**3GPP TSG RAN WG1 #102-e R1-2007006**

**e-Meeting, August 17th – 28th, 2020**

**Agenda item:** 7.2.6

**Source:** Moderator (LG Electronics)

**Title:** Summary#1 of email thread [102-e-NR-eMIMO-01]

**Document for:** Discussion and Decision

# Introduction

This contribution summaries discussion in email thread [102-e-NR-eMIMO-01]

# Background

Codebook based or non-codebook based PUSCH can be scheduled by either DCI format 0\_1 or DCI format 0\_2. However, in TS 38.213 the UE behavior on determining default pathloss RS for PUSCH transmission is only specified for the PUSCH scheduled by DCI format 0\_1. For this reason, OPPO proposed following TP.

**TP from OPPO for clause 7.1.1 of TS 38.213**

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| 7.1.1 UE behavior\*\*\* Unchanged text is omitted \*\*\*- If the PUSCH transmission is scheduled by a DCI format 0\_0, and if the UE is provided a spatial setting by PUCCH-SpatialRelationInfo for a PUCCH resource with a lowest index for active UL BWP $b$ of each carrier $f$ and serving cell $c$, as described in Clause 9.2.2, the UE uses the same RS resource index $q\_{d}$ as for a PUCCH transmission in the PUCCH resource with the lowest index- If the PUSCH transmission is scheduled by a DCI format 0\_1 or a DCI format 0\_2, and if the UE is provided *enableDefaultBeamPlForSRS* and is not provided *PUSCH-PathlossReferenceRS* and *PUSCH-PathlossReferenceRS-r16,* the UE uses the same RS resource index $q\_{d}$ as for a SRS resource set with an SRS resource associated with the PUSCH transmission- If - the PUSCH transmission is scheduled by a DCI format 0\_0 and the UE is not provided a spatial setting for a PUCCH transmission, or - the PUSCH transmission is scheduled by a DCI format 0\_1 or a DCI format 0\_2 that does not include an SRI field, or - *SRI-PUSCH-PowerControl* is not provided to the UE,  the UE determines a RS resource index $q\_{d}$ with a respective *PUSCH-PathlossReferenceRS-Id* value being equal to zero where the RS resource is either on serving cell$c$ or, if provided, on a serving cell indicated by a value of *pathlossReferenceLinking*\*\*\* Unchanged text is omitted \*\*\* |

# Discussion

Based on the discussion during preparation phase and due to the fact that DCI0\_1 and DCI0\_2 are quite similar in terms of power control, it seems reasonable to adopt OPPO’s TP.

FL’s proposal: Adopt the TP in section 2.

**Companies’ view (to be updated)**

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| --- | --- |
| Company name | View |
| DOCOMO | Support. This TP enables to align default spatial relation and default PL-RS for PUSCH scheduled by DCI format 0\_2, hence this proposal is beneficial when gNB uses DCI format 0\_2. |
| Ericsson | Support. But note that we added default pathloss RS for PUSCH scheduled by DCI format 0\_1 only in the previous meeting, which was a very late addition of new functionality.  |
| MediaTek | Support. We also think it is good to extend this feature to DCI format 0\_2 and this is a missing part in current spec. |
| Huawei, HiSilicon | Though this is a late addition, for completeness of Rel-16 and avoid fragmented discussions in the future, we can live with the FL proposal. With this change, the previously agreed UE feature16-1c in R1-2004970 is assumed to include the support of default spatial relation and PL-RS for PUSCH scheduled by DCI format 0\_2. We think it is safer to explicitly capture such understanding as a conclusion, without changing FG 16-1c.  |
| OPPO | Support FL’s proposal. In our view, this is a missing part in current spec as a part of the feature of *enableDefaultBeamPlForSRS.* |
| Apple | We are fine with FL proposal |
| Qualcomm | Fine with the proposal |
| LG | Support the FL’s proposal |
| Sony | Support FL’s proposal. Technically, we think it is good to treat DCI 0\_1 and 0\_2 equally. It seems late addition, but late better than never.  |
| ZTE | Support the FL’s proposal |
| vivo | Fine with the FL’s proposal. Also sympathize with Huawei’s comment on UE feature clarification. |
| Spreadtrum | Support the FL’s proposal |
| Samsung | Support the FL’s proposal |
| Nokia/NSB | Support FL’s proposal |

# Conclusion (to be updated)

# Reference

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| **TDoc** | **Title** | **Source** |
| [**R1-2005976**](http://www.3gpp.org/ftp/TSG_RAN/WG1_RL1/TSGR1_102-e/Docs/R1-2005976.zip) | Text proposals for Multi-beam Operation Enhancement | OPPO |