3GPP TSG-RAN WG4 Meeting # 102-e R4-2xxxxxx

**Electronic Meeting, Feb.21st – Mar.3rd 2022**

**Title:** Way Forward on MMSE-IRC for intra-cell inter-user interference

**Source:** Huawei, HiSilicon

**Agenda item:** 10.2.2.2

**Document for:** Discussion

# Inter-user interference modelling

**DMRS scrambling ID for target UE and co-scheduled UE**

* Background

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| * Option 1: Same scrambling ID when paired UEs are in the same CDM group. Different scrambling ID when paired UEs are in different CDM groups. * Option 2: Same scrambling ID for all cases * Option 3: Configure variable scrambling ID during the test. |

* Agreement
* Same scrambling ID for all cases

# Simulation assumptions

Companies can provide the simulation results in next meeting based on the assumptions in Table 2-1:

**Table 2-1: Simulation assumptions for MU-MIMO**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Parameter** | | **Unit** | **Value** | |
| **Target UE** | **Co-scheduled UE** |
| Channel Bandwidth/SCS | | MHz/KHz | 10/15 for FDD and 40/30 for TDD | |
| Duplex mode | |  | FDD and TDD | |
| TDD pattern | |  | 7D1S2U S=6D+4G+4U | |
| MCS | |  | 13 | 16 QAM random symbols |
| Allocation for interference UE and target UE | Rank allocation |  | 1 | 1 |
|  | 2 | 2 |
| DMRS port allocation |  | For rank 1+1: Port 1000  For rank 2+2: Port 1000 and 1001 | For rank 1+1: Port 1001  For rank 2+2: Port 1002 and 1003 |
| MIMO configuration | |  | 2T2R ULA Low and 2T4R ULA Low for case with rank1+1 and 4T4R ULA Low (Note 1) for case with rank 2+2 | |
| Number of CDM groups without data | |  | 1 for case with rank 1+1 and 2 for case with rank 2+2 | |
| HARQ process number | |  | 4 for FDD and 8 for TDD | |
| Precoding model | Target UE |  | Random precoding with Single panel Type 1 per PRB bundling size per slot | * For case with rank 1+1: Select the PMI matrix randomly from the codebook of Co-scheduled UE to ensure that any column of precoding matrix of Co-scheduled UE is not equal to any column of precoding matrix of Target UE * For case with rank 2+2: Select the precoding matrix to ensure orthogonality with Target UE |
| PDSCH configuration | Mapping type |  | Type A | |
| Starting symbol (S) |  | 2 | |
| Length (L) |  | 12 | |
| PRB bundling size |  | 2 | |
| PRB bundling type |  | Static | |
| PDSCH DMRS configuration | DMRS Type |  | DMRS Type 1 | |
| Number of additional DMRS |  | 1 | |
| Maximum number of OFDM symbols for DL front loaded DMRS |  | 1 | |
| Propagation conditions | |  | For rank 1+1: TDLC300-100  For rank 2+2: TDLA30-10 | |
| Receiver type | |  | MMSE-IRC | N/A |
| Test metric | |  | SNR @ %70 of maximum Throughput | N/A |

# UE feature list

* Backgroud

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| * Option 1: No need to introduce new UE feature, requirements release independent from Rel-15 * Option 2: Mandatory with or without UE capability signaling * Option 3: Optional with or without UE capability and applicable from Rel-17 * Option 4: Optional without UE capability and applicable from Rel-15 |

* Proposals
  + Option 1: Define one new UE feature for MMSE-IRC receiver for mitigating both inter-cell interference and intra cell inter user interference, which is optional without capability signalling for Rel-15 and mandatory without capability from Rel-17.
  + Option 2: Define one new UE feature for MMSE-IRC receiver for mitigating both inter-cell interference and intra cell inter user interference, which is optional without capability signalling for Rel-16 and mandatory without capability from Rel-17.
  + Define one new UE feature for MMSE-IRC receiver for mitigating both inter-cell interference and intra cell inter user interference, which is optional without capability signalling for Rel-16 and mandatory without capability from Rel-17.

# CR split

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| Section | Company |
| General and applicability section | ZTE |
| PDSCH requirements – 2 Rx | Intel |
| PDSCH requirements – 4 Rx | China Telecom |
| Annex A: FRC | Intel |
| Annex B: MU-MIMO Beamforming Model | Huawei |