**3GPP TSG RAN WG2 Meeting #110-e R2-200xxxx  
E-Conference, 1st – 12th June 2020**

**Agenda item: 5.4.1.1**

**Source: Qualcomm Incorporated**

**Title: Summary of Offline discussion#004: L1 Parameters (Qualcomm)**

**Document for: Discussion and Decision**

1. Introduction

This is a summary of below offline discussion:

**L1 Configuration**

* [AT110e][004][NR15] L1 Parameters (Qualcomm)

Scope: Treat R2-2004468, R2-2004469, R2-2005072, R2-2005073, R2-2005110, R2-2005111, R2-2004773, R2-2004774 (proponents are responsible to explain and drive)

Part 1: Decision whether to make corrections or not, identify agreeable corrections. Deadline: June 4, 0700 UTC.

Part 2: For agreeable parts, continuation to agree CRs. Deadline: June 10, 0700 UTC

Basically, it includes two topics (clarifications on SRS-CarrierSwitching and default BWP configuration), where the related CRs are list below:

Clarifications of SRS-CarrierSwitching

[R2-2004468](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2004468.zip) CR on SRS-CarrierSwitching ZTE Corporation, Sanechips, Qualcomm Incorporated CR Rel-15 38.331 15.9.0 1518 1 F NR\_newRAT-Core R2-2002698

[R2-2004469](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2004469.zip) CR on SRS-CarrierSwitching ZTE Corporation, Sanechips, Qualcomm Incorporated CR Rel-16 38.331 16.0.0 1602 - A NR\_newRAT-Core

[R2-2005072](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2005072.zip) Configuration of SRS Carrier Switching Ericsson discussion Rel-15 NR\_newRAT-Core

[R2-2005073](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2005073.zip) Corrections to configuration of SRS Carrier Switching Ericsson CR Rel-15 38.331 15.9.0 1646 - F NR\_newRAT-Core

[R2-2005110](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2005110.zip) Corrections to configuration of SRS Carrier Switching Ericsson CR Rel-16 38.331 16.0.0 1647 - A NR\_newRAT-Core

[R2-2005111](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2005111.zip) [DRAFT] Ambiguities related SRS Carrier Switching Ericsson LS out Rel-15 NR\_newRAT-Core To:RAN1

BWP configuration

[R2-2004773](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2004773.zip) Clarificaiton on the default BWP configuration Apple CR Rel-15 38.331 15.9.0 1625 - F NR\_newRAT-Core

[R2-2004774](file:///D:/Documents/3GPP/tsg_ran/WG2/RAN2/2005_R2_110-e/Docs/R2-2004774.zip) Clarificaiton on the default BWP configuration Apple CR Rel-16 38.331 16.0.0 1626 - A NR\_newRAT-Core

2. Discussion

## 2.1 Clarification on SRS-CarrierSwitching

Note that this topic was discussed in RAN2#109bis-e, and the conclusion is:

R2-2002698 CR on SRS-CarrierSwitching ZTE Corporation, Sanechips, Qualcomm Incorporated CR Rel-15 38.331 15.9.0 1518 - F NR\_newRAT-Core

[005]

- Chair: There is support for the proposals 2 and 3 in R2-2004116, i.e. the following:

Agree the clarification on typeA field (i.e. only use the first entry) as in R2-2002698.

Agree the clarification on srs-CC-SetIndexlist field for typeB case. Update R2-2002698 by taking into account the comment, i.e. to remove text (i.e. The network does not configure this field for typeB.) in the field descriptions for cc-IndexInOneCC-Set and cc-SetIndex.

- Chair: Ericsson requests for time to check.

- Chair: We can postpone to next meeting, but expect then to agree according to proposals above unless particular issues has been found.

* [005] postponed (to allow time to check)

The related RRC spec is in appendix for easy to check. Because rapporteur has not seen any proposals/issues in this RAN2 meeting to oppose the clarification, we think RAN2 can directly discuss how to make the clarification.

In our understanding, there are totally 3 spec changes in the CRs:

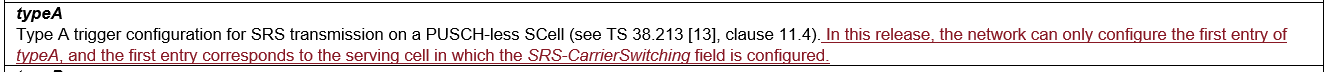
* #1: Clarification on *srs-TPC-PDCCH-Group* with 32 entries for type A

**Issue:** When IE *srs-TPC-PDCCH-Group* is set to *typeA,* it is defined as a structure of 32 entries of *SRS-TPC-PDCCH-Config*, which is per SCell configuration. It is not clear how to interrupt the meaning of each entry of this list.

