

**3GPP TSG-RAN WG4 Meeting #83
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Motivation for new WI on LTE DL 8Rx antenna ports
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Motivation

- Recently clear market needs are observed
 - Boost downlink peak data rate to 1.2Gbps and 1.6Gbps by using 8-layer transmission.
 - New UE DL category 18 and 19 were introduced correspondingly.
 - RAN4 should specify new RF, RRM and demodulation performance requirements.
- Benefits:
 - Higher peak data rate and higher spectrum efficiency are available.
 - Improve the downlink throughput.
 - Improve the coverage.
 - Make high order modulation like 256QAM and 1024QAM usable in more practical operating SINR range.
 - Be capable of canceling more inter-cell interferences.
- One use case: backhaul transmission
 - For backhaul transmission, there would be less limitation of form factor for the device. Given the above benefits, 8Rx device could be widely used in different bands.

Objectives

- Core requirements
 - Specify RF core requirement such as REFSENS.
 - Specify RRM core requirement such as RLM.
- Performance requirements
 - Specify the channel model including correlation matrices for 8Rx antennas
 - Specify corresponding RRM tests such as RLM and application rules
 - Specify demodulation performance, CSI reporting requirements, and application rules
 - Identify a minimum set of necessary requirements for PDSCH, PDCCH/PCFICH, PHICH, PBCH, EPDCCH to achieve a good trade-off between test coverage and test case number.
 - Assume MMSE and MMSE-IRC as baseline receivers
 - Specify methodology including antenna connection to reuse the existing demodulation performance requirements, which are not covered by the minimum set of requirements.
 - Use the methodology to specify 4Rx requirements as starting point.
- Both core and performance requirements will cover the single carrier and CA scenarios.

Evaluation

Parameters	Test 1	Test 2
Antenna configuration and correlation Matrix	4x4 Low	4x8 Low
Rank	4	4
MCS	MCS14 (16QAM,1/2)	MCS14 (16QAM,1/2)
Propagation condition	EPA5	EPA5
Receiver	MMSE	MMSE

