for PUCCH transmission with HARQ-ACK information in slot $n$ in response to PDSCH receptions, SPS PDSCH release or SCell dormancy indication

- slot offsets $K\_{0}$ [6, TS 38.214] provided by time domain resource assignment field in a DCI format scheduling PDSCH receptions and by *pdsch-AggregationFactor*, or *pdsch-AggregationFactor-r16*, or *repetitionNumber*, when provided.

<Unchanged text omitted>

**9.2.5.2 UE procedure for multiplexing HARQ-ACK/SR/CSI in a PUCCH**

<Unchanged text omitted>

If a UE has HARQ-ACK, SR and sub-band CSI reports to transmit and the UE determines a PUCCH resource with PUCCH format 3 or PUCCH format 4, where

- the UE determines the PUCCH resource using the PUCCH resource indicator field [5, TS 38.212] in a last of a number of DCI formats with a value of a PDSCH-to-HARQ\_feedback timing indicator field indicating a same slot for the PUCCH transmission, or by a value provided by *dl-DataToUL-ACK* or *dl-DataToUL-ACK-r16* or *dl-DataToUL-ACK-DCI-1-2*  if the PDSCH-to-HARQ\_feedback timing indicator field is not present in the last DCI format, from a PUCCH resource set provided to the UE for HARQ-ACK transmission, and

- the UE determines the PUCCH resource set as described in clause 9.2.1 and clause 9.2.3 for  UCI bits

<Unchanged text omitted>

If a UE is provided a first interlace of $M\_{Interlace,0}^{PUCCH}$ PRBs by *interlace0* in *InterlaceAllocation*, the UE has HARQ-ACK, SR and wideband or sub-band CSI reports to transmit, and the UE determines a PUCCH resource with PUCCH format 2, or the UE has HARQ-ACK, SR and wideband CSI reports to transmit and the UE determines a PUCCH resource with PUCCH format 3, where

- the UE determines the PUCCH resource using the PUCCH resource indicator field in a last of a number of DCI formats with a value of a PDSCH-to-HARQ\_feedback timing indicator field indicating a same slot for the PUCCH transmission, or a value provided by *dl-DataToUL-ACK* or *dl-DataToUL-ACK-r16* or *dl-DataToUL-ACK-DCI-1-2* if the PDSCH-to-HARQ\_feedback timing indicator field is not present in a DCI format, from a PUCCH resource set provided to the UE for HARQ-ACK transmission, and

- the UE determines the PUCCH resource set as described in clauses 9.2.1 and 9.2.3 for $O\_{UCI}$ UCI bits

<Unchanged text omitted>

If a UE is provided a first interlace of $M\_{Interlace,0}^{PUCCH}$ PRBs by *interlace0* in *InterlaceAllocation*, the UE has HARQ-ACK, SR and sub-band CSI reports to transmit, and the UE determines a PUCCH resource with PUCCH format 3, where

- the UE determines the PUCCH resource using the PUCCH resource indicator field in a last of a number of DCI formats that have a value of a PDSCH-to-HARQ\_feedback timing indicator field indicating a same slot for the PUCCH transmission, or a value provided by *dl-DataToUL-ACK* or *dl-DataToUL-ACK-r16* or *dl-DataToUL-ACK-DCI-1-2* if the PDSCH-to-HARQ\_feedback timing indicator field is not present in the last DCI format, from a PUCCH resource set provided to the UE for HARQ-ACK transmission, and

- the UE determines the PUCCH resource set as described in clauses 9.2.1 and 9.2.3 for $O\_{UCI}$ UCI bits

<Unchanged text omitted>

----------------------------------------------------- End of text proposal ------------------------------------------------------

|  |  |
| --- | --- |
| Company | View |
| Nokia/NSB | Support (to align R16 & R17 specifications for this R16 functionalities) |
| Vivo | Support. |
| ZTE | Support |

# Summary and conclusions

The following are captured in the Chair notes.

**For the TS38.213 editor:**

The text proposal in section 2.3 of R1- 2203851~~7~~ is provided to improve clarity of 38.213 specification. Please consider it in the next specification revision.

**For the TS38.213 editor:**

The text proposal in Proposal 3 of R1- 2205343 is provided to improve clarity of 38.213 specification. Please consider it in the next specification revision.

# Reference

1. R1-2203851, Remaining issues on intra-UE multiplexing/prioritization, Samsung
2. R1-2204438 Correction on RRC parameter name of dl-DataToUL-ACK-ForDCI-Format1-2 in TS 38.213, ITRI