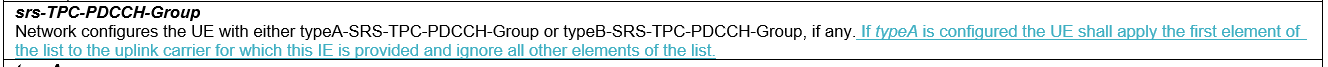
**Solution:** Both sets of CR ([R2-2004468](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2004468.zip)/[R2-2004469](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2004469.zip) and [R2-2005073](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2005073.zip)/[R2-2005110](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2005110.zip)) addressed this issue. Rapporteur think their principle is same, but solutions are slightly different. Thus, rapporteur think we don’t need to discuss whether this clarification is needed, and we can directly pick from them.

**Q1: On how to understand the structure of 32 entries of *SRS-TPC-PDCCH* for *typeA*, which clarification alternatives do you prefer?**

Alt-1 ([R2-2004468](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2004468.zip)/[R2-2004469](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2004469.zip)):



Alt-2 ([R2-2005073](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2005073.zip)/[R2-2005110](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2005110.zip)):



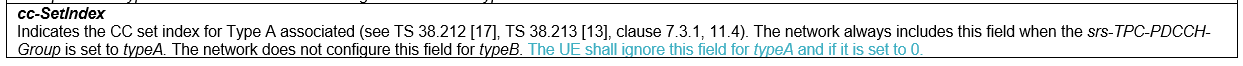
|  |  |  |
| --- | --- | --- |
| Company | Alt-1 or Alt-2? | Comments |
| Qualcomm | Alt-1 | We think the intention and principle of the two sets of CR are same. But Alt-2 will introduce a new UE requirement. In general, we should avoid new UE requirement as long as it can be avoided by the network. Thus, we prefer Alt-1 |
|  |  |  |

* #2: Clarification on *cc-SetIndex* for type A

**Issue:** As explained in discussion paper ([R2-2005072](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2005072.zip)), when comparing the *cc-SetIndex* and the number of SRS triggers. The *cc-SetIndex* has the range 0 to 3 (i.e. up to 4 values), but the SRS trigger in DCI format 2-3 can only take 3 values (Table 7.3.1.1.2-24 in TS 38.212). The fourth codepoint is reserved for "No aperiodic SRS resource set triggered", and 1st, 2nd, and 3rd sets of serving cells provided by higher layer. Thus, it seems to be a misalignment between 38.331 and 38.212.

**Solution:** Only one set of CR ([R2-2005073](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2005073.zip)/[R2-2005110](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2005110.zip)) addressed this issue. Because this issue was not discussed in last RAN2 meeting, Rapporteur think we need to discuss whether this clarification is needed.

**Q2: On the below clarification of *cc-SetIndex* for type A in CR (**[**R2-2005073**](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2005073.zip)**/**[**R2-2005110**](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2005110.zip)**)***,* **do you think whether it is needed? If “Yes”, do you agree the clarification made in** [**R2-2005073**](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2005073.zip)**/**[**R2-2005110**](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2005110.zip)**?**



|  |  |  |
| --- | --- | --- |
| Company | Need clarification? (Yes/No) | If you think the clarification is needed:   * Do you agree the change in [R2-2005073](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2005073.zip)/[R2-2005110](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2005110.zip)? * If you don’t agree the change, please provide your solution |
| Qualcomm | Yes | We don’t agree the changes in [R2-2005073](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2005073.zip)/[R2-2005110](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2005110.zip) because we think they are not aligned with RAN1 understanding:  **=============================================**  **RAN1 Chairman Notes #97:**  **R1-1907816**         Correction on SRS request field for SRS Carrier Switching in 38.212             Huawei, HiSilicon  Revised version of R1-1907506. No further discussion for Rel-15 in RAN1.  **Conclusion**  The first/second/third set in DCI description of SRS request field refers to cc-SetIndex 0/1/2 respectively.  In the above conclusion it means that   * SRS-request=01 <-> cc-SetIndex = 0 * SRS-request=10 <-> cc-SetIndex = 1 * SRS-request=11 <-> cc-SetIndex = 2   ============================================  Furthermore, similar to our comment in Q1, we prefer to avoid new UE requirement as long as it can be avoided by the network. Thus, we can accept the below revised change:  “For Type A SRS carrier switching configuration ~~the UE shall ignore~~ the network doesn’t configure the field cc-SetIndex ~~if it is set to 0~~ to 3 in this release of specification.” |
|  |  |  |

