**3GPP TSG RAN WG1 #117 R1-240xxxx**

**Fukuoka City, Fukuoka, Japan, May 20th – 24th, 2024**

**Source: Moderator (ZTE)**

**Title: Moderator summary on SRS BW aggregation**

**Agenda item: 5**

**Document for: Discussion and Decision**

# Introduction

In RAN1#116 meeting, the following agreement was made for SRS bandwidth aggregation, and the corresponding LS was sent to RAN2 [1].

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| **Agreement**  RAN1 understands that the current RRC ASN.1 only supports single “aggregated combination”, in which only one SRS resource set from each of the 2 or 3 carriers are aggregated, e.g. CC#1 SRS resource set 1 + CC#2 SRS resource set 2 + CC#3 SRS resource set 3. RAN1 suggests to extend the number of such “aggregated combinations” to up to 32. Send an LS to RAN2 and RAN3. |

In this meeting, an LS R2-2403807 (R1-240xxxx) from RAN2 is sent to RAN1. The contents of RAN2 LS in [2] is copied below.

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| **1. Overall Description:**  RAN2 thank RAN1 for the LS on SRS bandwidth aggregation, and would like to ask RAN1, for which RRC state the up to 32 combinations can be applied to? (e.g. RRC\_CONNECTED, RRC\_INACTIVE, or both)  **2. Actions:**  **To RAN1**  **ACTION:** RAN2 respectfully asks RAN1 to answer the above question. |

Per Chair’s guidance, this document presents the moderator summary of submitted contributions to AI 5 to the LS from RAN2 [2].

R1-2403824 LS to RAN1 on bandwidth aggregation RAN2, ZTE

# Discussion

Based on the submitted contributions, companies’ views are summarized here:

* Option 1: 32 for both RRC\_CONNECTED and RRC\_INACTIVE states
  + Intel, Spreadtrum, Nokia, vivo, CATT, Huawei, Qualcomm, Ericsson
* Option 2: 32 for RRC\_CONNECTED, and 16 for RRC\_INACTIVE
  + ZTE
* Option 3: 32 for RRC\_CONNECTED, 4 for RRC\_INACTIVE
  + OPPO
* Based on the above views, there is consensus for the following observation:

**The up to 32 aggregated combinations are applicable to RRC\_CONNECTED**

* For RRC\_INACTIVE state, because the maximum number of SRS resource sets in a carrier is 16 (the same as RRC\_CONNECTED), hence all companies think at least 16 combinations should be supported. The controversial part is whether to support 2 (the number of carrier combinations) in frequency domain.
  + Majority supports option 1, i.e. 2x16 should be supported.
  + However, ZTE supporting option 2 thinks only 1 carrier combination can be supported based on the previous RAN1 agreement as shown below, where only maximum 2 additional carriers for positioning aggregation are supported, i.e. totally 3 carriers. It is impossible to get 2 combinations in frequency domain. OPPO prefers to further limit the number to 4.

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| **Agreement**  To support intra-band contiguous SRS bandwidth aggregation for UE in RRC \_INACTIVE state, frequency information (e.g. point A, offset to carrier) of one or two additional carriers with respective SRS configurations should be provided to the UE , where the newly introduced carrier(s) and the carrier of the initial BWP should be intra-band contiguous carriers. |

Based on the above analysis and the existing RAN1 agreement, moderator suggests the following proposal

***Proposal :*** *Reply RAN2 LS that up to 32 aggregated combinations are applicable to RRC\_CONNECTED state. RAN1 thinks up to 16 aggregated combinations should be sufficient for RRC\_INACTIVE state.*

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| **Companies** | **Comments** |
| CATT | We don’t think previous agreement has such limitation to “16 aggregated combinations for RRC\_INACTIVE state”. But, considering that in practice there may no need to support more 16 aggregated combinations for RRC\_INACTIVE state, we can accept either 16 or 32 aggregated combinations for RRC\_INACTIVE state. |
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# Reference

1. R2-2402108/R1-2401708 LS on bandwidth aggregation for positioning
2. R2-2403807 LS to RAN1 on bandwidth aggregation
3. R1-2403986 Draft LS reply on SRS bandwidth aggregation Intel Corporation
4. R1-2404010 Discussion on LS on bandwidth aggregation Spreadtrum Communications
5. R1-2404051 Draft Reply LS to RAN2 on bandwidth aggregation Nokia
6. R1-2404140 Draft reply LS on bandwidth aggregation vivo
7. R1-2404356 Discussion on bandwidth aggregation CATT
8. R1-2404357 Draft reply LS on bandwidth aggregation CATT
9. R1-2404828 Discussion on RAN2 LS on bandwidth aggregation OPPO
10. R1-2404950 Discussion on RAN2 LS to RAN1 on bandwidth aggregation Huawei, HiSilicon
11. R1-2404982 Draft reply LS on SRS BW aggregation ZTE
12. R1-2404983 Discussion on SRS BW aggregation ZTE
13. R1-2405133 Draft Reply to LS to RAN1 on bandwidth aggregation Qualcomm Incorporated
14. R1-2405286 Discussion on LS to RAN1 on bandwidth aggregation Ericsson