**3GPP TSG RAN Meeting #93-e RP-21xxxx**

**Electronic Meeting, September 13-17, 2021**

**Agenda item:** 9.3.1.1

**Source:** Moderator (Samsung)

**Title:** Moderator’s summary for email discussion [93-e-08-feMIMO-Scope]

**Document for:** Discussion and Decision

1. Introduction and background

Per chairman’s instruction, the goal and pertinent contributions for this email discussion is as follows:

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| [93e-12-feMIMO-Scope] | RP-211677 (RAN4 LS), 1789 (Samsung), 2023 (vivo), 2126 (Ericsson) | Eko Onggosanusi, Samsung | 9.3.1.1 |

The following topics have been discussed in the above contributions:

* (1789, 2023) Overall progress of Rel-17 NR\_FeMIMO:
  + It was pointed out that the overall progress is good per the outcome RAN1#106-e.
  + No discussion is needed on this topic
* (All) Failure to reach consensus on the scope of one of the RAN4 WID objectives (link recovery procedure in FR2 serving cell): “*Investigate if the requirements on link recovery procedure is suitable for FR2 serving cells [RAN4]*”
  + The RAN4 LS RP-211677 requested that RAN discuss and clarify the scope of this objective.
  + More specifically, RP-211789, and 2023 mentioned two alternatives for RAN to choose from (either requiring WID revision):
    - Alt1. Remove this objective from the WID
    - Alt2. Revise this objective with a more specific (clearer) and agreeable scope
  + RP-212126 proposes that RAN remove this objective (i.e. Alt1)
  + Discussion is needed on this topic

1. Initial round

During the initial round, interested companies are encouraged to share their view on the following:

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| Please review section 1 for background summary.  Q1. In regard of the WID objective “*Investigate if the requirements on link recovery procedure is suitable for FR2 serving cells [RAN4]*”, please share your view and preference between these two alternatives:   * Alt1. Remove this objective from the WID * Alt2. Revise this objective with a more specific (clearer) and agreeable scope   + If this is your preference, what would be a proper clarification on the scope? |