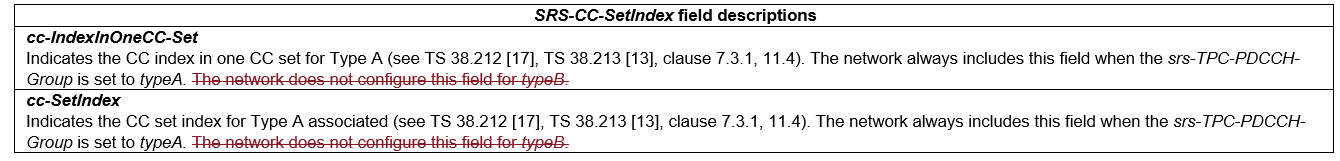
* #3: Clarification on *srs-CC-SetIndexlist* for type B

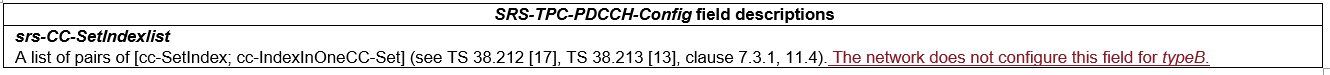
**Issue:** For Type B in NR, there is no need to configure any SRS CC set to UE, thus it is meaningless to invoke *SRS-TPC-PDCCH-Config* structure when the CHOICE is set to ‘*typeB*’. However, the field descriptions only mention the *cc-SetIndex* and *cc-IndexInOneCC-Set sub-field* are not applicable to *typeB*. Then it is confused whether *srs-CC-SetIndexlist* (with empty sub-fields) can be configured to the UE.

**Solution:** Both sets of CR ([R2-2004468](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2004468.zip)/[R2-2004469](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2004469.zip) and [R2-2005073](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2005073.zip)/[R2-2005110](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2005110.zip)) addressed this issue. Similar to change#1, Rapporteur think their principle is same, but solutions are slightly different. Thus, rapporteur think we don’t need to discuss whether this clarification is needed, and we can directly pick from them.

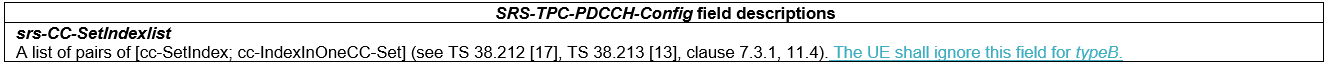
**Q3: On the clarification of *srs-CC-SetIndexlist for typeB****,* **which alternatives do you prefer?**

Alt-1 ([R2-2004468](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2004468.zip)/[R2-2004469](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2004469.zip)):





Alt-2 ([R2-2005073](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2005073.zip)/[R2-2005110](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2005110.zip)):



|  |  |  |
| --- | --- | --- |
| Company | Alt-1 or Alt-2? | Comments |
| Qualcomm | Alt-1 | We think the intention and principle of the two sets of CR are same. But Alt-2 will introduce a new UE requirement. In general, we should avoid new UE requirement as long as it can be avoided by the network. Thus, we prefer Alt-1 |
|  |  |  |

In addition, the discussion paper ([R2-2005072](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2005072.zip)) proposed to send LS to RAN1 to inform them of ambiguities in TS 38.212 and TS 38.214. And they provided their draft LS in [R2-2005111](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2005111.zip). Rapporteur think we need to discuss whether the LS to RAN1 is needed.

