**3GPP TSG-RAN WG2 #109e R2-2002204**

**Elbonia, 24th February – 6th March, 2020**

**Title:** LS to RAN1 on preamble-to-PRU mapping for 2-step CFRA

**Release:** Rel-16

**Work Item:** NR\_2step\_RACH-Core

**Source:** RAN2

**To:** RAN1

**Contact Person:**

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**1. Overall Description:**

During the RAN2#109e meeting, RAN2 took the following agreements on the signaling of CFRA:

**Agreements**

**For 2-step CFRA**

1 Support dedicated msgA PUSCH resources, i.e non-shared msgA PUSCH resources between CFRA and CBRA.

2 For dedicated msgA PUSCH resources, the full msgA PUSCH configuration is signaled in RACH-ConfigDedicated

3 Dedicated msgA PRACH occasions are optionally configured for 2-step CFRA. If not configured, msgA PRACH occasions for 2-step CBRA are used.

The remaining issue for CFRA after these agreements was identified as part of the open issue summary on Control Plane [1]. The remaining issue is regarding the preamble-to-PRU mapping for CFRA and how to map a preamble (for the case of CFRA and CBRA having shared RO, i.e the UE is given dedicated preamble(s) to be used in the same RACH occasion(s) as for CBRA) to a dedicated CFRA msgA PUSCH resource. Currently RAN2 have discussed two alternatives for mapping:

**Alt 1:** Reusing the preamble-to-PRU mapping rule defined by RAN1 used for CBRA and signaling the number of preambles(field *msgA-TotalNumberOfCFRAPreambles*) and an offset to be used for the start of the preamble in each SSB/CSI-RS RACH occasion(field *msgA-PreambleStartIndex*)[2].

**Alt 2:** Not using the preamble-to-PRU mapping but defining an index pointing to the PRU within the dedicated PUSCH occasion in each SSB/CSI-RS(field *pusch-OccasionIndex*)[3]. This index is defined by increasing order of frequency resource index, time resources, and indices for PUSCH slots corresponding to a PRACH slot.

Among the companies in RAN2 the support for alternative 1 is a lot larger, thus we expect RAN1 to first consider alternative 1.

For CFRA, RAN2 respectfully asks RAN1 to take the above alternatives into consideration and answer the following questions:

Q1: Is Alt1 feasible/preferable from RAN1 perspective? and if so, RAN2 kindly requests RAN1 to implement Alt1 and confirm whether the signaling parameters (i.e. *msgA-TotalNumberOfCFRAPreambles* and *msgA-PreambleStartIndex*) are all that are needed.

Q2: If Alt1 is not feasible or preferable from RAN1 perspective, consider Alt2 and provide feedback on the necessary signaling to support Alt2 (i.e. indicate whether *pusch-OccasionIndex* is the only parameter that is need to support this alternative).

**2. Actions:**

**To RAN1:**

**ACTION:** RAN2 respectfully ask RAN1 to take the above considerations when specifying the preamble-to-PRU mapping and reply to RAN2 on the required signaling to identify a PRU in a dedicated PUSCH occasion.

**3. Date of Next TSG-RAN WG2 Meetings:**

RAN-WG2 Meeting #109bis Sapporo, Japan 20-24 April, 2020

RAN-WG2 Meeting #110 Athens, Greece 25-29 May, 2020

RAN-WG2 Meeting #111 Toulouse, France 24-28 Aug, 2020

**4. References**

[1] R2-2001917, Summary of CP open issues, Ericsson, RAN2#109e

[2] R2-2000998, Resource configuration for 2-step CFRA, ZTE, RAN#109e

[3] R2-2000224, PUSCH Resource Configuration for 2 step CFRA, Samsung, RAN2#109e