**3GPP TSG-RAN WG2 Meeting #131bis R2-250xxxx**

**Prague, Czech Republic, Oct. 13th-17th, 2025**

**Agenda item: 8.12.1**

**Source: Samsung**

**Title: Report of Rel-19 MIMO MAC open issues for maintenance**

**WID/SID: NR\_MIMO\_Ph5**

**Document for: Discussion and Decision**

# Introduction

This offline discussion aims to collect Rel-19 MIMO MAC open issues for maintenance according to the instruction below indicated in email thread **[POST131][000][Organizational] Schedule and Agenda** and in the RAN2#131bis meeting agenda.





The following CR review offline discussion is used to expand the scope to gather open issues.

* [Post131][217][MIMO\_Ph5] CR for TS 38.321 (Samsung)

Intended outcome: ~~Agree the CR for TS 38.321~~ and collect open issues for maintenance.

Deadline: **phase-1 Sep. 19th 1000 UTC; phase-2 Sep. 26th 1000 UTC.**

For phase-1 discussion, companies are invited to provide identified open issues and the corresponding suggested solutions by **Sep. 19th 1000 UTC**, so that Rapporteur can summarize the issues to be discussed in phase-2.

For phase-2 discussion by **Sep. 26th 1000 UTC**, companies please share views on the issues summarized by the Rapporteur. Based on the comments, Rapporteur will list the easy issues with promising solutions and the controversial issues to be further discussed based on tdoc contribution.

Companies are encouraged to spend time early to identify open issues and utilize this offline discussion to provide inputs in order to facilitate the tdoc preparation and the discussion at RAN2#131bis.

# Discussion

For phase-1 discussion by Sep 19th 1000 UTC, please provide the description of the identified issues and the potential solutions. As the outcome of phase-1 discussion, Rapporteur will indicate the issues to be discussed in phase-2. Some easy issues may not need phase-2 discussion.

* The identified issue should have potential MAC impact. Issues can include the ones discussed/proposed in RAN2 before but not solved/concluded, the ones with RAN2 impact caused by other WG (e.g., RAN1) but not identified before, and so on.
* For the proposed solution, companies are encouraged to provide the detailed TP, or if not possible, a high-level proposal at least.

For phase-2 discussion by Sep 26th 1000 UTC, please provide comments on the issues/solutions listed in phase-1 discussion outcome.

Companies are also encouraged to indicate miscellaneous and non-controversial issues (including editorial issues) here. Such issues can be provided until Sep 26th 1000 UTC and will be directly handled in the Rapporteur CR to be submitted to RAN2#131bis.

Please use the template below and fill in each block for one issue.

# [ASUSTeK] [Issue-1]

**[Issue Description]**:

The PUCCH resource of a UEI report configuration of a SCell can be configured on a PUCCH Cell associated with a different TAG from the SCell:



Currently, in this case, when TAT of a TAG of the SCell expires and PUSCH transmission for the CSI report becomes unavailable, the PUCCH resource of a UEI report configuration of the SCell is not released when the PUCCH resource is configured on a PUCCH Cell with a different TAG. This will cause unnecessary PUCCH transmission and the PUCCH resource will be occupied by the UE and cannot be reallocated for other uses. In addition, if RAN2 decides to not release PUCCH resource in this case, behavior of UEI beam reporting should be clarified when no PUSCH is available for CSI report (i.e., whether the UE still transmits the PUCCH when no PUSCH is available for CSI report).

**[Proposed Solution]**:

**Proposal 1: RAN2 to select from one of the options for UEI beam reporting in the following scenario: Upon STAG TAT expiry associated with a SCell configured with a UEI report configuration, if the PUCCH resource of the UEI report configuration is configured on a PCell or PUCCH-SCell of a different TAG with a running TAT, the UE:**

* + - * **Option 1: releases the PUCCH resource.**
      * **Option 2a: does not release the PUCCH resource. If a UEI beam report is triggered for the SCell, the UE transmits the PUCCH and does not transmit the PUSCH for the UEI beam report.**
      * **Option 2b: does not release the PUCCH resource. If a UEI beam report is triggered for the SCell, the UE does not transmit the PUCCH for the UEI beam report.**

**Proposal 2: Based on the selected option in P1, RAN2 to discuss spec impact for handling UEI report upon SCell TAT expiry.**

Possible TPs for each option are as below:

