**3GPP TSG RAN Meeting #89-e RP-20xxxx**

**Electronic Meeting, September 14 - 18, 2020**

**Agenda item:** 9.8.1

**Source:** Moderator (Samsung)

**Title:** Moderator summary for initial round of [89E][26][R17\_MIMO\_scope]

**Document for:** Discussion and Decision

1. Introduction

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

* Goal: Find a way forward on the proposed scope revisions.
* Input contributions covered:  1470, 1839, 1895

Table 1 Summary of the identified input contributions

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| **Tdoc** | **Summary of issue and proposals** |
| RP-201470 | Issue: Telefonica and UIC requested to be added as supporting companies right after the WID was endorsed in RAN#86. The request has not yet fulfilled since the WID has not been revised.Proposal: Add Telefonica and UIC as supporting companies per their past and not-yet-fulfilled requests |
| RP-201839 | Issue: It is claimed that Rel-16 multi-DCI multi-TRP requirement of receive timing difference within a CP is in general too restrictive and therefore should be relaxed for Rel.17 inter-cell mTRP work (item 2b of the WID). Proposal: * “Clarify that a target deployment scenario (both FR1, FR2) for inter-cell operation in Rel-17 should consider non-ideal cell-phase synchronization (timing error) between the two cells.”
 |
| RP-201895 | Issue: On item 2b of the WID, in RAN1 #102-e, some companies argued that synchronization and timing aspects for inter-cell multi-TRP are out of scope while others think it is a natural part of the practical scenarios.3 “factors” that require consideration for inter-cell mTRP:* Propagation delay difference is at least similar to that of Rel-16; in addition,
* Synchronization offset between multiple cells; an
	+ Note that inter-cell synchronization accuracy is up to 3us (TDD only) per RAN4 requirements
* Backhaul between the cells can be non-ideal with certain amount of delay
	+ This requires separate uplink transmissions to multiple TRPs of different cells

Proposal:* “To proceed Rel-17 inter-cell multi-TRP work, there are 2 alternatives:
	+ Alt. 1: Only consider factor A, same as in the case of intra-cell
		- The applicable scenarios will be very limited: very tightly synchronized cells with very fast backhaul and small cell sizes.
	+ Alt. 2: Consider all factors A, B, and C
		- Applicable to more practical scenarios
* RAN Plenary to determine between Alt. 1 and Alt. 2.”
 |

Evidently, RP-201470 (Samsung, rapporteur) neither requires nor solicits any additional inputs - unless some other companies not listed as supporters would like to add their support as well (which is doable by online or personal emails directly to the rapporteur). Therefore, the proposed amendment on the list of supporting companies is readily accepted and requires no discussion.

Both RP-201839 (Intel) and RP-201895 (Futurewei) attempt to address the same issue raised in RAN1#102-e pertaining to item 2b of the WID.

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| 1. Enhancement on the support for multi-TRP deployment, targeting both FR1 and FR2:
	1. ...
	2. Identify and specify QCL/TCI-related enhancements to enable inter-cell multi-TRP operations, assuming multi-DCI based multi-PDSCH reception
	3. ...
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Intel’s proposal is essentially Alt2 of Futurewei’s proposal. Since some companies voiced their preference on Alt1 in RAN1#102-e, Futurewei’s proposal seems to be a good starting point for discussion. In addition, whether the current WID on item 2b should be refined (and, if needed, how) is to be decided.

1. Summary and moderator proposals

[Observation]

...

**Proposed way forward**: Revise the WID for Rel.17 NR\_FeMIMO as follows:

* Add two additional supporters per their requests as indicated in RP-201470
* [...]
1. Compilation of companies’ inputs

During the initial round, interested companies are encouraged to share their view on the following issue brought up by Intel and Futurewei:

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| 3 “factors” that require consideration for inter-cell mTRP:* Factor A: Propagation delay difference is at least similar to that of Rel-16; in addition,
* Factor B: Synchronization offset between multiple cells; an
	+ Note that inter-cell synchronization accuracy is up to 3us (TDD only) per RAN4 requirement
* Factor C: Backhaul between the cells can be non-ideal with certain amount of delay (due to non-ideal cell-phase synchronization)
	+ This requires separate uplink transmissions to multiple TRPs of different cells

On item 2b of the NR\_FeMIMO WID, consider and choose between the two alternatives:* Alt. 1: Only consider factor A, same as in the case of intra-cell
	+ The applicable scenarios will be very limited: very tightly synchronized cells with very fast backhaul and small cell sizes.
* Alt. 2: Consider all factors A, B, and C
	+ Applicable to more practical scenarios
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Table 1 Inputs

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| **Company** | **View** |
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# References

1. RP-201470 Revised WID: Further enhancements on MIMO for NR Samsung
2. RP-201839 **MIMO multi-TRP timing constraints for inter-cell operation** Intel Corporation
3. RP-201895 Discussion on multi beam enhancement vivo