**3GPP TSG RAN WG1 #104-e R1-21xxxxx**

**January 25th – February 5th, 2021**

**Agenda item:** 7.1

**Source:** Moderator (Qualcomm)

**Title:** Summary of email discussion [104-e-NR-7.1CRs-05]: clarification of cancellation due to SFI, PSDCH, or CSI-RS

**Document for:** Discussion and Decision

# Introduction

In RAN1 #103e, the following RAN1 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**

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| **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** |

* **TP for Rel-16 should also be discussed in next meeting**

Section 3 and Section 4 capture the proposed corrections for Rel. 15 and Rel. 16 NR, respectively.

# Summary of Companies’ Inputs

Please provide your comments on the proposed Rel. 15 and Rel. 16 CRs in the tables below.

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| --- | --- |
| **Company** | **Comments on the Rel. 15 CR** |
| **CATT** | **We support the text proposals.**  **For the cover page, we would like to propose the following addition to “reason for change”.**  A partial cancellation of uplink configured PUCCH/PUSCH/PRACH transmissions due to collision with PDSCH/CSI-RS or SFI is not supported in Rel. 15. |
| **Spreadtrum** | **Support CRs** |
| Apple | Support in principle, but we wonder for SRS if the following would be better given that the second sentence talks about “remaining symbols from the subset of symbols”.  **“**the UE does not expect to cancel the transmission of SRS in symbols from the subset of symbols that occur, relative to a last symbol of a CORESET where the UE detects the DCI format after a number of symbols that is smaller than . The UE cancels the SRS transmission in remaining symbols from the subset of symbols; **”** |
| Intel | Support in principle.  Since we are updating this part of the spec, it would be desirable if the phrase “after a number of symbols that is smaller than ” is also corrected. Specifically, the quoted phrase seems to compare a number of symbols to a unit of time (Tproc,2).  Accordingly, the following rephrasing is suggested to simplify the text and improve readability.  **For Subclause 11.1: (paragraph defining**  **is omitted below)**   |  | | --- | | 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 1\_0, DCI format 1\_1, or DCI format 0\_1 indicating to the UE to receive CSI-RS or PDSCH in a subset of symbols from the set of symbols, then  - 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 from a last symbol of a CORESET where the UE detects the DCI format  - otherwise, the UE cancels the PUCCH, or PUSCH, or PRACH transmission in the set of symbols.  -   the UE does not expect to cancel the transmission of SRS in symbols from the set of symbols that occur within  from a last symbol of a CORESET where the UE detects the DCI format. The UE cancels the SRS transmission in remaining symbols from the subset of symbols; |   **For Subclause 11.1.1: (paragraph defining**  **is omitted below)**  *Note: “DCI format 2\_0 or” can be removed from the two sub-bullets.*   |  | | --- | | CSI-RS or PDSCH in a subset of symbols from the set of symbols, then  - 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  from a last symbol of a CORESET where the UE detects the DCI format;  - otherwise, the UE cancels the PUCCH, or PUSCH, or PRACH transmission in the set of symbols.  - the UE does not expect to cancel the transmission of SRS in symbols from the set of symbols that occur within  from a last symbol of a CORESET where the UE detects the DCI format. The UE cancels the SRS transmission in remaining symbols from the subset of symbols; | |
| Huawei | Support the CR |
| ZTE | Ok with the CR |
| Samsung | We are also OK with the CR after some modifications.  **Subcalause 11.1**   * We basically agree with Apple’s and Intel’s comments. As is a time unit, we propose the following wordings * the UE does not expect to cancel the transmission of SRS in symbols from the subset of symbols that start within  relative to a last symbol of a CORESET where the UE detects the DCI format. The UE cancels the SRS transmission in remaining symbols from the subset of symbols;   **Subcalause 11.1.1.**   * For smilar reasons with 11.1 * the UE does not expect to cancel the transmission of SRS in symbols from the subset of symbols that start within relative to a last symbol of a CORESET where the UE detects the DCI format 2\_0 or the DCI format. The UE cancels the SRS transmission in remaining symbols from the subset of symbols; |
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| **Company** | **Comments on the Rel. 16 CR** |
| CATT | **We support the text proposals.**  **For the cover page, we would like to propose the following addition to “reason for change”.**  A partial or full cancellation of uplink configured PUCCH/PUSCH/PRACH transmissions due to collision with PDSCH/CSI-RS or SFI dependent on the UE capability in Rel. 16. |
| **Spreadtrum** | **Support CRs** |
| **vivo** | **The following wording seems unclear for “remaining symbols”. Hope to make it clearer with**  -   the UE does not expect to cancel the transmission of SRS in symbols from the set of symbols that occur, relative to a last symbol of a CORESET where the UE detects the DCI format after a number of symbols that is smaller than . The UE cancels the SRS transmission in remaining symbols from the subset of symbols that occur after a numer of symbols that is greater than ; |
| Apple | Support in principle. Same comment as above. |
| Intel | Support in principle; similar suggestion as above.  **Subclause 11.1: (paragraph defining**  **is omitted below)**   |  | | --- | | 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 from 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, 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 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 from 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.  -   the UE does not expect to cancel the transmission of SRS in symbols from the set of symbols that occur within  from a last symbol of a CORESET where the UE detects the DCI format. The UE cancels the SRS transmission in remaining symbols from the subset of symbols; |   **Subclause 11.1.1: (paragraph defining**  **is omitted below)**  *Note: “DCI format 2\_0 or” can be removed from the two sub-bullets.*   |  | | --- | | 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 from 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, 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 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 from 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.  -   the UE does not expect to cancel the transmission of SRS in symbols from the set of symbols that occur within  from a last symbol of a CORESET where the UE detects the DCI format. The UE cancels the SRS transmission in remaining symbols from the subset of symbols. | |
| Huawei | Support the CR |
| ZTE | Ok with the CR |
| Samsung | * We are OK for this CR too. But for the same reason as Rel. 15 CR please consider this wording   **Subcalause 11.1**   * the UE does not expect to cancel the transmission of SRS in symbols from the subset of symbols that start within  relative to a last symbol of a CORESET where the UE detects the DCI format. The UE cancels the SRS transmission in remaining symbols from the subset of symbols;   **Subcalause 11.1.1**   * the UE does not expect to cancel the transmission of SRS in symbols from the subset of symbols that start within relative to a last symbol of a CORESET where the UE detects the DCI format 2\_0 or the DCI format. The UE cancels the SRS transmission in remaining symbols from the subset of symbols. |

