**3GPP TSG-RAN WG1 Meeting #105-eR1-210xxxx**

**e-Meeting, May 10th – 27th, 2021**

**Agenda item:** **7.1**

**Source: Moderator (Apple Inc.)**

**Title: Summary of email discussion [105-e-NR-7.1CRs-09] on the correction for UL cancellation due to DCI format 2\_0**

**Document for: Discussion and Decision**

# 1 Introduction

This contribution provides the summary for the following email discussion in RAN1#105-e:

**Issue#23**

[R1-2105077](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_105-e/Docs/R1-2105077.zip) Correction on UL cancellation due to DCI format 2\_0 Apple

[R1-2105078](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_105-e/Docs/R1-2105078.zip) Correction on UL cancellation due to DCI format 2\_0 Apple

[105-e-NR-7.1CRs-09] Issue#23: Correction on UL cancellation due to DCI format 2\_0 – Sigen (Apple) by May 25

Section 2 provides the background information for the issues raised in R1-2105077 and R1-2105078. Section 3 captures the detailed email discussions. Section 4 summarizes the outcome of the email discussion.

# 2 Background

In RAN1 #103e, the following agreement was made:

**Agreements:**

* **Clarify that partial cancelation of PUCCH/PUSCH/PRACH triggered by dynamic SFI or dynamically assigned PDSCH/CSI-RS is not supported in Rel-15**
  + **Prepare CR for above clarification in next meeting**
* **Introduce a new Rel-16 FG for partial cancelation of PUCCH/PUSCH/PRACH as below**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **FG 22-x** | **Cancellation of PUCCH, PUSCH or PRACH with a DCI scheduling a PDSCH or CSI-RS or a DCI format 2\_0 for SFI** | **A UE supports the partial cancellation of the SRS or PUCCH or PUSCH or PRACH configured transmission:**   * **The UE cancels the configured PUCCH or PUSCH or PRACH in a set of symbols of a slot due to detection of a DCI format 2\_0 with a slot format value other than 255that indicates a slot format with a subset of symbols from the set of symbols as downlink or flexible** * **The UE cancels the configured PUCCH or PUSCH or PRACH in a set of symbols of a slot due to the detection of a DCI format 1\_0, DCI format 1\_1, DCI format 1\_2 or DCI format 0\_1 and DCI format 0\_2 indicating to the UE to receive CSI-RS or PDSCH in a subset of symbols from the set of symbols.** |  | **Yes** | **N/A** |  | **Per FS** | **n/a** | **n/a** | **n/a** |  | **Optional with capability signalling** |

The corresponding CRs were agreed in RAN1#104-e in [R1-2101990](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_104-e/Docs/R1-2101990.zip) (Rel. 15) and [R1-2101991](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_104-e/Docs/R1-2101991.zip) (Rel.16).

However, the case when DCI format 2\_0 is not detected by the UE was not changed accordingly in the agreed CRs. Draft CRs were proposed in:

* [R1-2105077](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_105-e/Docs/R1-2105077.zip) (Rel-15) to clearly capture that only full cancellation is supported for configured PUCCH/PUSCH/PRACH if DCI format 2\_0 is not detected by the UE.
* [R1-2105078](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_105-e/Docs/R1-2105078.zip) (Rel-16) to clearly capture that the behavior of partial or full cancellation for configured PUCCH/PUSCH/PRACH depending on UE capability if DCI format 2\_0 is not detected by the UE.

# 3 Email Discussions

## 3.1 First Round of Email Discussion

Companies are invited to provided comments on the draft CRs in [R1-2105077](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_105-e/Docs/R1-2105077.zip) (Rel-15) and [R1-2105078](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_105-e/Docs/R1-2105078.zip) (Rel-16).

