SC2200 Wideband Performance results with NXP A2I25D025N at 2.6GHz

With and without RF delay

PA Information and Test Conditions

- PA information
  - > NXP A2I25D025N, Doherty, LDMOS
  - > Operating Frequency: 2100-2900 MHz, Frequency tested: 2660 MHz
  - > Gain = ~29dB; Psat = P3dB= ~ 45dBm; Vdd=28V
  - > NXP Driver used for testing: MMG20241H. **Very good linearity's of the drivers are critical for wideband performance**
- Test conditions
  - > Target performance: ACLR1 = -50dBc
  - > Compare performance with delay and without delay
    - **Delay**: SC2200-EVK2400 EVK, Anaren XDL15-3-030S 3nsec delay. RF delay has 5dB insertion loss at 2660MHz
    - **No delay**: modified SC2200-EVK2400 EVK, replaced delay by 4dB attenuation to maintain the same attenuation at 2.6GHz between RFIN and RFOUT
  - > All data collected in "Smooth Mode" with calibration 0.5 to 1dB above the targeted maximum PA output power. This was critical to achieve optimum performance.
  - > RFIN, RFFB and RFOUT Peak Power within datasheet recommendations.

NXP A2I25D025N (29dB Gain) Performance Data Summary

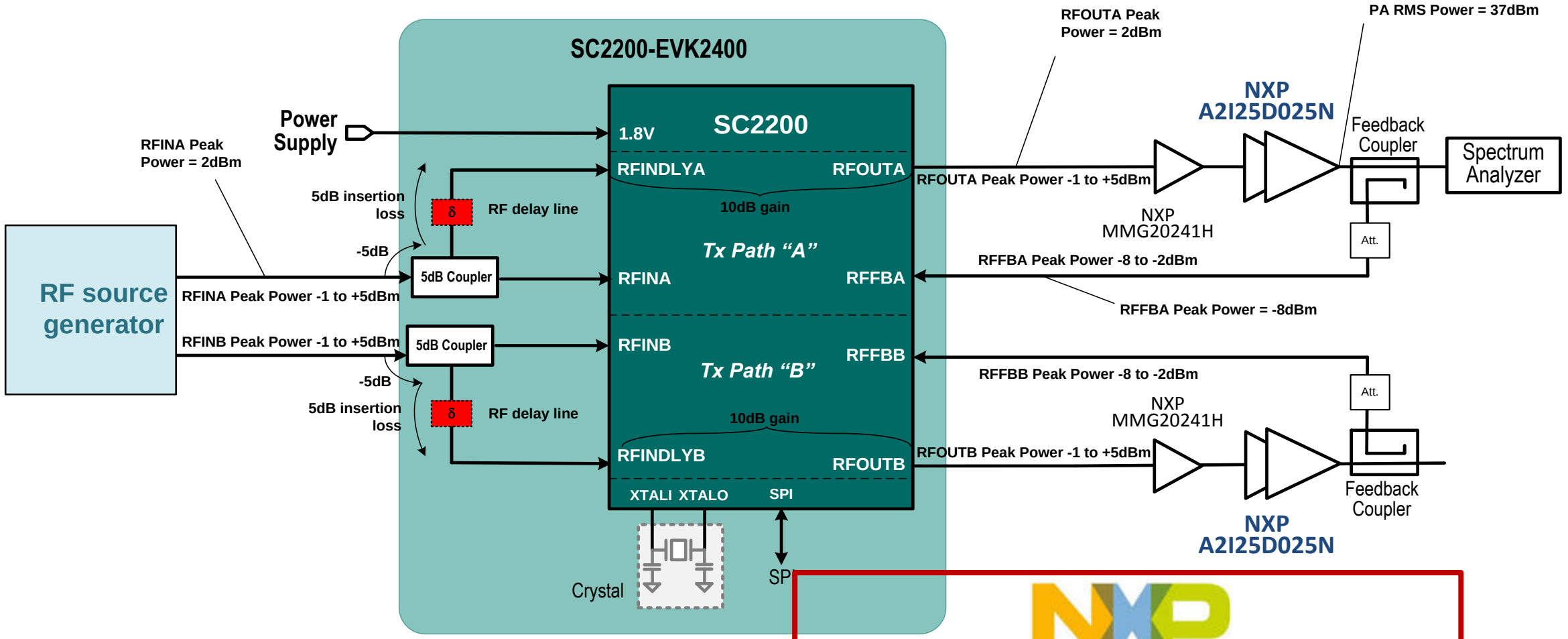
Performance summary for -50dBc ACLR target

