3GPP TSG-RAN WG4 Meeting # 98-bis-e TDoc <TDocNumber>

**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**

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**Send any reply LS to: 3GPP Liaisons Coordinator,** **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 has concluded that phase can be maintained between repetitions for non-zero symbols gap if the gap is at most [TBD] symbols. RAN4 OFF power requirement is specified to be met with the duration of at least a 1 msec. With the gap less than the minimum duration for the OFF power, it is unclear if UE can meet the OFF power requirement in the gap.

 For the case with other UL channels in between repetitions, Ran4 has concluded that phase can be maintained if the gap between the repetitions is less than [TBD] symbols and the a guard period between any UL channel and the first symbols of next transmission part of the repetition bundle is allowed. Length of the guard period is [TBD] symbol(s). Ran4 would like to remind that the power of the PUSCH/PUCCH transmissions part of same repetitions must be the same also for this case but the power of the channel in between repetitions not part of the repetition can be different.

# 2 Actions

**To <destination\_group(s)\_to>**

**ACTION:** [Your Group] asks [RANx, SAx, CTx] to …

Guidance – Provide clear information on what the destination group(s) must do, and by when

# 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