**For the draft CR in** [**R1-2105077**](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_105-e/Docs/R1-2105077.zip) **(Rel-15), please indicate if you support it in principle.**

|  |  |
| --- | --- |
| **Yes** | CATT, vivo, Samsung, Huawei, Ericsson, Qualcomm, Intel, Apple |
| **No** | OPPO, NTT DOCOMO, ZTE |

**Companies please provide detailed comments on the draft CR in** [**R1-2105077**](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_105-e/Docs/R1-2105077.zip) **(Rel-15), if any.**

|  |  |
| --- | --- |
| **Company** | **Comments** |
| OPPO | Firstly, the referred RAN1 agreement talks about something triggered by dynamic SFI, while the CR in R1-2105077 is about something relating to semi-statically configured CORESET occasion. We do no see the linkage between the two. The proposed CR may need a separate RAN1 agreement for a new UE behavior.  Secondly, the fact of “UE does not detect a DCI format 2\_0” could be based on that “gNB does not send DCI format 2\_0 at all (there is no mandating requirement for gNB to send every DCI format 2\_0)”, and the concerned CORESET could be configured to contain other DCI formats like 2\_x besides 2\_0. Then the question is why the concerned Rel-15 behavior (only full cancellation) should be linked to a condition of “UE does not detect DCI format 2\_0” rather than some condition like “UE performs DCI detection at the configured CORESET resource”?  [Moderator] the reason why it is related to partial or full cancellation is because the case when the UE does not detect a DCI format 2\_0 also can result in partial cancellation as currently specified. And the agreement in RAN1#103-e is to conclude that Rel-15 UEs do not support partial cancellation, and Rel-16 UEs are subject to UE capability. I don’t understand the last question. Maybe the question can be clarified further? |
| vivo | Based on the principle of the agreement made in RAN1#103e meeting that Rel-15 does not support partial cancellation for PUSCH, PUCCH and PRACH and Rel-16 support the partial cancellation based on UE capability, we support the draft CRs. |
| Samsung | We prefer similar text as what we agreed in case of DCI detection.  [Moderator] Can you be more specific? The TP is indeed based on the CRs that were previously agreed for the same issue. There is some difference because the case is different, and the exact same text cannot be directly applied. |
| NTT DOCOMO | Agreement is following.  Agreements:   * Clarify that partial cancelation of PUCCH/PUSCH/PRACH triggered by dynamic SFI or dynamically assigned PDSCH/CSI-RS is not supported in Rel-15   + Prepare CR for above clarification in next meeting * Introduce a new Rel-16 FG for partial cancelation of PUCCH/PUSCH/PRACH as below   …  This is clearly saying as partial cancellation triggered by dynamic SFI or dynamically assigned PDSCH/CSI-RS. This CR is different situation. To agree this CR, new agreement is needed, which would be NBC.  [Moderator] It is true that the case is not explicitly covered in the agreements, but it should be clear that the draft CRs are aligned with the spirit of the agreements. The NBC issue had been extensively debated when the above agreement was made, and hopefully we do not need to repeat the same discussion. |
| ZTE | We acknowledge this is an issue that we need to address. However, we share the same view as other companies, it is better to have a separate discussion to agree on some agreements first. Then, we can work on the CR based on the new RAN1 agreements. Also, we may need to work on the UE feature list, i.e., introducing new UE feature or updating the existing UE feature. |
| Huawei | Ok |
| Ericsson | We are OK in principle.  The reason we are supportive is that our understanding of the discussion in UE features that led to the cited agreement was to introduce capability for “partial cancellation”. In that light, it seemed this reason was missed, and we are fine to include that.  However, it seems it needs to be reflected on UE features accurately as well, that covers only misdetection of DCI 2\_0. Also, the CR can be perhaps improved if considered with previous case ina more compact way. |
| Qualcomm | We support the CR in principle. The CR addresses a case that were missed in the104e CR on SFI, and it is based on the same principle of the agreement made in RAN1#103e meeting that Rel-15 does not support partial cancellation for PUSCH, PUCCH and PRACH and Rel-16 support the partial cancellation based on UE capability. |
| Intel | We support the CR in principle. The issue here is still of a dynamic trigger – where the trigger is “implicit”, based on a missed detection of DCI 2\_0. |
| Apple | We support the CR. |

**For the draft CR in** [**R1-2105078**](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_105-e/Docs/R1-2105078.zip) **(Rel-16), please indicate if you support it in principle.**

|  |  |
| --- | --- |
| **Yes** | CATT, Samsung, Huawei, Ericsson, Qualcomm, Intel, Apple |
| **No** | OPPO, NTT DOCOMO, ZTE |

