**3GPP TSG RAN WG1 #104-e R1-20xxxxx**

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

**Agenda Item: 7.2.11**

**Source: Moderator (AT&T)**

**Title: Summary of email discussion/approval [104-e-NR-UEFeatures-eMIMO-02]**

**Document for:** **Discussion/Decision**

# Introduction

This document presents the summary of email discussion/approval [104-e-NR-UEFeatures-eMIMO-02] during RAN1 #104-e. According to the Chairman’s Notes:

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| --- |
| [104-e-NR-UEFeatures-eMIMO-02] Email discussion/approval of whether/how to capture that the maximum number of configured PUCCH spatial relations and candidate beams in BFR can be up to 64, till 1/29 (Ralf, AT&T) |

The following was discussed and agreed during RAN1 #104-e within the scope of [104-e-NR-UEFeatures-eMIMO-02]. All proposals are based on the latest RAN1 UE features list for Rel-16 NR in [1].

# Summary of email discussion/approval [104-e-NR-UEFeatures-eMIMO-02]

In [2], Qualcomm observes the following:

|  |
| --- |
| In R16, it has been agreed that the maximum number of configured PUCCH spatial relations and candidate beams in BFR can be up to 64. However, the corresponding UE capability seems not specified. They should be captured in R16 FGs or new candidate values in R15 FGs.  maxNrofSpatialRelationInfos-r16 INTEGER ::= 64  maxNrofCandidateBeams-r16 INTEGER ::= 64 |

The following is proposed in [2].

**Proposal:** The maximum number of 64 PUCCH spatial relations and 64 candidate beams in BFR agreed in R16 should be up to UE capability

Companies are invited to express their views in the table below. Companies supporting the proposal should also provide a detailed text proposal of how the proposal should be implemented in their view.

|  |  |
| --- | --- |
| Company | Comments/Questions/Suggestions |
| Ericsson | Support |
| Nokia, NSB | We are not supportive of this change, especially without a clear proposal on how such FG would be defined and what are the related dependencies, as this could cause NBC issues. |
| Apple | Support |
| MediaTek | Support |
| ZTE | Support in principle. A complete proposal is needed for further review, if we would like to introduce a new FG. |
| Docomo | Support. |
| LG | Support in principle, but as commented by Nokia and ZTE, it will be better if we can discuss on a detailed FG proposal. |
| Qualcomm | Support. Detailed TP is as below. We are also fine to introduce R16 versions of FG 2-59 and FG 2-31 with new candidate values.  To our understanding, all R16 features are optional unless specified in agreement.   |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Index | Feature group | Components | Prerequisite feature groups | Need for the gNB to know if the feature is supported | Applicable to the capability signalling exchange between UEs (V2X WI only)”. | Consequence if the feature is not supported by the UE | Type  ( 1) Per UE or 2) Per Band or 3) Per BC or 4) Per FS or 5) Per FSPC) | Need of FDD/TDD differentiation | Need of FR1/FR2 differentiation | Capability interpretation for mixture of FDD/TDD and/or FR1/FR2 | Note | Mandatory/Optional | | 16-1h | Support of 64 configured PUCCH spatial relations | 1. Support of configuring maximum 64 PUCCH spatial relations per BWP per CC | 2-59 | Yes | N/A |  | Per band | No | FR2 only |  |  | Optional with capability signaling | | 16-1I | Support of 64 configured candidate beam RSs | 1. Support of configuring maximum 64 candidate beam RSs per BWP per CC | Component 3: 2-31 | Yes | N/A |  | Per band | No | No |  |  | Optional with capability signaling | |
| CAT | Support. |
| vivo | Support the FGs. |
| OPPO | Support |
| Huawei, HiSilicon | Support FL proposal. |

# Conclusion

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# References

1. R1-2009585, Updated RAN1 UE features list for Rel-16 NR, Moderators (AT&T, NTT DOCOMO, INC.)
2. R1-2101444, Discussion on NR Rel-16 UE features, Qualcomm Incorporated