**3GPP TSG-RAN WG2 Meeting #113bis-e *R2-210xxxx***

**Online, 12–20 April 2021**

**Agenda item: 6.3.4**

**Source: CATT**

**Title:** **Report of [AT113bis-e][608][POS] SP positioning SRS activation/deactivation MAC CE (CATT)**

**Document for: Discussion and Agreement**

# 1 Introduction

This is to report the result of the following email discussion in RAN2#113bis-e Meeting.

* [AT113bis-e][608][POS] SP positioning SRS activation/deactivation MAC CE (CATT)

      Scope: Discuss R2-2104504 including backward compatibility aspects, and determine if a revision is needed.

Intended outcome: Agreed CR if possible, in R2-2104412

Deadline: Tuesday 2021-04-20 0800 UTC

# 2 Contact Information

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# 3 Discussion

The length of the SRS resource ID within the filed Spatial Relation for Resource IDi with SRS within SP Positioning SRS Activation/Deactivation MAC CE is only 5bits, which is unable to indicate the maximum SRS resource or porsitioning SRS resource in Rel-16 for positioning. This CR was discussed online and decided as NBC change. Companies accept NBC and the length of the field should be extended during the online discussion.

R2-2104504 Corrections on SP Positioning SRS Activation and Deactivation MAC CE CATT CR Rel-16 38.321 16.4.0 1072 - F NR\_pos-Core

Here we will discuss if a description is needed for the bit order of the split fields and determine if a revision is needed.

## 3.1 Background of MAC PDU

According to the MAC PDU description in Medium Access Control (MAC) protocol specification TS38.321, more generally the bit string is to be read from left to right and then in the reading order of the lines. For your convience, the general description [1]was copied here:

# 6 Protocol Data Units, formats and parameters

## 6.1 Protocol Data Units

### 6.1.1 General

A MAC PDU is a bit string that is byte aligned (i.e. multiple of 8 bits) in length. In the figures in clause 6, bit strings are represented by tables in which the most significant bit is the leftmost bit of the first line of the table, the least significant bit is the rightmost bit on the last line of the table, and more generally the bit string is to be read from left to right and then in the reading order of the lines. The bit order of each parameter field within a MAC PDU is represented with the first and most significant bit in the leftmost bit and the last and least significant bit in the rightmost bit.

A MAC SDU is a bit string that is byte aligned (i.e. multiple of 8 bits) in length. A MAC SDU is included into a MAC PDU from the first bit onward.

A MAC CE is a bit string that is byte aligned (i.e. multiple of 8 bits) in length.

A MAC subheader is a bit string that is byte aligned (i.e. multiple of 8 bits) in length. Each MAC subheader is placed immediately in front of the corresponding MAC SDU, MAC CE, or padding.

The MAC entity shall ignore the value of the Reserved bits in downlink MAC PDUs.

Meanwhile, here is another example of some MAC CE which has split fields for your reference[1]:

The CORESET ID in TCI State Indication for UE-specific PDCCH MAC CE has split fields as below. We can find there is no description of order on it.

#### 6.1.3.15 TCI State Indication for UE-specific PDCCH MAC CE

The TCI State Indication for UE-specific PDCCH MAC CE is identified by a MAC subheader with LCID as specified in Table 6.2.1-1. It has a fixed size of 16 bits with following fields:

- Serving Cell ID: This field indicates the identity of the Serving Cell for which the MAC CE applies. The length of the field is 5 bits. If the indicated Serving Cell is configured as part of a simultaneousTCI-UpdateList1 or simultaneousTCI-UpdateList2 as specified in TS 38.331 [5], this MAC CE applies to all theServing Cells in the set simultaneousTCI-UpdateList1 or simultaneousTCI-UpdateList2, respectively;

- CORESET ID: This field indicates a Control Resource Set identified with ControlResourceSetId as specified in TS 38.331 [5], for which the TCI State is being indicated. In case the value of the field is 0, the field refers to the Control Resource Set configured by controlResourceSetZero as specified in TS 38.331 [5]. The length of the field is 4 bits;



Figure 6.1.3.15-1: TCI State Indication for UE-specific PDCCH MAC CE

## 3.2 Corrections on SP Positioning SRS Activation and Deactivation MAC CE

So we suggest to extend the length of the filed SRS resource ID within Spatial Relation for Resource IDi with SRS within SP Positioning SRS Activation/Deactivation MAC CE to 6bits without additional description which follows the rules in MAC protocol.

For your convience, the modifications in the CR were copied as below. You can also refer to the CR directly here: [https://www.3gpp.org/ftp/tsg\_ran/WG2\_RL2/TSGR2\_113bis-e/Inbox/Drafts/%5BOffline-608%5D%5BPOS%5D%20SP%20positioning%20SRS%20activationdeactivation%20MAC%20CE%20(CATT)](https://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_113bis-e/Inbox/Drafts/%5BOffline-608%5D%5BPOS%5D%20SP%20positioning%20SRS%20activationdeactivation%20MAC%20CE%20(CATT)" \o "here)

- SRS resource ID: When F1 is set to 0, the field indicates an index for SRS resource SRS-ResourceId as defined in TS 38.331 [5]; When F1 is set to 1, the field indicates an index for Positioning SRS resource SRS-PosResourceId as defined in TS 38.331 [5]. The length of the field is 6 bits;



Figure 6.1.3.36-4: Spatial Relation for Resource IDi with SRS

**Q1. Do you agree that the changes in the CR** **R2-2104504** **which is a NBC CR are needed? In the comment field please indicate if you request some changes in the CR.**

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| Company | Agree as it is;  Agree with changes;  Disagree | Detailed Comments |
| Intel |  | The suggestion from Huawei on the coversheet looks good to us. |
| Samsung | Agree with changes | As Intel said, Huawei’s proposals seems to be needed in the cover sheet. |
| MediaTek | See comment | This CR can be rendered backward compatible by defining the bit order so that the R bit becomes the MSB, rather than LSB, of the 6-bit field. We would also need a UE capability to indicate support of the 6-bit version of the field. Then, if the UE does not indicate support, the network uses the 5 LSBs to signal a value from 0 to 31 (same as a legacy network); if the UE does indicate support, the network uses the full 6-bit field.  So we suggest that there should be companion CRs to introduce a capability to 38.306/38.331, and the bit order should be changed in the MAC CR. |
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# 4 Conclusion

**TBD**

# 5 References

[1] TS 38.321 Medium Access Control (MAC) protocol specification V16.4.0

[2] R2-2104504 Corrections on SP Positioning SRS Activation and Deactivation MAC CE CATT CR Rel-16 38.321 16.4.0 1072 - F NR\_pos-Core