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# Views on UE RF topics for Release 19

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# Rel-19 RF Related Proposals

- Higher UE output power with CA
  - General framework to cover any power class combination for CA (including PC1.5)
- 6Rx for smartphones
  - 6L MIMO/4L MIMO with 6Rx
- Tx Power enhancements
  - MPR related enhancements

# Higher UE output power with CA

- Motivation
  - Enabling higher UE output power brings instant throughput/coverage gains
    - Multiple Tx (e.g. 3Tx) gains can only be obtained by increasing the output power
  - Currently only a limited set of power class combinations is covered by the specifications
    - PC3 FDD + PC2 TDD
    - PC3 +PC5 *(newly introduced in Rel-18)*
  - Introducing combinations separately (e.g. PC3+PC2, PC2+PC2=PC1.5, PC2+PC1.5, etc) is very inefficient
    - Large amount of work without any benefits
  - FR2 already implements this concept for FR2+FR2 or FR1+FR2 CA
  - Separate handling introduces delays in support of such a feature
- Objectives
  - Introduce a general framework to enable higher output power in inter-band CA for any power class combination (including PC1.5)
    - No limit on the maximum output power stemming from the constraint that the CA output power should be based on a power class (maximum power would be the sum of the Tx powers in all aggregated bands)
    - Per band power class is kept (power class limit in each band is kept)

# 6Rx for Smartphone Form Factor

- Motivation
  - Depending on the device size, it is possible to implement 6Rx chains/antennas with low correlation
  - Higher order diversity can bring throughput/performance gain in various scenarios
  - Work expected to be very similar to 8Rx
- Objectives
  - Introduce RF requirements for 6Rx
  - Introduce SRS switching support and requirements for 3T6R, 4T6R
  - Introduce demod requirements for 6Rx with up to 6L MIMO
  - Introduce RRM requirements/tests for 6Rx

# MPR Reduction

- UE maximum Tx power can be enhanced under certain conditions
  - Single operator spectrum holding is wider than a CC so some emissions (e.g. ACLR) can be relaxed
  - MPR table applicability should depend on the active CCs, not the configured CCs
  - MPR table applicability should depend only on the UL aggregated bandwidth, not also on the DL aggregated bandwidth (FR2)
- Changes should focus on changing applicability of existing power reduction tables, not introducing different power reduction levels MPR/A-MPR studies in RAN4 consume a large amount of time and are unlikely to lead to significant enhancements
  - Specifications define the maximum allowed power reduction, UEs can always employ smaller reductions
- Objectives:
  - Specify MPR reduction cases when ACLR can be relaxed
  - Specify MPR reduction for cases when a UE uses a narrower channel BW within a wider BS bandwidth
  - Specify MPR reduction based on the UL active CCs (both FR1 and FR2)
  - Introduce the necessary signaling mechanism to enable these MPR reductions

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# Thank you

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