3GPP TSG RAN WG1 #104-e R1-21xxxxx

e-Meeting, January 25th – February 5th, 2021

**Agenda item: 7.2.6**

**Source: Moderator (Nokia)**

**Title:** **Moderator summary of [104-e-NR-eMIMO-05]
Email discussion/approval of a potential reply LS to R1-2100018**

**Document for: Discussion and Decision**

# 1 Introduction

RAN1 received an LS from RAN2 suggesting a Stage 2 defintion of multi-TRP MIMO to TS38.300
[R1-2100018](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_104-e/Docs/R1-2100018.zip) *LS on multi-TRP description in Stage-2*, RAN2 (Nokia), attaching a CR in R2-2010803 including a stage 2 description of Multi-TRP operation for TS38.300.

The LS has this action to RAN1:

**ACTION:** RAN2 respectfully asks RAN1 to indicate if the attached RAN2-agreed Stage-2 description has any errors.

The RAN2 CR has the following items:

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| …TRP Transmit/Receive Point…**Transmit/Receive Point:** Part of the gNB transmitting and receiving radio signals to/from UE according to physical layer properties and parameters inherent to that element.…6.X Multiple Transmit/Receive Point OperationIn Multiple Transmit/Receive Point (multi-TRP) operation, a serving cell can schedule UE from two TRPs, providing better PDSCH coverage, reliability and/or data rates.There are two different operation modes for multi-TRP: single-DCI and multi-DCI. For both modes, control of uplink and downlink operation is done by both physical layer and MAC. In single-DCI mode, UE is scheduled by the same DCI for both TRPs and in multi-DCI mode, UE is scheduled by independent DCIs from each TRP.  |

Two contributions related to the LS were submitted to AI5:

[R1-2100125](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_104-e/Docs/R1-2100125.zip) Discussion on LS on multi-TRP description in Stage-2 OPPO

[R1-2101750](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_104-e/Docs/R1-2101750.zip) On changes to multi-TRP description in Stage 2 Huawei, HiSilicon

# 2 Discussion

[R1-2100125](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_104-e/Docs/R1-2100125.zip) suggests to delete the sentence *“For both modes, control of uplink and downlink operation is done by both physical layer and MAC”*based on the following argumentation:

…the wording **“For both modes, control of uplink and downlink operation is done by both physical layer and MAC.”** is incomplete and may lead to misunderstanding. For both modes, control of uplink and downlink operation is not only done by DCI and MAC signaling. For example, for single-DCI mode, the transmission scheme (e.g. scheme 2a/2b/3/4) is configured by RRC signaling. Whether the UE is operated in multi-DCI mode and corresponding UE behaviour in this mode is also controlled by configuration of *CORESETPoolIndex* from RRC. Furthermore, not all the uplink and downlink operations are controlled by **both** physical layer and MAC, e.g. some of the configurations are done by DCI only or MAC CE only or even DCI+RRC. Hence, we propose to suggest RAN2 to delete this sentence to avoid possible misleading.

[R1-2101750](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_104-e/Docs/R1-2101750.zip) suggests to modify the same sentence the R1-2100125 is suggesting to delete and replace the “…and MAC signalling” to “…and higher layer signalling”.

**Moderator proposal**: Suggest to RAN2 to clarify the **“For both modes, control of uplink and downlink operation is done by both physical layer and MAC.”** as follows, and provide an LS back to RAN2 with the justification along the lines of R1-2100125:

There are two different operation modes for multi-TRP: single-DCI and multi-DCI. For both modes, control of uplink and downlink operation ~~is~~ can be done by ~~both~~ physical layer and MAC layers, within the configuration provided by the RRC layer. In single-DCI mode, UE is scheduled by the same DCI for both TRPs and in multi-DCI mode, UE is scheduled by independent DCIs from each TRP.

**Please provide company views on the proposal**

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| --- | --- |
| **Company** | **Comment** |
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| Apple | We are fine with the moderator proposal Rel-16 mTRP switching between 6 different schemes is done jointly by DCI + MAC-CE + RRC, very unnecessarily complicated, but it is the agreed design  |
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# 3 Conclusions

To be written