# 3 CR for Release 15

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **38.213** | **CR** | **DRAFT** | **rev** |  | **Current version:** | **15.12.0** |  |
|  | | | | | | | | |
| *For* [***HELP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network | **X** | Core Network |  |

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| ***Title:*** | Correction for cancellation due to PDSCH/CSI-RS/SFI | | | | | | | | | |
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| ***Source to WG:*** | Qualcomm Incorporated | | | | | | | | | |
| ***Source to TSG:*** |  | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_newRAT-Core | | | | |  | ***Date:*** | | | 2021-01-18 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | F |  | | | | | ***Release:*** | | | Rel-15 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) Rel-12 (Release 12) Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16)* | |
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| ***Reason for change:*** | | A partial cancellation of uplink configured transmissions due to collision with PDSCH/CSI-RS or SFI is not supported in Rel. 15. | | | | | | | | |
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| ***Summary of change:*** | | Change the partial cancellation to full cancellation for PUCCH/PUSCH/PRACH | | | | | | | | |
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| ***Consequences if not approved:*** | | Incorrect UE behavior | | | | | | | | |
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| ***Clauses affected:*** | | 11.1 and 11.1.1 | | | | | | | | |
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|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
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| ***Other comments:*** | |  | | | | | | | | |
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| ***This CR's revision history:*** | |  | | | | | | | | |

## 11.1 Slot configuration

**<Unchanged parts are 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 1\_0, DCI format 1\_1, or DCI format 0\_1 indicating to the UE to receive CSI-RS or PDSCH in a subset of symbols from the set of symbols, then

- 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, relative to a last symbol of a CORESET where the UE detects the DCI format after a number of symbols that is smaller than ;

- otherwise, the UE cancels the PUCCH, or PUSCH, or PRACH transmission in the set of symbols.

-   the UE does not expect to cancel the transmission of SRS in symbols from the set of symbols that occur, relative to a last symbol of a CORESET where the UE detects the DCI format after a number of symbols that is smaller than . The UE cancels the SRS transmission in remaining symbols from the subset of symbols;

is the PUSCH preparation time for the corresponding UE processing capability [6, TS 38.214] assuming and corresponds to the smallest SCS configuration between the SCS configuration of the PDCCH carrying the DCI format and the SCS configuration of the SRS, PUCCH, PUSCH or , where corresponds to the SCS configuration of the PRACH if it is 15kHz or higher; otherwise .

**<Unchanged parts are omitted>**

## 11.1.1 UE procedure for determining slot format

**<Unchanged parts are 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 1\_0, DCI format 1\_1, or DCI format 0\_1 indicating to the UE to receive CSI-RS or PDSCH in a subset of symbols from the set of symbols, then

- 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, relative to a last symbol of a CORESET where the UE detects the DCI format 2\_0 or the DCI format after a number of symbols that is smaller than ;

- otherwise, the UE cancels the PUCCH, or PUSCH, or PRACH transmission in the set of symbols.