- PA Output Power (dBm); Efficiency(%)

Waveform	With 3ns delay	Without delay (5dB pad)
20MHz 7dB PAR	37.5dBm; 38%	37.5dBm; 38%
2x20MHz 7dB PAR	36.5dBm; 35.5%	36dBm; 34.5%
3x20MHz 7.5dB PAR	35dBm; 32%	-50dBc Not Achievable

- NXP A2I25D025N is a very wideband PA with high video bandwidth
- As the signal bandwidth increases, the RF delay line becomes more critical to compensate for PA memory effects and achieve optimum linearization performance
- With 3x20MHz, the delay line was critical to achieve -50dBc. Further PA optimization is required to minimize the memory effect and improve performance without delay line

SC2200 Test Set-up with RF Delay Line

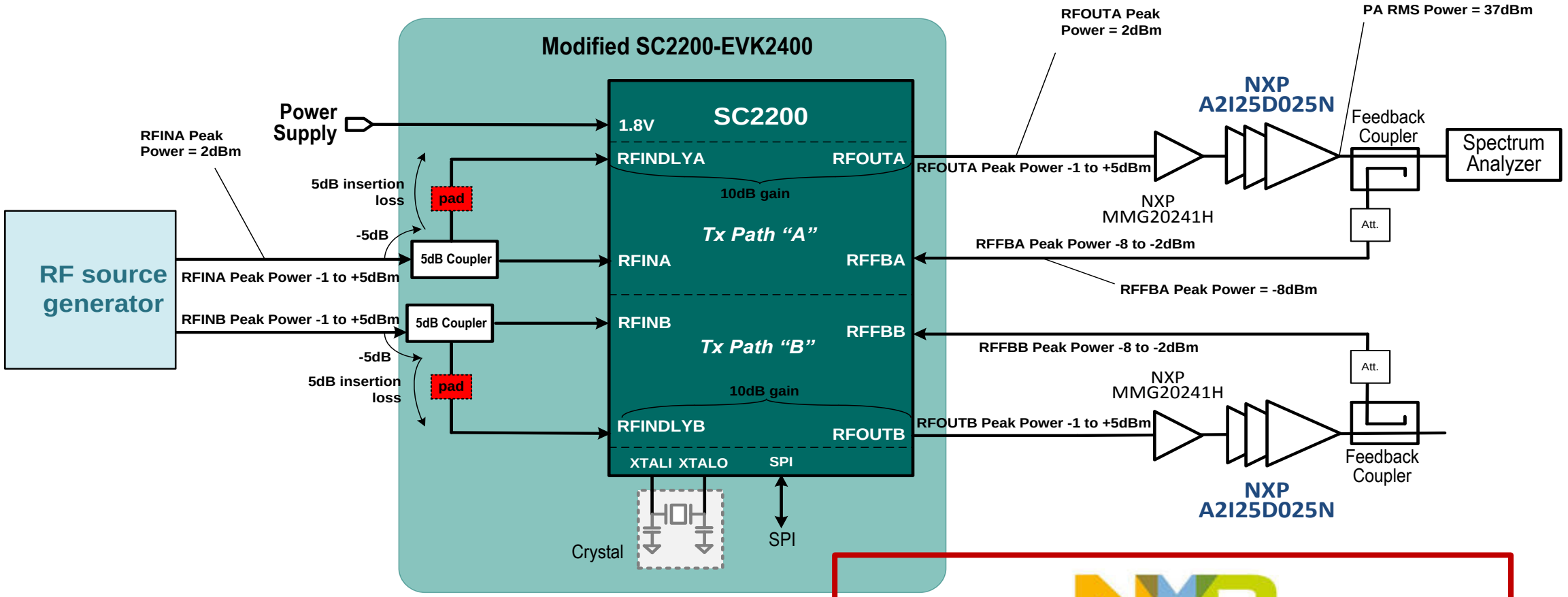


A2125D025N

25 Watt Peak, Doherty PA

With NXP MMG20241H driver

SC2200 Test Set-up without delay line with 4dB Pad

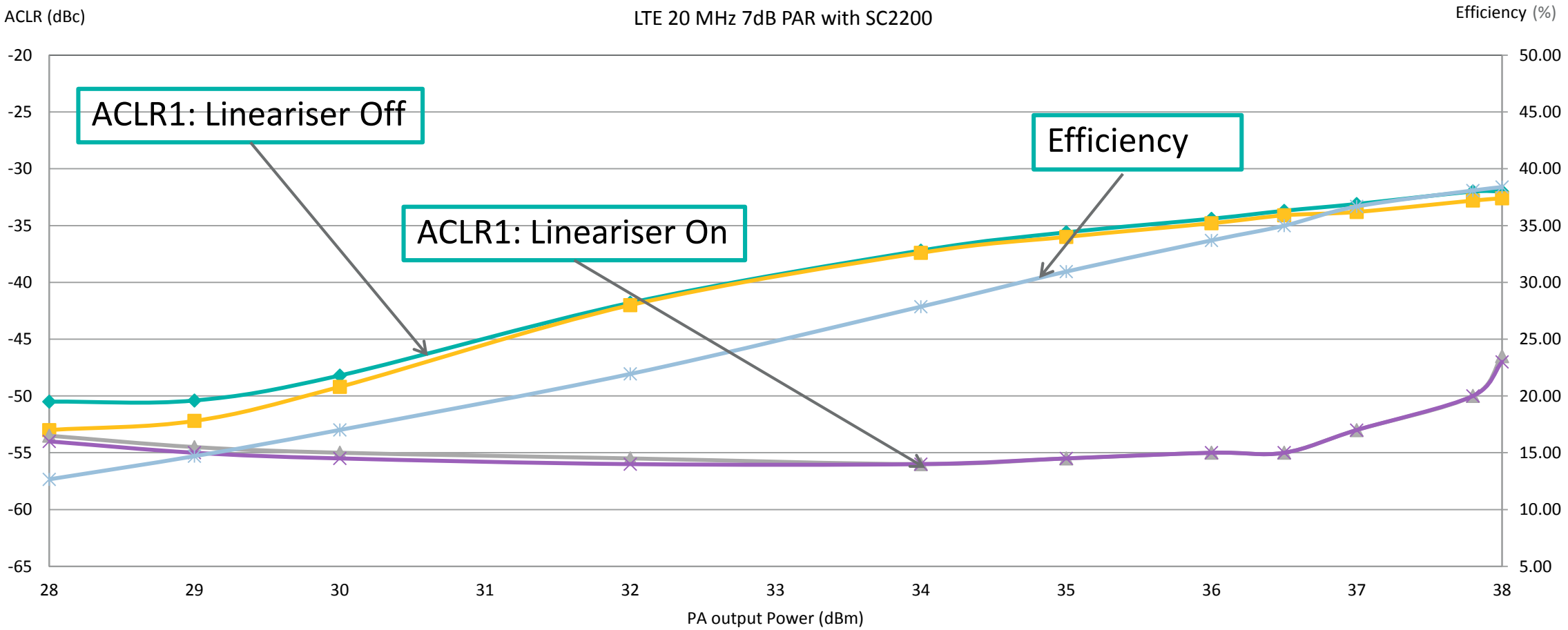


A2125D025N