**Companies please provide detailed comments on the draft CR in** [**R1-2105078**](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_105-e/Docs/R1-2105078.zip) **(Rel-16), if any.**

|  |  |
| --- | --- |
| **Company** | **Comments** |
| OPPO | Our above two comments for Rel-15 CR in R1-2105077 still apply here.  In addition, the proposed UE behavior of partial cancellation upon condition of “DCI format 2\_0 not detected” is not listed in Rel-16 UE FG 22-x (as given background section). It seems RAN1 needs to firstly reach certain new agreement in UE feature session (for the proposed UE behavior) and to update it with RAN2, before agreeing the proposed changes in R1-2105078 to 38.213. |
| Samsung | We prefer similar text as what we agreed in case of DCI detection. |
| NTT DOCOMO | The introduced UE capability ‘partialCancellationPUCCH-PUSCH-PRACH-TX-r16’ is described as follows in 306. This CR is different situation.  ***partialCancellationPUCCH-PUSCH-PRACH-TX-r16***  Indicates whether UE supports the partial cancellation of the configured PUCCH or PUSCH or PRACH transmission in set of symbols of a slot due to:   * Detection of 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, and * Detection of a DCI format 1\_0, DCI format 1\_1, DCI format 1\_2 or DCI format 0\_1 and DCI format 0\_2 indicating to the UE to receive CSI-RS or PDSCH in a subset of symbols from the set of symbols. |
| ZTE | To be safe, it is better to work on the UE feature first. If RAN1 makes agreements on corresponding UE feature, i.e., introducing new UE feature or updating the existing UE feature, then we can come back to this issue. |
| Huawei | Ok |
| Ericsson | Similar comment as previous one. |
| Qualcomm | Similar comment as previous one. |
| Intel | Same comment as above. |
| Apple | We support the CR. |

## 3.2 Second Round of Email Discussion

During the first round of email discussion, majority companies support the CRs in principle. OPPO, DOCOMO and ZTE have concerns on it, mainly due to the fact that the case of missing DCI format 2\_0 was not explicitly captured in the RAN1#103-e agreements.

However, it should be clear that the proposed CRs are aligned with the spirit of the previous agreements. The agreement in RAN1#103-e was to conclude that Rel-15 UEs do not support partial cancellation, and Rel-16 UEs are subject to UE capability. If the case of missing DCI format 2\_0 is not addressed, Rel-15 UEs would still need to support partial cancellation for this particular case, and Rel-16 UEs would need to support partial cancellation for this particular case without associated capability signaling. This is certainly against the original intention, and it would make the agreement meaningless. As Intel also commented: “The issue here is still of a dynamic trigger – where the trigger is “implicit”, based on a missed detection of DCI 2\_0.”

As proposed by a few companies, one way to address the concern may be to have an explicit agreement first, and then discuss the TP. Therefore, the following is proposed:

### Proposal 1:

* **Clarify that partial cancelation of PUCCH/PUSCH/PRACH due to dynamic SFI not being detected is not supported in Rel-15**
* **Update the Rel-16 FG 22-9 for partial cancelation of PUCCH/PUSCH/PRACH as below:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| FG 22-9 | Cancellation of PUCCH, PUSCH or PRACH with a DCI scheduling a PDSCH or CSI-RS or a DCI format 2\_0 for SFI | A UE supports the partial cancellation of the PUCCH or PUSCH or PRACH configured transmission:   * The UE cancels the configured PUCCH or PUSCH or PRACH in a set of symbols of a slot due to detection of 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 due to a DCI format 2\_0 not being detected * The UE cancels the configured PUCCH or PUSCH or PRACH in a set of symbols of a slot due to the detection of a DCI format 1\_0, DCI format 1\_1, DCI format 1\_2 or DCI format 0\_1 and DCI format 0\_2 indicating to the UE to receive CSI-RS or PDSCH in a subset of symbols from the set of symbols. |  | Yes | N/A |  | Per FS | n/a | n/a | n/a |  | Optional with capability signalling |

