**3GPP TSG-RAN WG2 Meeting #109bis-e R2-20xxxxx**

**Online, 20 – 30 April 2020**

**Title: [Draft]** LS on Intra-UE Prioritization

**Response to:** -

**Release:** Release 16

**Work Item:** FS\_NR\_IIOT

**Source:** Nokia, Nokia Shanghai Bell [TSG RAN WG2]

**To:** TSG RAN WG1

**Cc:**

**Contact Person:**

#### Name: Ping-Heng (Wallace) Kuo

E-mail Address: ping-heng\_dot\_kuo\_at\_nokia\_dot\_com

**Send any reply LS to: 3GPP Liaisons Coordinator,** **mailto:3GPPLiaison@etsi.org**

**Attachments:** -

**1. Overall Description:**

For intra-UE prioritization cases with uplink grants overlapping in time (i.e. DG v.s. CG collision and CG v.s. CG collision), it was agreed in RAN2 #108 that prioritization in MAC should be determined based on the highest logical channel (LCH) priority of data that can be conveyed by each grant, as well as considering the data availability in the buffer of these LCHs:

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| **RAN2 #108 Chairman’s Notes:*** For CGCG conflicts, and CGDG conflicts, the priority value of an uplink grant (UL-SCH resource) is the highest priority of the LCHs that is multiplexed or can be multiplexed in MAC PDU, taking into account LCH restrictions and data availability.
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This agreement is already captured in the latest MAC specifications, TS 38.321 v16.0.0. Furthermore, it was concluded in RAN2 #109e that there can be situations where MAC delivers two MAC PDUs for the two conflicting grants to PHY sequentially when the conflicting grants have the same L1 priority, and the second MAC PDU carries data with higher LCH priority (due to e.g. late traffic arrival) than the first MAC PDU:

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| **RAN2 #109e Chairman’s Notes:*** Observation, acc to current R2 agreements: In case that two MAC PDUs with the same L1 priority (i.e. high-high or low-low) are delivered by MAC, the second PDU has priority from RAN2 perspective (based on LCH priority).
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Since there are 16 LCH priority levels, from MAC perspective, the second PDU should be prioritized and processed as it has higher priority data, in spite of the same L1 priority between the conflicting grants. However, it is RAN2’s understanding that PHY may not transmit this second PDU, e.g. the PUSCH of a dynamic grant would always prioritize the PUSCH of a conflicting configured grant with the same L1 priority regardless of the LCH priority of carried data. Hence, there is a gap between RAN1 and RAN2 that has to be resolved.

RAN2 has concluded two possible options to address this gap:

1. RAN2 changes MAC specification to accommodate current PHY behaviour. With this option, MAC will avoid providing second MAC PDU with the same L1 priority to PHY, meaning that PHY would transmit the packet with lower LCH priority data.
2. RAN1 changes PHY specification to accommodate current MAC behaviour of prioritizing the second MAC PDU provided from MAC.

RAN2 has considered how Option 1 can be proceeded in MAC specification but no solid conclusion has been drawn. As the issue concerns both PHY and MAC layers, RAN2 would like to request feedback from RAN1 on the preferred way to eliminate this gap.

**2. Actions:**

**To RAN1 group.**

**ACTION:** RAN2 respectfully asks RAN1 to take the above information into account and provide feedback on which option is more feasible/appropriate as the way forward to resolve the RAN1/RAN2 gap identified in this LS.

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

3GPPRAN2#110e 01 Jun -12 Jun 2020 Online

3GPPRAN2#111 24 Aug -28 Aug 2020 Toulouse, France