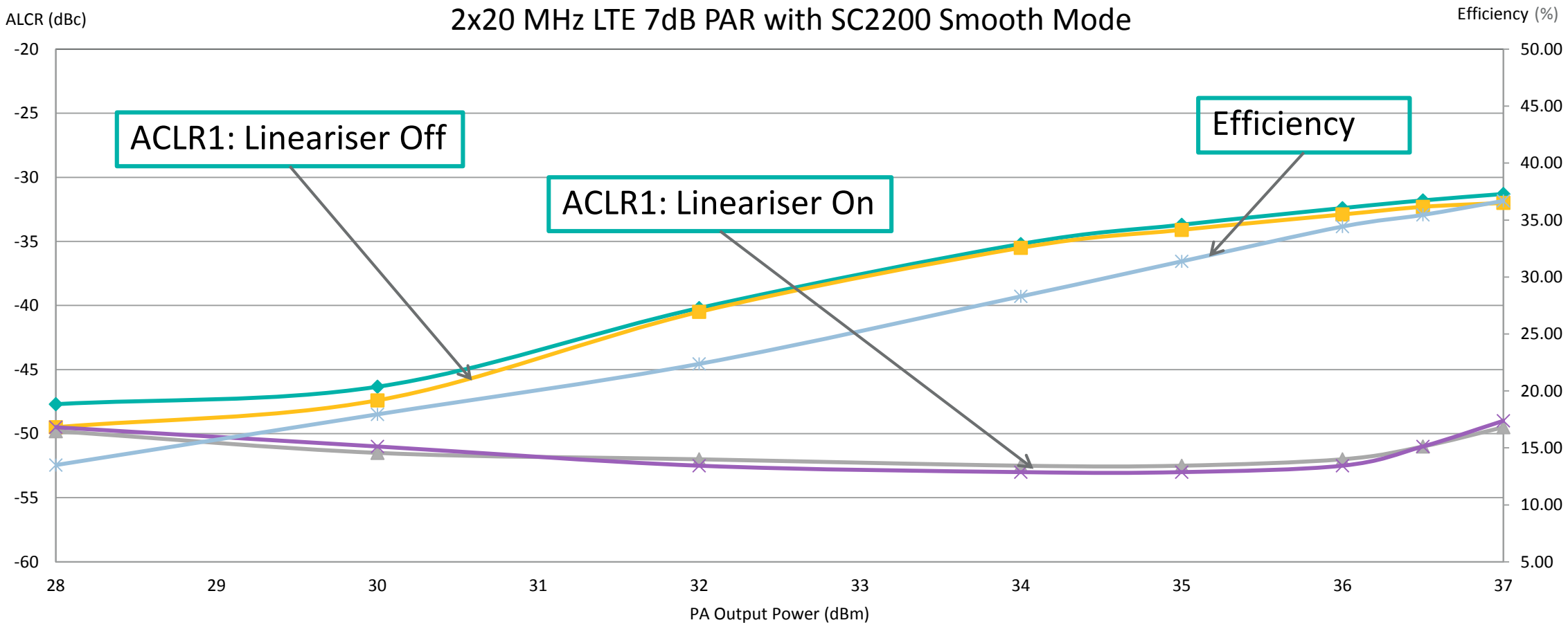
25 Watt Peak, Doherty PA

With NXP MMG20241H driver

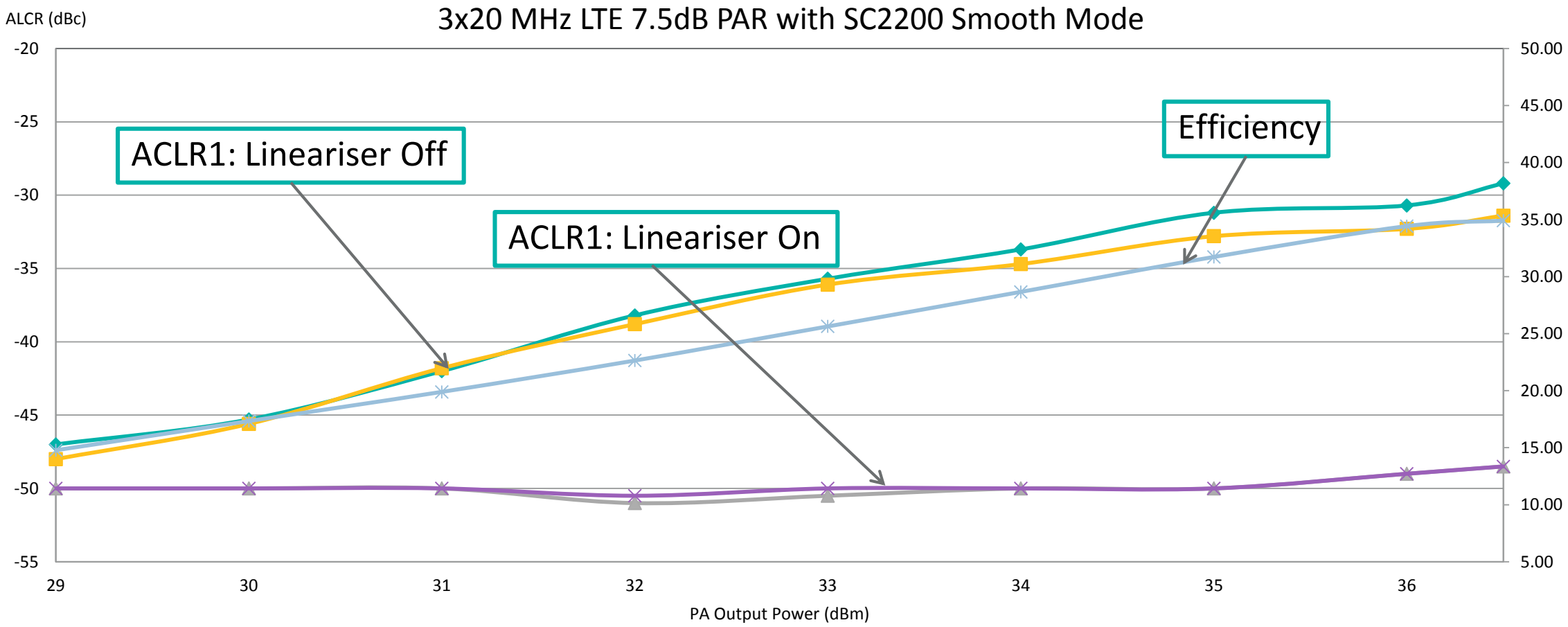
LTE20MHz: 37.8dBm out; 38% efficiency with Delay Line



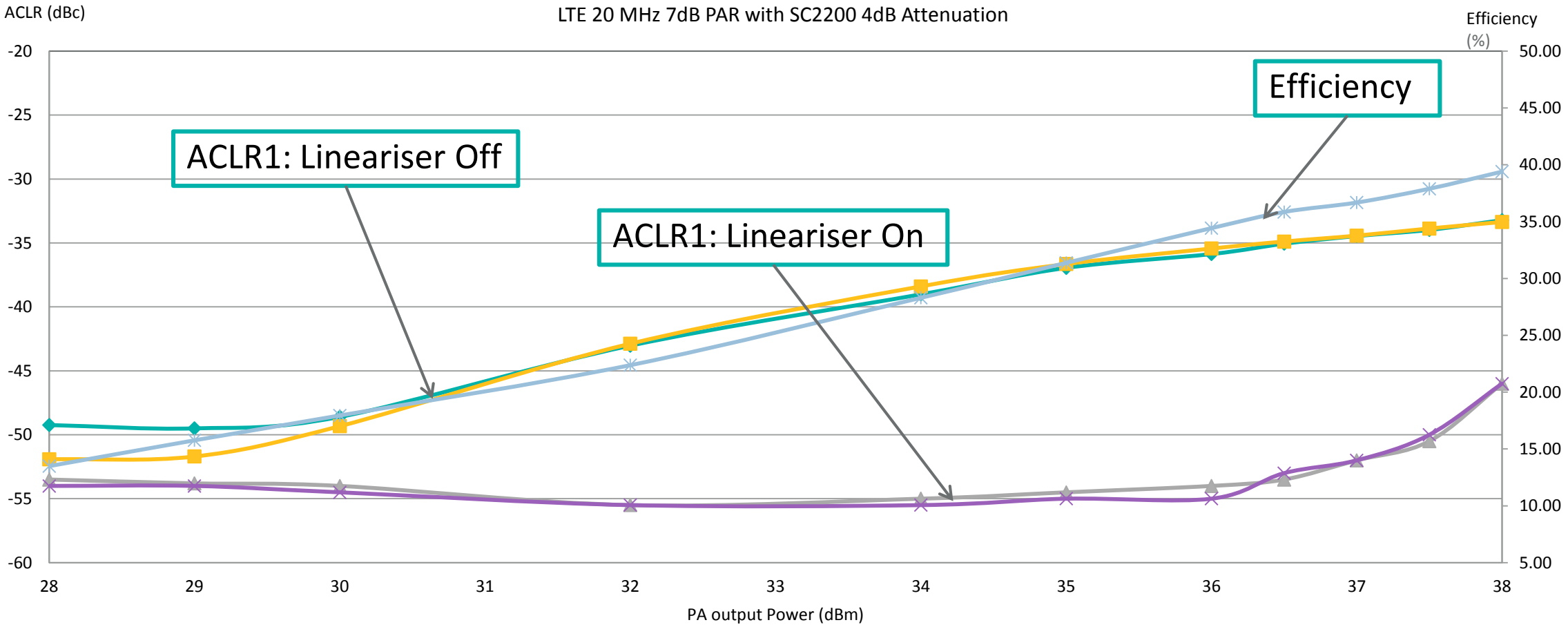
LTE2x20MHz: 36.5dBm out; 35.5% efficiency with Delay Line



