**3GPP TSG RAN WG1 Meeting #101-e R1-200xxxx**

**E-Meeting, May 25 – June 5, 2020**

**Agenda Item: 6.2.3.1.1**

**Source: Moderator (Huawei)**

**Title: Text proposal on additional SRS for carrier based switching**

**Document for: Discussion and Decision**

# Introduction

This document provides the text proposal as outcomes of the following email discussion [1]:

[101-e-LTE-LTE\_DL\_MIMO\_EE-01] Support of additional SRS for carrier based switching, dual connectivity and LAA/eMTC by 5/29 – Yubo (Huawei)

* Issues 2, 3, 4 in [R1-2004706](file:///C%3A%5CUsers%5Cwanshic%5COneDrive%20-%20Qualcomm%5CDocuments%5CStandards%5C3GPP%20Standards%5CMeeting%20Documents%5CTSGR1_101%5CDocs%5CR1-2004706.zip)

# Discussion

## TP on resource reservation to special subframes

**Reason for changes:**

The additional SRS symbols for carrier based switching has not been captured.

**Summary of changes:**

The collision handling of addition SRS symbol for carrier based switching is captured.

**Specs/sections impacted:**

36.213 sections 8.2

**Consequences if not approved:**

The collision handling of additional SRS symbols configured for carrier based switching is not complete.

**-----------------------------------------------------Start of Text Proposal-----------------------------------**

*<unchanged parts are omitted>*

8.2 UE sounding procedure

*<unchanged parts are omitted>*

For a TDD serving cell *d* not configured for PUSCH/PUCCH transmission, denote as *s*0(*d*)the corresponding serving cell whose UL transmissions may be interrupted as signalled by *srs-SwitchFromServCellIndex*. Define the set *S*(*d*)*=* {*s*0(*d*)… *s*N-1(*d*)} as the set of serving cells that meet the all the following conditions:

- {*s*0(*d*)… *s*N-1(*d*)} are in the same band as *s*0(*d*).

- {*s*0(*d*)… *s*N-1(*d*)} have the same CP as *s*0(d).

- {*s*0(*d*)… *s*N-1(*d*)} are in the same TAG as *s*0(d).

The following prioritization rules shall be applied in case of collision between a transmission of SRS over serving cell *d* and transmission of a physical signal/channel over a serving cell in set *S(d)*:

- If PUSCH/PUCCH transmission carrying HARQ-ACK/positive SR/RI/PTI/CRI/wideband PMI only (PUCCH reporting type 2a in Subclause 7.2.2) and/or PRACH on a serving cell in set *S(d)* overlaps in the same symbol with the SRS transmission (including any interruption due to uplink or downlink RF retuning time [10]) on serving cell *d*, then the UE shall not transmit trigger type 0/1 SRS or drop the overlapped symbol(s) of type 2 SRS (including any interruption due to uplink or downlink RF retuning time [10]). Otherwise,

- if PUSCH transmission carrying aperiodic CSI on a serving cell in set *S(d)* overlaps in the same symbol with the SRS transmission (including any interruption due to uplink or downlink RF retuning time [10]) in serving cell *d*, and if the SRS transmission is a type 0 SRS transmission, then the UE shall not transmit the type 0 SRS. Otherwise,

- if PUSCH transmission on a serving cell in set *S(d)* overlaps in more than one symbol with the SRS transmission (including any interruption due to uplink or downlink RF retuning time [10]) in serving cell *d*, then the UE shall drop the PUSCH transmission. If PUCCH/trigger type 0/1 SRS transmission on a serving cell in set *S(d)* overlaps in the same symbol with the SRS transmission (including any interruption due to uplink or downlink RF retuning time [10]) on serving cell *d*, the UE shall drop the PUCCH/trigger type 0/1 SRS transmission. If a subset of symbol(s) for type 2 SRS transmission on a serving cell in set *S(d)* overlaps with the SRS transmission (including any interruption due to uplink or downlink RF retuning time [10]) on serving cell *d*, the UE shall drop the subset of the symbol(s) for type 2 SRS on a serving cell in set *S(d)*.

In case an SRS transmission in subframe N on serving cell *d* is dropped due to a collision with a higher priority transmission (as defined above) in subframe N+1, and there is a lower priority transmission (as defined above) in subframe N that would have been dropped had the transmission in subframe N+1 not occurred, the UE is not required to transmit the lower priority transmission in subframe N.

The UE is not expected to be triggered to transmit type 2 SRS on serving cell *d* in subframe N that overlaps (including any interruption due to uplink or downlink RF retuning time [10]) with uplink subframe N-1 on a serving cell in set *S(d).*

*<unchanged parts are omitted>*

For a serving cell that is not a LAA SCell, a non-BL/CE UE configured for type 1/2 triggered SRS transmission on serving cell *c* upon detection of a positive SRS request in subframe *n*, slot *2n* or slot *2n+1* of serving cell *c* shall commence SRS transmission in the first subframe satisfying , and

-  if the positive SRS request in PDCCH/SPDCCH with DCI format 7-0A/7-1A is detected in slot *2n* or slot *2n+1,* for TDD

*- * if the UE is configured with higher layer parameter *shortProcessingTime* and the corresponding PDCCH with CRC scrambled by C-RNTI with DCI format other than DCI format 7-0A/7-0B/7-1E/7-1F/7-1G is in the UE-specific search space*,*

*- *otherwise, and

 for TDD serving cell *c* with  and for FDD serving cell *c*,

 for TDD serving cell *c* with 

where for FDD serving cell *c*  is the subframe index within the frame , for TDD serving cell *c*, if the UE is configured with the parameter *srs-UpPtsAdd* for trigger type 1,  is defined in Table 8.2-6; otherwise  is defined in Table 8.2-3. For a TDD serving cell not configured for PUSCH/PUCCH transmission and the positive SRS request detected in PDCCH/EPDCCH scheduling PDSCH and the UE configured with *soundingRS-FlexibleTiming-r14* by higher layer signalling, if the trigger type 1 SRS transmission (including any interruption due to uplink or downlink RF retuning time [10]) in the first subframe  happens to overlap with a HARQ-ACK transmission for any serving cell, the UE shall commence trigger type 1 SRS transmission in subframe *n + k + l*, where *l* = max( 5, ). The *soundingRS-FlexibleTiming-r14* if configured by higher layer signaling is not applied to trigger type 2 SRS.

*<unchanged parts are omitted>*

**------------------------------------------------------End of Text Proposal------------------------------------**

# References

1. R1-200xxxx Feature summary on 101-e-LTE-LTE\_DL\_MIMO\_EE-01 Moderator (Huawei)