* 1. Compilation of companies’ inputs

Table 1 Inputs

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| **Company** | **View** |
| Mod V0 | **Please share your view on the above Q1** |
| vivo | Our preference is alt1, i.e., to remove the objective in question from WID |
| Huawei, HiSilicon | For Q1, consider the left time for R17 and the workload, we are fine to remove it.  By the way, in our contribution (2146), we also discussed a few topics are progress slow, e.g., fast UL panel selection/switching and advanced beam refinement/tracking. For UL panel selection/switching, till now there is no fundamental agreements, and is still discussing panel definition. For advanced beam refinement/tracking, it is still in study phase. In the last two meetings, they may be difficult to be completed. So, may consider to postpone them to R18. |
| Samsung | In our understanding, this objective was initially setup with target on potential enhancement on link recovery procedure and corresponding requirements. However, given RAN2 is not responsible WG for this bullet, without any update on the link recovery procedure, it is challenge for RAN4 to enhance the link recovery procedure requirements. The discussion on the impacts to link recovery procedure requirements including TRP specific BFD/CBD is ongoing under the separate objectives, i.e., mTRP scenarios in Rel-17. Considering above, we suggest to remove the objective in the WID, i.e, we support Alt 1. |
| Apple | Our preference is to remove the aforementioned RAN4 objective. |
| ZTE | Based on the clarifications from Samsung, we are fine with Alt 1to remove it, however we want to make sure that the following objective would be specified in RAN4.   * To specify the requirements for TRP specific BFD/CBD/BFR/RLM requirements assuming up to 2 RS set configured for BFD and CBD;   In addition, SFN mannered PDCCH with two BFD-RS has been supported in RAN1#106e, then how to specify the requirements on BFR in the case of SFN PDCCH transmission scheme need more discussions in RAN4. |
| OPPO | According the RAN4 discussion on this issue and the current status of feMIMO in RAN1/RAN2, we think Alt.1 is a good way to move forward. |
| Vodafone | We are ok to remove the objective/not prioritize it over the MIMO FR1 work |
| Ericsson | We support Alt1. Remove this objective from the WID.  We also agree with Samsung that link recovery procedure requirements including TRP specific BFD/CBD are covered under separate objectives in the WID. |
| Futurewei | We are ok to remove it.  BTW, there are 2 action items assigned in last plenary for RAN1+106-e as copied below:   * In RAN1#106-e, conclude on the synchronization and the timing advance assumptions between the cells * Note: RAN1 is to discuss the details (e.g. applicable channels/signals) regarding “a UE can transmit to or receive from only a single cell” in RAN1#106-e meeting.   For the second one, our understanding is that, though RAN1 did not reach an explicit answer, the group did make decision that solved the issue already. But for the first one, RAN1 has the following conclusion:  **Conclusion**  On Rel.17 enhancements for inter-cell beam management,   * In Rel-17, RAN1 cannot reach consensus in supporting same or different TA values across the serving cell and TRPs with different PCIs from that of the serving cell   As RAN1 cannot reach agreement and this impacts the work to complete R17, we suggest to discuss it in this plenary. |
| Lenovo, Motorola Mobility | We support to remove it from the WID considering the work load for RAN4. |
| LG | We prefer alt1. Regarding the suggestion from Huawei, we don’t think further revision of WID for MB is needed. If really needed, scoping could be well handled within RAN1 noting that advanced beam refinement/tracking is not explicitly defined in WID objective. So, there is no need to discuss it in RANP. |
| Qualcomm | We are ok with Alt 1. |
| CATT | We are ok to remove the aforementioned RAN4 objective. |
| Nokia, NSB | We are OK with Alt 1, i.e. remove the corresponding RAN4 objective from the WID. We do not see a need for further downscoping on this WID in RAN#93-e. |
| Spreadtrum | We are OK with Alt1. |
| Telecom Italia | consider the left time for R17 and the workload, we are fine to remove it |
| CMCC | We prefer to alt 1 to remove the objective. |
| Intel | We support Alt. 1, which is to remove the objective.  We believe that the intention of this objective was somehow to follow updates and enhancements if there was any specified in RAN1/2. However we haven’t seen any on the link recovery procedure so far in Rel-17. |
| MediaTek | Fine with Alt. 1 as nobody seems to have justified any motivation for anything else.  Do not agree to discuss further any MIMO issues that were not raised via input documents prior to the meeting. |

* 1. Summary and moderator proposals

During the initial round, based on the collected inputs in section 2.1, the following **observation** can be made:

* Out of 19 companies sharing their inputs, all the 19 companies prefer or are fine with Alt1 (remove this objective, i.e. “*Investigate if the requirements on link recovery procedure is suitable for FR2 serving cells [RAN4]*” from the WID)
* A few other unrelated topics (beyond those raised in the input documents) were brought up
  + ZTE mentioned RAN4 issues related to link recovery procedure requirements pertaining to TRP-specific BFD/CBD. A few companies (e.g. Samsung, Ericsson) pointed out that this already falls under separate objective(s) in the current WID.
  + Huawei mentioned slow progress on multi-panel UE and advanced beam refinement/tracking and, hence, proposes to postpone these issues to Rel-18. A few companies (e.g. LG, Nokia/NSB) see no need for further refining the WID for this purpose since they can be naturally resolved in RAN1 without RAN involvement.
  + Futurewei proposed to discuss the TA issue in RAN (no consensus in RAN1). From moderator’s perspective, this issue is technical in nature. If RAN1 reaches no consensus, it is unlikely that RAN-level discussion can help.
  + It is noted that MediaTek stated their concern on discussing MIMO issues other than the one raised in the input documents.

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| **Proposed way forward (WF) 1 (after the initial round)**:  *Revise the Rel-17 NR\_FeMIMO WID by removing the following objective: “Investigate if the requirements on link recovery procedure is suitable for FR2 serving cells [RAN4]”* |

1. Intermediate round
   1. Summary and moderator proposals
   2. Summary and moderator proposals

# References

1. RP-211586 Revised WID: Further enhancements on MIMO for NR Samsung