

3GPP TSG-RAN Meeting #103
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Agenda Item: 9.1.4.5
Document for: Discussion/Decision

RP-240433

Views on demodulation topics for Rel-19

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Enhanced 8Rx UE performance requirements

- Motivation

- > RAN4 has defined the performance requirements with MMSE-IRC receiver for suppressing inter-cell interference and intra-cell inter-user interference for 2Rx and 4Rx for FR1 in Release 17 (RP-221285)
- > In Rel-18, RAN4 agreed to introduce 8Rx PDSCH requirements with the scope of SU-MIMO with white noise, however, such requirements can't verify the interference suppression capability of the 8Rx capable UE.
- > 8Rx capable UE has more spatial degrees of freedom to suppresses interference compared to 4Rx UE, which means MMSE-IRC should be beneficial to improve PDSCH performance
- > Rel-17 PDSCH link adaptation requirements only cover 2Rx/4Rx UE with maximum 2 MIMO layers, 8Rx capable UE is capable of higher rank, which should be beneficial to higher throughput from link adaption

- Objectives

- > Introduce 8Rx PDSCH and CQI performance requirements with inter cell interference scenario with MMSE-IRC:
 - Reuse Rel-17 interference profiles as starting point
 - 2 MIMO layers as starting point. Investigate the scenarios under which the performance with MIMO layers not less than 4 layers
- > Introduce 8Rx PDSCH with intra cell inter user interference scenario with MMSE-IRC:
 - Consider Rank2+2 as baseline, higher rank allocation is not precluded.
- > Introduce 8Rx PDSCH requirements with link adaption
 - 4 MIMO layers as starting point
- > The performance requirements can be release independent from Rel-18

BS requirements with MMSE-IRC receiver for inter cell interference

- > MMSE-IRC has been widely used as BS baseband algorithm from Rel-15, it's too late and meaningless to define such requirements in Rel-19
- > Base station has high capability to handle the interference, performance can be guaranteed under interference scenario.

Proposal: Not introduce BS requirements with MMSE-IRC receiver for inter cell interference

Channel model with Spatial component

- CDL models were extensively discussed in NR Rel-15, but due to the channel model complexity and difficulty to align the simulation results among companies, finally TDL is agreed to be used for demodulation performance requirements definition.
- There are too many parameters for CDL model, it is hard to set typical values for all that can standard for the real deployment
- The spatial character is an important aspect in real wireless channel, it will affect performance to certain extent, especially under multi-layer scenario, so it is beneficial to study the feasibility to define such channel model, the outcome can be used for 6G research
- Considering the late stage of NR 5G and start of 6G, enough time should be allocated to the study of feasibility
- **Proposal: Prioritize to study the feasibility of introduction of calibrated CDL channel**