TP for option 1 (38.331):

|  |
| --- |
| 5.3.12 UE actions upon PUCCH/SRS release request  Upon receiving a PUCCH release request from lower layers, for all bandwidth parts of an indicated serving cell the UE shall:   1. release PUCCH-CSI-Resources configured in *CSI-ReportConfig*;   1> release PUCCH-CSI-Resources configured in *LTM-CSI-ReportConfig*;  1> release *SchedulingRequestResourceConfig* instances configured in *PUCCH-Config*;   1. release *pucch-Resource* configured in the *CSI-ReportUE-IBR*;   1> if the indicated serving cell is referred to by *pucch-Cell* included in *CSI-ReportUE-IBR* of an associated *CSI-ReportConfig*;  2> release *pucch-Resource* indicated in the associated *CSI-ReportUE-IBR*; |

TP for option 2 (38.321):

|  |
| --- |
| 5.2 Maintenance of Uplink Time Alignment  …  1> when a *timeAlignmentTimer* expires:  …  2> else:  3> if the *timeAlignmentTimer* is associated with a TAG for an SCell configured with only this TAG; or  3> if the *timeAlignmentTimer* is associated with a TAG for an SCell, and if the SCell is configured with two TAGs and *the timeAlignmentTimer* associated with the other TAG is not running:  4> flush all HARQ buffers for all such SCells;  4> notify RRC to release PUCCH, if configured on all such SCells;  4> notify RRC to release SRS, if configured for all such SCells;  4> clear any configured downlink assignments and configured uplink grants for all such SCells;  4> clear any PUSCH resource for semi-persistent CSI reporting for all such SCells;  4> maintain NTA (defined in TS 38.211 [8]) of this TAG.  … |

TP for option 2a (change can also be made in 38.321):

|  |
| --- |
| (38.214)  5.2.1.5.4 UE Initiated reporting  …  If the number of event instances determined by the counter for such reference signal is greater than or equal to *eventInstanceCount*, the UE transmits UEIRI on a PUCCH format 0 or format 1 in the PUCCH resource (in the CC provided by *pucchCell,* if configured, in the *CSI-ReportConfig*) configured by *PUCCHResource* in the *CSI-ReportConfig*. If *timeAlignmentTimer* associated with the Cell configured with the *CSI-ReportConfig* expires, the UE does not send a CSI report via PUSCH resource after transmission of UEIRI. |

TP for option 2b (change can also be made in 38.321):

|  |
| --- |
| (38.214)  5.2.1.5.4 UE Initiated reporting  …  If the number of event instances determined by the counter for such reference signal is greater than or equal to *eventInstanceCount* and *timeAlignmentTimer* associated with the Cell configured with the *CSI-ReportConfig* is running, the UE transmits UEIRI on a PUCCH format 0 or format 1 in the PUCCH resource (in the CC provided by *pucchCell,* if configured, in the *CSI-ReportConfig*) configured by *PUCCHResource* in the *CSI-ReportConfig*. |

**[Phase-2 Discussion]**:

# [Sharp] [Issue-2]

**[Issue description]**:

For the UE initiated beam measurement report transmission configured with Mode B, PUCCH resource could be configured in a dedicated BWP while PUSCH resource could be configured in another dedicated BWP.

CSI-ReportUE-IBR-r19 ::= SEQUENCE {

...

reportTransmissionMode-r19 CHOICE {

modeA-r19 NULL,

modeB-r19 SEQUENCE {

pusch-ResourceOfModeB-r19 SEQUENCE {

configuredGrantConfigIndex-r19 ConfiguredGrantConfigIndex-r16,

ul-BWP-Id-r19 BWP-Id,

servCellIndex-r19 ServCellIndex

},

…

pucch-Resource-r19 SEQUENCE {

…

resource PUCCH-ResourceId,

ul-BWP-Id-r19 BWP-Id,

pucch-Cell-r19 ENUMERATED {spCell, pucch-Scell}

}

}

It is not clear if the BWP for PUSCH resource is deactivated, whether the UE should transmit an associated PUCCH in an active BWP when there is a UE initiated beam measurement report.

**[Proposed Solution]**:

UE will not transmit a PUCCH for beam measurement report notification in Mode B if the BWP for the associated PUSCH is deactivated.

**[Phase-2 Discussion]**:

…

# Conclusions

The following open issues are listed with suggested way forward.

…

# References

1. R2-2506202 Report from session on Rel-18 MIMO, Rel-19 MIMO, LPWUS, SBFD, NR Others RAN2 Vice Chairman (CATT)
2. R2-2506539 Rel-19 TS 38.321 CR#2100 Samsung