**Companies please provide comments on Proposal 1.**

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| --- | --- |
| **Company** | **Comments** |
| vivo | We support proposal 1. If the updated FG is agreed, we should inform it to the moderator of AI 7.2.11 to include the updated FG. |
| NTT DOCOMO | Considering majorities’ views, we can accept this direction.  But in this case, FG 22-9 should be updated correctly. The intended condition is,   * Flexible is indicated by tdd-UL-DL-ConfigurationCommon, and tdd-UL-DL-ConfigurationDedicated if provided, OR * When tdd-UL-DL-ConfigurationCommon and tdd-UL-DL-ConfigurationDedicated are not provided, AND * 2\_0 is not detected   It seems that the red text above covers the third bullet only. It means always cancelled if 2\_0 detection is not configured (i.e. semi-static TDD case). Detailed condition should be added. |
| CATT | We support Proposal 1. Our understanding of the red text is to cover the case when UE is configured to monitor DCI format 2\_0 but DCI format 2\_0 is not detected by the UE. |

(Please don’t comment further on Proposal 1)

### Proposal 2:

* **Clarify that partial cancelation of PUCCH/PUSCH/PRACH due to dynamic SFI being configured but not detected is not supported in Rel-15.**
* **Update the Rel-16 FG 22-9 for partial cancelation of PUCCH/PUSCH/PRACH as below:**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| FG 22-9 | Cancellation of PUCCH, PUSCH or PRACH with a DCI scheduling a PDSCH or CSI-RS or a DCI format 2\_0 for SFI | A UE supports the partial cancellation of the PUCCH or PUSCH or PRACH configured transmission:   * The UE cancels the configured PUCCH or PUSCH or PRACH in a set of symbols of a slot due to detection of 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 * The UE cancels the configured PUCCH or PUSCH or PRACH in a set of symbols of a slot due to a DCI format 2\_0 being configured but not detected, when either the set of symbols are indicated as flexible by *tdd-UL-DL-ConfigurationCommon*, and *tdd-UL-DL-ConfigurationDedicated* if provided, or *tdd-UL-DL-ConfigurationCommon* and *tdd-UL-DL-ConfigurationDedicated* are not provided to the UE. * The UE cancels the configured PUCCH or PUSCH or PRACH in a set of symbols of a slot due to the detection of a DCI format 1\_0, DCI format 1\_1, DCI format 1\_2 or DCI format 0\_1 and DCI format 0\_2 indicating to the UE to receive CSI-RS or PDSCH in a subset of symbols from the set of symbols. |  | Yes | N/A |  | Per FS | n/a | n/a | n/a |  | Optional with capability signalling |

**Companies please provide comments on Proposal 2.**

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| **Company** | **Comments** |
| CATT | According to current wording, it only covers the case that all the symbols configured for PUCCH/PUSCH/PRACH transmissions are configured as flexible if semi-static UL-DL configuration is provided. To our understanding, the case when only a subset of the symbols are configured as flexible and no symbol is configured as downlink should also be included. |
| OPPO | In principle, we are ok on technical side. Just not sure whether this is a right discussion thread to update UE feature list. |

(Please do not comment on Proposal 2 further.)

### Proposal 3:

* **Clarify that partial cancelation of PUCCH/PUSCH/PRACH due to dynamic SFI being configured but not detected is not supported in Rel-15.**
* **Update the Rel-16 FG 22-9 for partial cancelation of PUCCH/PUSCH/PRACH as below:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| FG 22-9 | Cancellation of PUCCH, PUSCH or PRACH with a DCI scheduling a PDSCH or CSI-RS or a DCI format 2\_0 for SFI | A UE supports the partial cancellation of the PUCCH or PUSCH or PRACH configured transmission:   * The UE cancels the configured PUCCH or PUSCH or PRACH in a set of symbols of a slot due to detection of 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 * The UE cancels the configured PUCCH or PUSCH or PRACH in a set of symbols of a slot due to a DCI format 2\_0 being configured but not detected, when either a subset of symbols from the set of symbols are indicated as flexible by *tdd-UL-DL-ConfigurationCommon*, and *tdd-UL-DL-ConfigurationDedicated* if provided, or *tdd-UL-DL-ConfigurationCommon* and *tdd-UL-DL-ConfigurationDedicated* are not provided to the UE. * The UE cancels the configured PUCCH or PUSCH or PRACH in a set of symbols of a slot due to the detection of a DCI format 1\_0, DCI format 1\_1, DCI format 1\_2 or DCI format 0\_1 and DCI format 0\_2 indicating to the UE to receive CSI-RS or PDSCH in a subset of symbols from the set of symbols. |  | Yes | N/A |  | Per FS | n/a | n/a | n/a |  | Optional with capability signalling |

