

# RF enhancements for Rel-18

RAN Rel-18 Workshop

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# RF enhancements: Motivation (1)

- Enhancements to the core (i.e. non-band-specific) RF requirements have been a key part of RAN4's work in Rel-16 and 17 (e.g. [RP-210899](#) and [RP-210914](#) for FR1 & FR2 respectively in Rel-17)
- RF performance, especially at the UE, has a major impact on overall system performance and user experience => important to keep RF requirements in step with technology and deployment scenarios

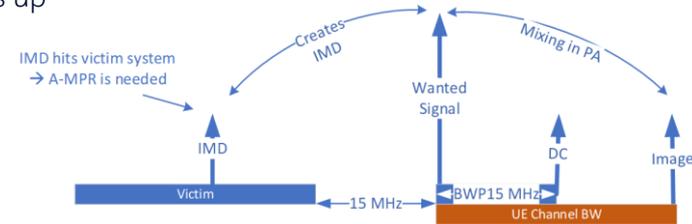
## Examples of possible RF enhancements for Rel-18:

### 1. “Leftover” objectives that are not included or completed in Rel-17 RF enhancement WIs, e.g.:

- Common beam management for uplink CA

### 2. A-MPR optimisation:

- In some cases, features such as UL CA and the wide channel bandwidth of NR do not bring improvements in UL performance because of IMD leading to large A-MPR values
  - e.g. A-MPR for 15MHz CBW for NS\_46 is up to 3.5 dB, while for 30 MHz CBW it is up to 11 dB in some conditions
  - The wider the CBW becomes, the larger A-MPR becomes if A-MPR applies
  - The gNB doesn't know if some UEs use a smaller A-MPR, so it has to schedule RBs conservatively
  - This leads to several of NR's advantages (such as wider CBW, higher power classes) being lost



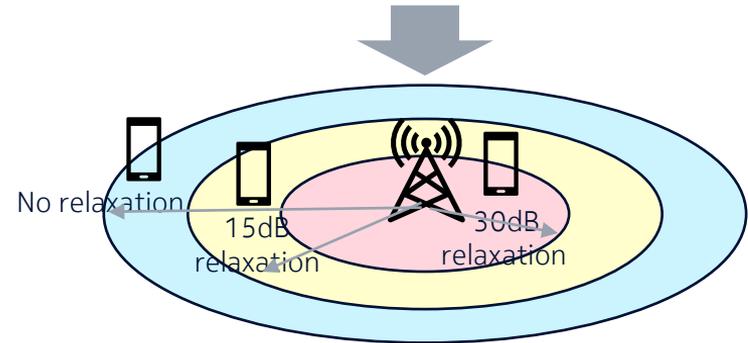
## RF enhancements: Motivation (2)

**3. MSD (Maximum Sensitivity Degradation)** is specified for band configurations whose sensitivity is degraded due to UL harmonic interference with and/or IMD

- In some cases, the values reach around 30 dB
- Contributions in RAN4 have shared the following:
  - Some operators give up using certain CA/DC due to the significant large MSD in the spec
  - There are, however, UEs with even smaller MSD than the specified values
- Hence, capability signalling has been proposed to allow the network to know for a given combination if the UE needs the maximum MSD, or some alternative amount of MSD

• Advantage:

- If NW doesn't know UE's ability, it has no choice but configuring UEs with CA in a conservative manner, e.g. CA is only configured when UEs are in the inner circle in the figure below.
- However, if NW knows it, it could configure UEs with CA according to its capability such that UEs with no MSD can use CA anywhere, while UEs with large MSD can use CA in the inner circle



**NOKIA**