3GPP TSG-RAN WG4 Meeting # 98-bis-e R4-2105417

**Electronic Meeting, 12th – 20th April, 2021**

**Title: Reply LS on PUCCH and PUSCH repetition**

**Response to: LS R1-2009784 on PUCCH and PUSCH repetition**

**from RAN1**

**Release: Rel-17**

**Work Item: NR\_cov\_enh-Core**

**Source: RAN4**

**To: RAN1**

**Cc:**

**Contact person: Ville Vintola**

**vvintola { a } qti.qualcomm.com**

**858- three six one - 8110**

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

**Attachments:** R4-2103393 Reply on LS on PUCCH and PUSCH repetition

# 1 Overall description

RAN4 has continued the discussion about the open items in previous reply on the same topic as highlighted below:

* In scenario of no more than *X* un-scheduled OFDM symbols in-between the PUSCH or PUCCH repetition (e.g., *X* = 0, 1, 2, …, 14), and scenario of other physical signals/channels in-between PUCCH or PUSCH repetitions from the UE perspective, e.g., SRS or PUCCH transmission in-between the PUSCH repetition for the UE, RAN4 is still discussing if X can be non-zero value and UE can maintain phase continuity
* RAN4 answer 3: If the conditions for phase continuity cross PUSCH or PUCCH repetitions are fulfilled, the same power level (with certain tolerance level) can also be achieved. The certain tolerance level is still under discussion in RAN4.

RAN4 confirms the feasibility of phase continuity and power consistency for non-zero un-scheduled gap case for a gap less than 14 symbols when UE is not required to meet the existing off power requirements. Whether new off power requirements for shorter duration than 1 msec as well as the maximum value of X un-scheduled symbols will be introduced are pending on further RAN4 discussions. For the case with other UL channels in between repetitions, at least if the other scheduled signals/channels during the non-zero gap have the same settings in antenna port, occupied PRBs and UL power than the repeated transmission signals/channels, it is feasible to maintain the phase continuity and power consistency across the repetitions.

For the phase tolerance level, RAN4 is planning to perform further studies in following meetings.

# 2 Actions

**To RAN1**

**ACTION: To RAN1**

RAN4 respectfully asks RAN1 to the above information in account in their work

# 3 Dates of next WG4 meetings

TSG-RAN WG4 Meeting #99-e May 2021 E-meeting

TSG-RAN WG4 Meeting #100-e Aug 2021 E-meeting