- the UE does not expect to cancel the transmission of SRS in symbols from the set of symbols that occur, relative to a last symbol of a CORESET where the UE detects the DCI format 2\_0 or the DCI format, after a number of symbols that is smaller than . The UE cancels the SRS transmission in remaining symbols from the subset of symbols;

is the PUSCH preparation time for the corresponding UE processing capability [6, TS 38.214] assuming and corresponds to the smallest SCS configuration between the SCS configuration of the PDCCH carrying the DCI format and the SCS configuration of the SRS, PUCCH, PUSCH or , where corresponds to the SCS configuration of the PRACH if it is 15kHz or higher; otherwise .

**<Unchanged parts are omitted>**

# 4 CR for Release 16

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| *CR-Form-v12.0* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **38.213** | **CR** | **DRAFT** | **rev** |  | **Current version:** | **16.4.0** |  |
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| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* | | | | | | | | |
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| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network | **X** | Core Network |  |

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| ***Title:*** | Correction for cancellation due to PDSCH/CSI-RS/SFI | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Qualcomm Incorporated | | | | | | | | | |
| ***Source to TSG:*** |  | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | NR\_newRAT-Core | | | | |  | ***Date:*** | | | 2021-01-18 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | F |  | | | | | ***Release:*** | | | Rel-16 |
|  | *Use one of the following categories:* ***F*** *(correction)* ***A*** *(mirror corresponding to a change in an earlier release)* ***B*** *(addition of feature),* ***C*** *(functional modification of feature)* ***D*** *(editorial modification)*  Detailed explanations of the above categories can be found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | | | | | | | | *Use one of the following releases: Rel-8 (Release 8) Rel-9 (Release 9) Rel-10 (Release 10) Rel-11 (Release 11) Rel-12 (Release 12)* *Rel-13 (Release 13) Rel-14 (Release 14) Rel-15 (Release 15) Rel-16 (Release 16)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | A partial or full cancellation of uplink configured transmissions due to collision with PDSCH/CSI-RS or SFI dependent on the UE capability in Rel. 16. | | | | | | | | |
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| ***Summary of change:*** | | Correcting the cancellation behavior based on the UE capability | | | | | | | | |
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| ***Consequences if not approved:*** | | Incorrect UE behavior | | | | | | | | |
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| ***Clauses affected:*** | | 11.1 and 11.1.1 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **Y** | **N** |  | | | |  | | |
| ***Other specs*** | |  | **X** | Other core specifications | | | | TS/TR ... CR ... | | |
| ***affected:*** | |  | **X** | Test specifications | | | | TS/TR ... CR ... | | |
| ***(show related CRs)*** | |  | **X** | O&M Specifications | | | | TS/TR ... CR ... | | |
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| ***Other comments:*** | |  | | | | | | | | |
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| ***This CR's revision history:*** | |  | | | | | | | | |

## 11.1 Slot configuration

**<Unchanged parts are 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, relative to a last symbol of a CORESET where the UE detects the DCI format, after a number of symbols that is smaller than ; otherwise, 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 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, relative to a last symbol of a CORESET where the UE detects the DCI format, after a number of symbols that is smaller than . 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.

-   the UE does not expect to cancel the transmission of SRS in symbols from the set of symbols that occur, relative to a last symbol of a CORESET where the UE detects the DCI format after a number of symbols that is smaller than . The UE cancels the SRS transmission in remaining symbols from the subset of symbols;

is the PUSCH preparation time for the corresponding UE processing capability [6, TS 38.214] assuming and corresponds to the smallest SCS configuration between the SCS configuration of the PDCCH carrying the DCI format and the SCS configuration of the SRS, PUCCH, PUSCH or , where corresponds to the SCS configuration of the PRACH if it is 15kHz or higher; otherwise .

**<Unchanged parts are omitted>**

## 11.1.1 UE procedure for determining slot format

**<Unchanged parts are 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, relative to a last symbol of a CORESET where the UE detects the DCI format 2\_0 or the DCI format, after a number of symbols that is smaller than ; otherwise, 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 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, relative to a last symbol of a CORESET where the UE detects the DCI format 2\_0 or the DCI format, after a number of symbols that is smaller than . 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.

-   the UE does not expect to cancel the transmission of SRS in symbols from the set of symbols that occur, relative to a last symbol of a CORESET where the UE detects the DCI format 2\_0 or the DCI format, after a number of symbols that is smaller than . The UE cancels the SRS transmission in remaining symbols from the subset of symbols.

is the PUSCH preparation time for the corresponding UE processing capability [6, TS 38.214] assuming and corresponds to the smallest SCS configuration between the SCS configuration of the PDCCH carrying the DCI format and the SCS configuration of the SRS, PUCCH, PUSCH or , where corresponds to the SCS configuration of the PRACH if it is 15kHz or higher; otherwise .

**<Unchanged parts are omitted>**

# 5 Outcome of the Email Discussion