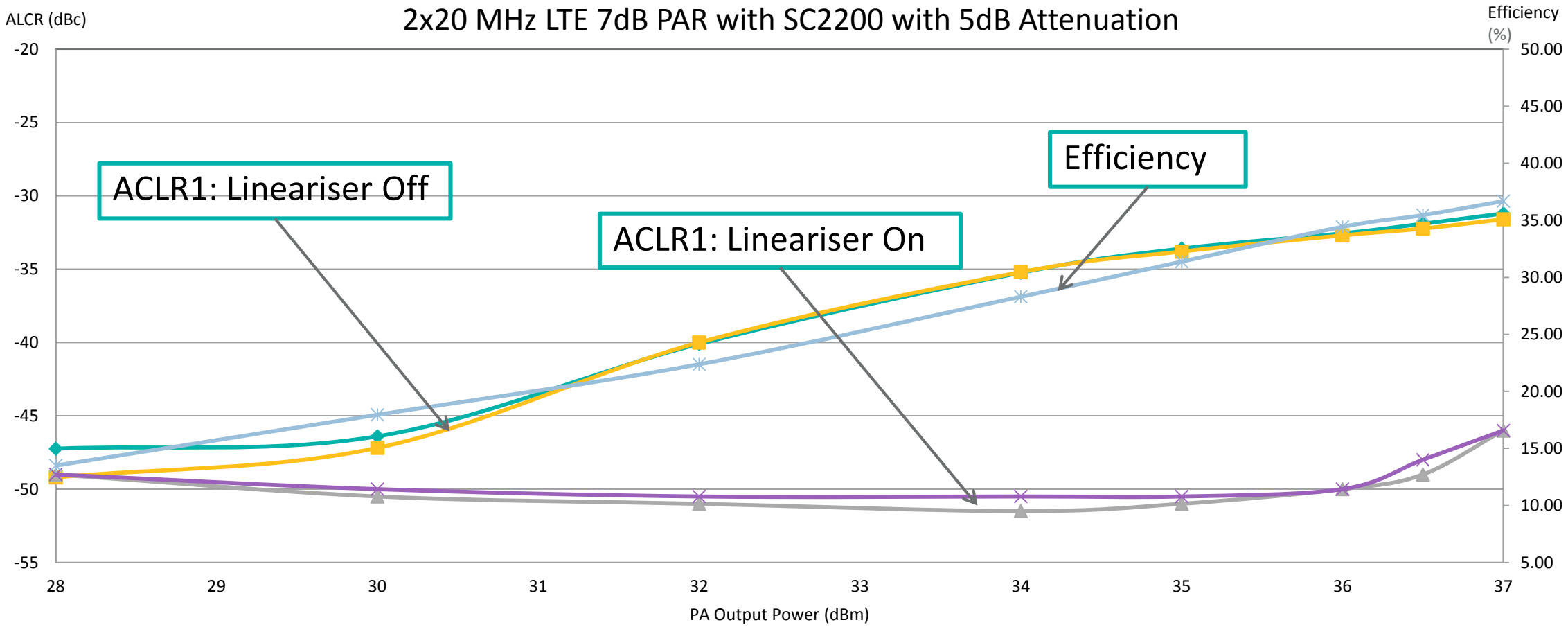
LTE3x20MHz: 35dBm out; 32% efficiency with Delay Line