**Q4: Do you think it is necessary to send LS to RAN1 to inform them of ambiguities in TS 38.212 and TS 38.214**?

|  |  |  |
| --- | --- | --- |
| Company | Need LS? (Yes/No) | Comments (if you agree to send LS, any wording suggestion to [R2-2005111](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2005111.zip)?; if you don’t agree to send LS, provide the reason) |
| Qualcomm | No | In our understanding, the LS is intended to inform RAN1 if change#2 (i.e. clarification on *cc-SetIndex* for type A) is agreed. However, as we indicated in Q2, RAN1#97 had made it clear the mapping rule from 2-bit SRS-request to cc-SetIndex as follows:   * SRS-request=01 <-> cc-SetIndex = 0 * SRS-request=10 <-> cc-SetIndex = 1 * SRS-request=11 <-> cc-SetIndex = 2   Given the situation, we think it is better for RAN2 to follow the above RAN1’s conclusion. To avoid possible confusion in RAN1, we think it is sufficient to only make clarification in RRC, i.e. no need to send LS to RAN1 |
|  |  |  |

## 2.2 Clarification on the default BWP configuration

Regarding which issues that need resolution, it is suggested to use the reason for change from [R2-2004773](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2004773.zip)/[R2-2004774](file:///D:\Documents\3GPP\tsg_ran\WG2\RAN2\2005_R2_110-e\Docs\R2-2004774.zip) as the input:

|  |
| --- |
| As indicated in NOTE 1 in RRC spec, if the dedicated part of the initial BWP is absent, dynamic BWP switching between the initial BWP and the dedicated BWP cannot be supported.  NOTE 1: If the dedicated part of initial UL/DL BWP configuration is absent, the initial BWP can be used but with some limitations. For example, changing to another BWP requires *RRCReconfiguration* since DCI format 1\_0 doesn't support DCI-based switching.  Dynamic BWP switching can be activated via L1 DCI indication and the BWP inactivity timer. Upon the BWP inactivity timer expiry, UE will switch to the default BWP, and NW can switch UE from the defualt BWP to other BWP via L1 DCI indication.  According to the current spec, if the defualt BWP is not configured, UE will switch to the initialBWP upon the BWP inactivity timer expiry. But if there is no dedicated configuration of the initial BWP, only RRCReconfiguration can be used to switch UE out of the initial BWP, which is inconsistent to the dynamic BWP switching scheme.  To support the dynamic BWP switching, default BWP shall be always configured if there is no dedicated configuration of the initial BWP. |

**Q5: Do you agree with the reason for change in** [**R2-2004773**](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2004773.zip)**/**[**R2-2004774**](file:///D:\Documents\3GPP\tsg_ran\WG2\RAN2\2005_R2_110-e\Docs\R2-2004774.zip)**?**

|  |  |  |
| --- | --- | --- |
| Company | Yes/No | Comments |
| Qualcomm | Yes | Network should ensure that either a proper Initial BWP is configured (i.e. configured with common **and** dedicated configuration) so it’s not used in a limited manner, when no Default BWP is configured. Or network should ensure Default BWP is configured. |
|  |  |  |

In [R2-2004773](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2004773.zip)/[R2-2004774](file:///D:\Documents\3GPP\tsg_ran\WG2\RAN2\2005_R2_110-e\Docs\R2-2004774.zip), it is proposed to clarify that defaultBWP is always configured if the dedicated configuration of the initial BWP is not provided.

**Q6: If your answer is Yes for Q5, do you agree with the changes made in** [**R2-2004773**](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2004773.zip)**/**[**R2-2004774**](file:///D:\Documents\3GPP\tsg_ran\WG2\RAN2\2005_R2_110-e\Docs\R2-2004774.zip)**?**

|  |  |  |
| --- | --- | --- |
| Company | Yes/No | Comments |
| Qualcomm | Yes |  |
|  |  |  |

# 3. Conclusion

Will provide based on companies’ inputs.

# References

[1] [R2-2004468](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2004468.zip) CR on SRS-CarrierSwitching ZTE Corporation, Sanechips, Qualcomm Incorporated CR Rel-15 38.331 15.9.0 1518 1 F NR\_newRAT-Core R2-2002698

[2] [R2-2004469](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2004469.zip) CR on SRS-CarrierSwitching ZTE Corporation, Sanechips, Qualcomm Incorporated CR Rel-16 38.331 16.0.0 1602 - A NR\_newRAT-Core

[3] [R2-2005072](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2005072.zip) Configuration of SRS Carrier Switching Ericsson discussion Rel-15 NR\_newRAT-Core

[4] [R2-2005073](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2005073.zip) Corrections to configuration of SRS Carrier Switching Ericsson CR Rel-15 38.331 15.9.0 1646 - F NR\_newRAT-Core

[5] [R2-2005110](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2005110.zip) Corrections to configuration of SRS Carrier Switching Ericsson CR Rel-16 38.331 16.0.0 1647 - A NR\_newRAT-Core

