**3GPP TSG-RAN WG4 Meeting # 100-e R4-2114994**

**Electronic Meeting, 16th – 27th August, 2021**

**Agenda item:** 9.19.1

**Source:** Samsung

**Title:** WF on FeMIMO impacts to RF requirements

**Document for:** Approval

# Introduction

In RAN4#99-e, the first discussion on the Rel-17 FeMIMO was initiated to see if any impact to RAN4 has to be considered based on the discussion progress of RAN1 on the work item. For the impact on the RF specification, a WF was approved with following agreements made during the last meeting of RAN4.

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| * No transmission requirements will be specified for multi-panel UE in Rel-17 FeMIMO WI * RAN4 will further study if any impact to the reception requirements for multi-panel UE in Rel-17 FeMIMO WI considering RAN1 status * RAN4 will further study the UE RF requirements impact for MPE mitigation. Companies are encouraged to provide the initial analysis for UE RF impact for MPE in the next RAN4 meeting considering the latest RAN1 progress considering RAN1 status * No UE RF impact for CSI enhancement and link recovery for FR2 serving cells in Rel-17 FeMIMO WI |

In RAN4#100-e, based on the latest approved WF and submitted contributions, the discussion on the impact to RF requirements was resumed, and the sub-topics were organized as follows:

* Sub topic 1-1: Impact for multi-panel reception
* Sub topic 1-2: Impact for MPE
* Sub topic 1-3: Impact for SRS enhancement

According to the observation of latest agreements in other WG, it seems RAN1 is still going forward to the final design for these objectives. Since there has not been able to progress much unfortunately, moderator suggested focusing on finding some common understanding of each sub-topic in this meeting given that only two meetings are left after this.

# WF on Impact for multi-panel reception

*In the last meeting, it was agreed that no additional transmission requirement is required for the multi-panel UE impact in the Rel-17 WI. Instead, RAN4 agreed with the further check if any impact to the reception requirements is needed considering RAN1 status.*

## Background

Most companies support Option 1 (no impact for multi-panel reception)

Other companies want to further check if there is any impact depending on RAN1 design

Given the input contributions and majority view during 1st round, it is observed that the Option 1 could be taken as a tentative agreement since all the submitted contributions propose that the possible enhancement can be evaluated by existing requirements, i.e., EIS spherical coverage.

## Agreements

* RAN4 will further determine if additional requirement is required for the multi-panel reception
* Given the time limitation, the RF impact for the multi-panel UE will be concluded in RAN4#101-e based on the discussion

# WF on Impact for MPE

*As shared by all contributions, the Rel-17 MPE mitigation solution is still under discussion in RAN1 although their options were tried down selected, i.e., option 1A and option 2A with multiple alternatives. Also, there is common understanding that RAN4 should wait for the concrete MPE solution in RAN1 before making a decision on the UE RF impact.*

## Background

Some companies provide their view on the possible RAN4 impact of per-beam P-MPR or virtual PHR. Similar views are found that it would be no/little impact to RAN4 even though those are finally introduced in RAN1.

The other companies want to wait and see the clear solution from RAN1 before the discussion on the impact.

## Agreements

* It would be little impact to RAN4 such as adding notes, if needed, even though those are finally introduced in RAN1.
* Companies are encouraged to check and analyze the RAN4 impact of the MPE enhancements considering the RAN1 progress in the next meeting.

# WF on Impact for SRS enhancement

*In the last meeting, some companies pointed out that RAN4 should wait until the full set of requirements for 8 antenna ports before discussing the impact of the SRS enhancement. On the other hand, some companies proposed that the configured power, or IL reporting shall be considered for this impact.*

## Background

Most companies support Option 1 (No, until a full set of 8 port requirements is defined).

Other companies want further check if there is any impact depending on RAN1 design.

Given the input contribution and majority view during 1st round, it is observed that the Option 1 could be taken as a tentative agreement. However, consensus was not achievable.

## Agreements

* RAN4 will further discuss if there is any SRS related impact in Rel-17
* It will be concluded in RAN4#101-e unless the updated WID or related WI is available

# Reference

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| --- | --- | --- |
| **Tdoc number** | **Title** | **Source** |
| R4-2112971 | MPE mitigation techniques | Nokia, Nokia Shanghai Bell |
| R4-2111771 | Multi-panel reception impact on Rx requirements | Nokia, Nokia Shanghai Bell |
| R4-2112971 | RF requirements for further enhancements on MIMO | Samsung |
| R4-2113016 | Discussion on impact of multi-panel reception requirements | vivo |
| R4-2113017 | Discussion on impact of MPE requirements | vivo |
| R4-2113035 | Proposal on FR2 FeMIMO multi-panel reception requirement | MediaTek |
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