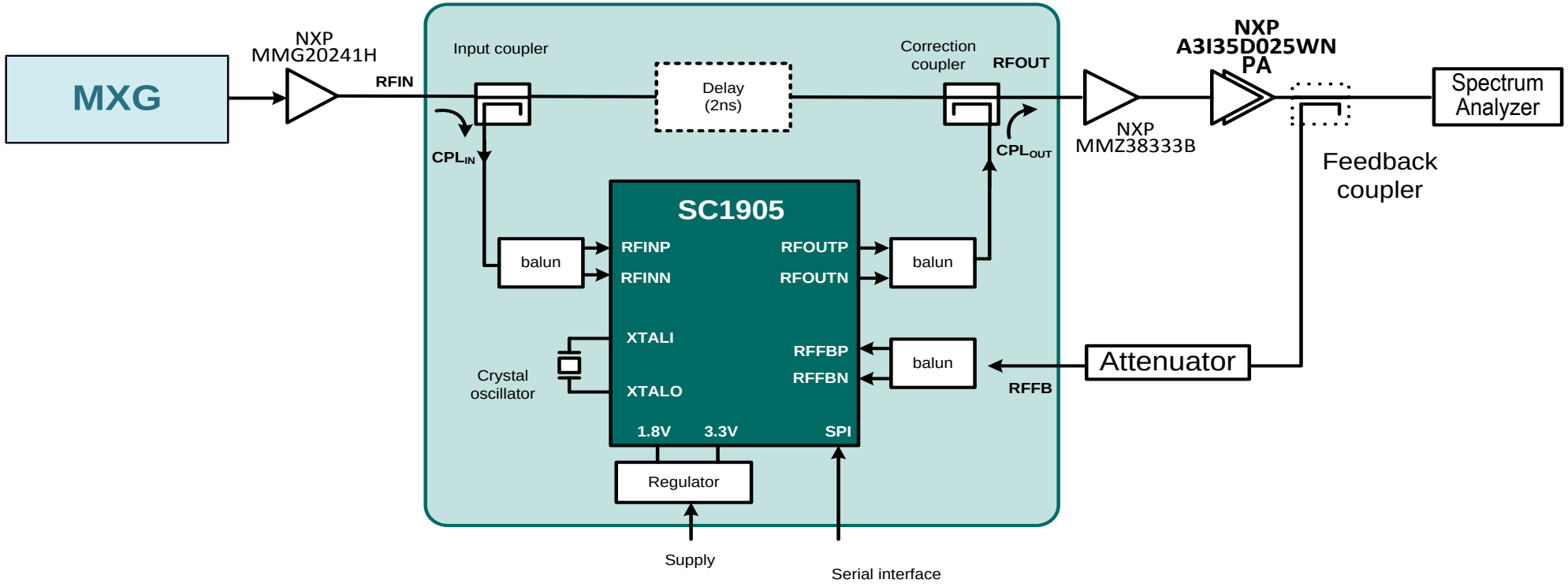
SC1905 100MHz Performance Data at 3.55GHz With NXP A3I35D025WN Doherty PA

Test Set-up with SC1905 and NXP A3I35D025WN at 3.55GHz

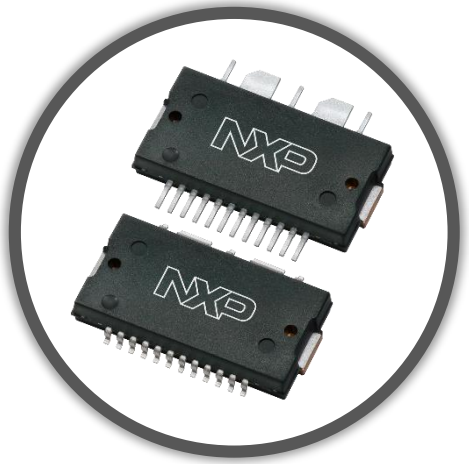


SC1905-EVK3400 Test Conditions with NXP Doherty A3I35D025WN

- 100MHz LTE, 5 contiguous 20MHz Carriers (8dB PAR)
- 100MHz LTE, 2 non-contiguous 20MHz 10001 Carriers (8dB PAR)
- Amplifier Data
  - > NXP A3I35D025WN, Doherty, LDMOS
  - > Operating Frequency: 3400-3800 MHz, tuned for 3400-3600MHz
  - > Frequency tested: 3550 MHz
  - > Video Bandwidth: 400MHz
  - > Gain = ~27dB; Psat = P3dB= ~ 45dBm
  - > Vdd=28V
- RFIN Level needs to be higher at 3.5GHz than at other frequencies of operation.
  - Recommendation for all bands (except 3400-3800MHz)is 1<RFIN AGC (PDET)<8
  - For 3400-3800MHz, recommend using **7<RFIN AGC (PDET)<14**

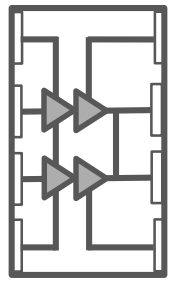
A3I35D025WN

- **28 V LDMOS**
- **35 W Peak, 5 W Avg**
- **3200-4000 MHz**
- **>24dB Gain**
- **>27% efficiency @ 9 dB OBO in Doherty**
- Symmetrical Doherty
- TO-270WB low-Rjc plastic package
- 1.7° thermal resistance



