Spectrum at the input of the power amplifier and at its output

Chart

Description automatically generated

AM-AM response of the power amplifier

Chart, line chart

Description automatically generated

* At the input

ACLR\_r = 39.5129

ACLR\_l = 44.1193

* At the output

ACLR\_r = 45.0026

ACLR\_l = 44.9969

64-QAM symbols

Chart, scatter chart

Description automatically generated

On the transmit side, the amplifier gain saturates with high input power. This prevents the OFDM signal from functioning in the backoff region where the signal power is much lower than the saturated power of the amplifier. The efficiency of the PA gradually decreases as the level of backoff increases, so it is desirable to minimize the amount of backoff in the power amplifier.

OFDM has a high peak power ratio (PAPR). Therefore, power amplifiers can introduce non-linear distortion into the amplified signal. This non-linear operation of the power amplifier not only distorts the transmitted signal known as in-band distortion, but also causes spectral regrowth that interferes with other signals in the adjacent channel known as out-of-band distortion.