**3GPP TSG RAN WG1 #108-e R1-22XXXXX**

**e-Meeting, February 21st – March 3rd, 2022**

**Source: Moderator (vivo)**

**Title: Summary of [108-e-R16-NR-U-02] Issue#T1: Channel access procedures for consecutive UL transmissions**

**Agenda Item: 7.2.2**

**Document for: Discussion and Decision**

1. **Introduction**

The document is to collect companies’ inputs and provide a summary for the email discussion thread

[108-e-R16-NR-U-02] Email discussion/approval on channel access procedures for consecutive UL transmissions (Issue T1 in R1-2202492) by February 25 – Gen Li (vivo)

Companies are highly appreciated providing your Round 1 inputs before the 1st checkpoint:

* **1st checkpoint:** **22nd Feb. 23:59 UTC**

1. **Discussions**

## Background

In RAN1#100bis meeting, the following agreement is made for multiple PUSCHs scheduled by a single UL grant:

Agreement:

For LBT type and CP extension, after failing to transmit first PUSCH(s) of a set scheduled by a single UL grant,

* If a UE fails to access the channel with UL Type 2B channel access, Type 2A UL channel access shall be used for the following consecutively scheduled transmissions.
* If a UE fails to access the channel prior to the first of the consecutive UL transmissions, it shall use “0” CP extension for the subsequent UL transmissions irrespective of the CP extension indicated in the scheduling grant.

In TS 37.213 [1], the channel access procedures for consecutive UL transmissions using one or more UL grant(s) or DL assignment(s) are described as below:

4.2.1.0.1 Channel access procedures for consecutive UL transmission(s)

For contiguous UL transmission(s), the following are applicable:

- If a UE is scheduled to transmit a set of UL transmissions using one or more UL grant(s) or DL assignment(s), and if the UE cannot access the channel for a transmission in the set prior to the last transmission according to one of Type 1, Type 2, or Type 2A UL channel access procedures, the UE shall attempt to transmit the next transmission according to the channel access type indicated in the corresponding UL grant or DL assignment. Otherwise, if the UE cannot access the channel for a transmission in the set prior to the last transmission according to Type 2B UL channel access procedure, the UE shall attempt to transmit the next transmission according to Type 2A UL channel access procedure.

In [1], it is found that the above spec is not aligned with the above agreement since the “otherwise” part includes the case that multiple consecutive UL transmissions are scheduled by multiple UL grant(s). This misalignement may bring problem for some certain scenarios such as the following example:



If following current spec below in 37.213, if Type 2B for PUSCH 1 failed, PUSCH2 and PUSCH3 will be transmitted by performing Type 2A LBT, which is not correct since it is already out of COT. Therefore, CRs in [3] and [4] are proposed to solve the misalignment.

## Company views (Round 1)

Please kindly provide your views in the table below.

##### Question 1: Do you agree that the above-mentioned spec in TS 37.213 is not aligned the agreement made in RAN1#100bis meeting?

* **Please provide the reason if you don’t agree.**

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| --- | --- | --- |
| Company | Agree or not | Comment |
| Huawei, HiSilicon | Not agree | This issue has been discussed before. We think that the current spec is clear enough. It is true that “otherwise” part includes the case of multiple consecutive UL transmissions scheduled by multiple UL grant(s). However, this should be handled by proper gNB scheduling. For instance, in the example shown in the figure above, gNB would not schedule consecutive PUSCH2 and PUSCH3 immediately after PUSCH1 with Type 1 channel access procedure indicated while there is no time gap to perform the Type 1 procedure and initiate a new COT in the first place.  Therefore, we do not think the proposed TP is needed. |
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##### Question 2: Do you support the following TP for solving the mis-alignement?

* **TP1** in [1]

------------------------------------------------------**TP1 for 37.213 Section 4.2.1.0.1**---------------------------------------------------

<unchanged part omitted>

4.2.1.0.1 Channel access procedures for consecutive UL transmission(s)

For contiguous UL transmission(s), the following are applicable:

- If a UE is scheduled to transmit a set of UL transmissions using one or more UL grant(s) or DL assignment(s), and

- if the UE cannot access the channel for a transmission in the set prior to the last transmission according to one of Type 1, Type 2, or Type 2A UL channel access procedures, the UE shall attempt to transmit the next transmission according to the channel access type indicated in the corresponding UL grant or DL assignment.

- if the UE cannot access the channel for a transmission in the set prior to the last transmission according to Type 2B UL channel access procedure and if the next transmission is scheduled by the same UL grant or DL assignment as that for the transmission, the UE shall attempt to transmit the next transmission according to Type 2A UL channel access procedure. Otherwise, if the next transmission is scheduled by a different UL grant or DL assignment from that for the transmission, the UE shall attempt to transmit the next transmission according to the channel access type indicated in the corresponding UL grant or DL assignment.

<unchanged part omitted>

------------------------------------------------------**TP1 for 37.213 Section 4.2.1.0.1**---------------------------------------------------

* **Please provide your comment for TP1.**

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| --- | --- | --- |
| Company | Support or not | Comment |
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## Summary of Round1

[TBD]

**Conclusion**

[TBD]

**Reference**

1. TS 37.213 Physical layer procedures for shared spectrum channel access, V16.6.0.
2. R1-2201067, Discussion on channel access procedures for consecutive UL transmissions, vivo
3. R1-2201068, Correction on channel access procedures for consecutive UL transmission(s), vivo
4. R1-2201069, Correction on channel access procedures for consecutive UL transmission(s), vivo