**Companies please provide comments on Proposal 3.**

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| **Company** | **Comments** |
| Ericsson | We are fine the proposal. |
| Huawei | Support |

In addition, companies are invited to provide detailed comments on the TPs in the draft CRs, assuming an agreement can be reached along the line of Proposal 3. Note that the cover page will need to be changed if we have new agreements, so the comments can focus on the TPs only.

**Companies please provide detailed comments on the TP in** [**R1-2105077**](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_105-e/Docs/R1-2105077.zip) **(Rel-15), if any.**

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| **Company** | **Comments** |
| vivo | We support the TP. |
| CATT | According to our comment to proposal 2, we are now wondering what “in the set of symbols” highlighted in cyan means. Does it cover only the case that all the symbols configured for PUCCH/PUSCH/PRACH transmission are semi-static flexible or no semi-static UL-DL configuration is provided, or does it also cover the case that a subset of the symbols are semi-static flexible? If latter is the intention, the case when any symbol of the set of symbols is semi-static downlink symbol should be excluded?  For a set of symbols of a slot that are indicated as flexible by *tdd-UL-DL-ConfigurationCommon*, and *tdd-UL-DL-ConfigurationDedicated* if provided, or when *tdd-UL-DL-ConfigurationCommon*, and *tdd-UL-DL-ConfigurationDedicated* are not provided to the UE, and if the UE does not detect a DCI format 2\_0 providing a slot format for the slot  <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, the UE |
| OPPO | We are ok to agree on a TP for Rel-15 in this meeting if this is what the majority want. |
| Ericsson | We are fine with TP.  To CATT it the refers to “For a set of symbols” |
| Huawei | Support |
| Samsung | We are okay to TP. |

**Companies please provide detailed comments on the TP in** [**R1-2105078**](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_105-e/Docs/R1-2105078.zip) **(Rel-16), if any.**

|  |  |
| --- | --- |
| **Company** | **Comments** |
| vivo | We support the TP. |
| CATT | Same comment as above. |
| OPPO | We are ok to agree on a TP for Rel-16 in this meeting if this is what the majority want. |
| Ericsson | We are fine with the TP |
| Samsung | We have some editorial comments about sentence as highlighted below, to be aligned with CR in R1-2101991 in RAN1 #104e (means that yellow highlighted text to blue highlighted text).  **In 11.1.1 of 38.213,**  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 𝑇𝑝𝑟𝑜𝑐,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 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 𝑇𝑝𝑟𝑜𝑐,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 or Clause 6.1 of [6, TS 38.214], or the PRACH transmission in remaining symbols from the set of symbols.  **In this TP,**   * if the UE does not indicate the capability of [partialCancellation], the UE does not expect to cancel the transmission of the SRS, or 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 or in Clause 6.1 of [6. TS 38.214], or the PRACH in symbols from the set of symbols in the slot , if any, starting before a symbol that is after the PUSCH preparation time if the first symbol of the PUCCH or the PUSCH or the actual repetition of the PUSCH or the PRACH in the slot occurs, relative to a last symbol of a CORESET where the UE is configured to monitor PDCCH for DCI format 2\_0, after a number of symbols that is smaller than T\_(proc,2). Otherwise, the UE cancels the PUCCH, or the PUSCH, or the actual repetition of the PUSCH, 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 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 the actual repetition of the PUSCH, or the PRACH transmission in remaining symbols from the set of symbols. |

# 4 Outcome of the Email Discussion

# References