[6] [R2-2005111](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2005111.zip) [DRAFT] Ambiguities related SRS Carrier Switching Ericsson LS out Rel-15 NR\_newRAT-Core To:RAN1

[7] [R2-2004773](file:///D:\Documents\3GPP\tsg_ran\WG2\TSGR2_110-e\Docs\R2-2004773.zip) Clarificaiton on the default BWP configuration Apple CR Rel-15 38.331 15.9.0 1625 - F NR\_newRAT-Core

[8] [R2-2004774](file:///D:/Documents/3GPP/tsg_ran/WG2/RAN2/2005_R2_110-e/Docs/R2-2004774.zip) Clarificaiton on the default BWP configuration Apple CR Rel-16 38.331 16.0.0 1626 - A NR\_newRAT-Core

# Appendix: Related RRC spec

-- ASN1START

-- TAG-SRS-CARRIERSWITCHING-START

SRS-CarrierSwitching ::= SEQUENCE {

srs-SwitchFromServCellIndex INTEGER (0..31) OPTIONAL, -- Need M

srs-SwitchFromCarrier ENUMERATED {sUL, nUL},

srs-TPC-PDCCH-Group CHOICE {

typeA SEQUENCE (SIZE (1..32)) OF SRS-TPC-PDCCH-Config,

typeB SRS-TPC-PDCCH-Config

} OPTIONAL, -- Need M

monitoringCells SEQUENCE (SIZE (1..maxNrofServingCells)) OF ServCellIndex OPTIONAL, -- Need M

...

}

SRS-TPC-PDCCH-Config ::= SEQUENCE {

srs-CC-SetIndexlist SEQUENCE (SIZE(1..4)) OF SRS-CC-SetIndex OPTIONAL -- Need M

}

SRS-CC-SetIndex ::= SEQUENCE {

cc-SetIndex INTEGER (0..3) OPTIONAL, -- Need M

cc-IndexInOneCC-Set INTEGER (0..7) OPTIONAL -- Need M

}

-- TAG-SRS-CARRIERSWITCHING-STOP

-- ASN1STOP

|  |
| --- |
| ***SRS-CC-SetIndex* field descriptions** |
| ***cc-IndexInOneCC-Set***  Indicates the CC index in one CC set for Type A (see TS 38.212 [17], TS 38.213 [13], clause 7.3.1, 11.4). The network always includes this field when the *srs-TPC-PDCCH-Group* is set to *typeA.* The network does not configure this field for *typeB*. |
| ***cc-SetIndex***  Indicates the CC set index for Type A associated (see TS 38.212 [17], TS 38.213 [13], clause 7.3.1, 11.4). The network always includes this field when the *srs-TPC-PDCCH-Group* is set to *typeA.* The network does not configure this field for *typeB*. |

|  |
| --- |
| ***SRS-CarrierSwitching* field descriptions** |
| ***monitoringCells***  A set of serving cells for monitoring PDCCH conveying SRS DCI format with CRC scrambled by TPC-SRS-RNTI (see TS 38.212 [17], TS 38.213 [13], clause 7.3.1, 11.3). |
| ***srs-SwitchFromServCellIndex***  Indicates the serving cell whose UL transmission may be interrupted during SRS transmission on a PUSCH-less SCell. During SRS transmission on a PUSCH-less SCell, the UE may temporarily suspend the UL transmission on a serving cell with PUSCH in the same CG to allow the PUSCH-less SCell to transmit SRS. (see TS 38.214 [19], clause 6.2.1.3). |
| ***srs-TPC-PDCCH-Group***  Network configures the UE with either typeA-SRS-TPC-PDCCH-Group or typeB-SRS-TPC-PDCCH-Group, if any. |
| ***typeA***  Type A trigger configuration for SRS transmission on a PUSCH-less SCell (see TS 38.213 [13], clause 11.4). |
| ***typeB***  Type B trigger configuration for SRS transmission on a PUSCH-less SCell (see TS 38.213 [13], clause 11.4). |

|  |
| --- |
| ***SRS-TPC-PDCCH-Config* field descriptions** |
| ***srs-CC-SetIndexlist***  A list of pairs of [cc-SetIndex; cc-IndexInOneCC-Set] (see TS 38.212 [17], TS 38.213 [13], clause 7.3.1, 11.4). |