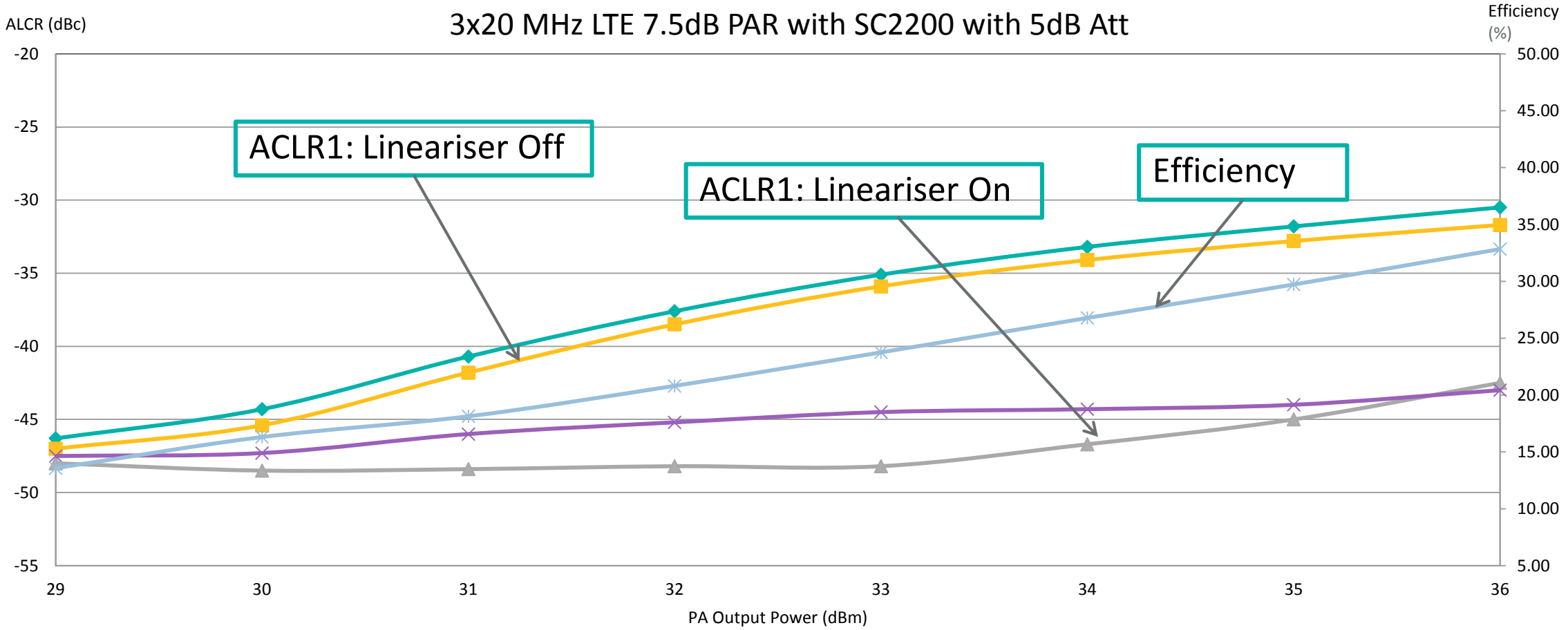
LTE20MHz: 37.5dBm out; 38% efficiency without Delay Line



LTE2x20MHz: 36.5dBm out; 35.5% efficiency without Delay Line



LTE3x20MHz: unable to achieve -50dBc without Delay Line



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