Comments:

- *Internal baseband termination for wide instantaneous bandwidth applications*
- *On-chip matching (50 ohm input, DC blocked)*
- *Integrated quiescent current temperature compensation with enable/disable function*
- *Designed for predistortion error correction systems*



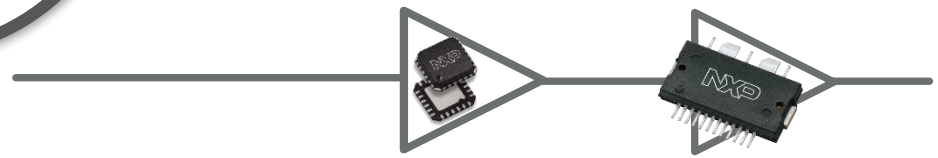
Available Reference Circuits:

3500 MHz

- Typical Single-Carrier W-CDMA Characterization Performance: V_{DD} = 28 Vdc, $I_{DQ1(A+B)}$ = 72 mA, $I_{DQ2(A+B)}$ = 260 mA, P_{out} = 3.4 W Avg., Input Signal PAR = 9.9 dB @ 0.01% Probability on CCDF. (1)

Frequency	G_{ps} (dB)	PAE (%)	ACPR (dBc)
3400 MHz	28.5	16.5	–46.5
3500 MHz	28.8	17.0	–46.3
3600 MHz	28.9	17.3	–46.1
3700 MHz	28.7	17.7	–46.4
3800 MHz	28.5	17.9	–46.2

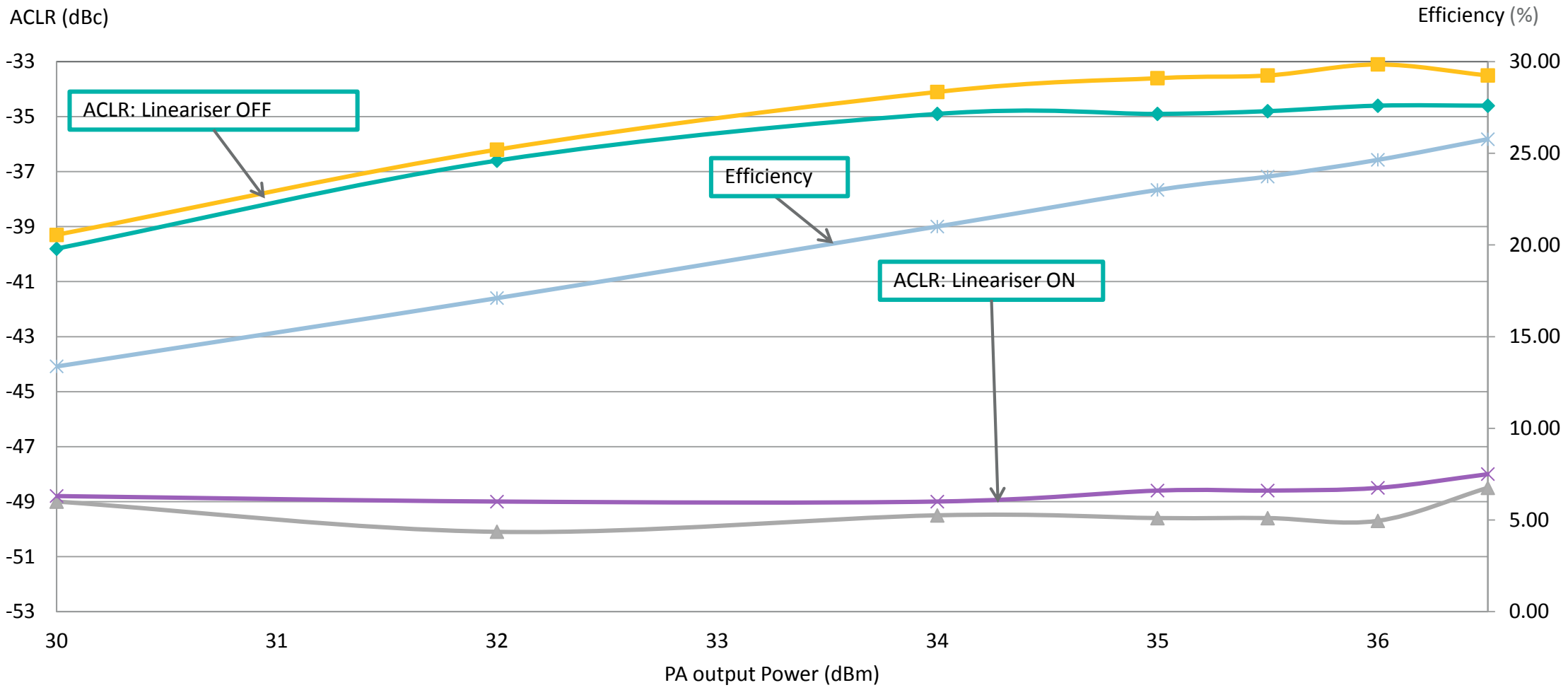
Typical line-up:



Driver: MMZ38333B

Final stage: A3I35D025WN

ACLR Performance with 5x20MHz (8dB PAR) at 3.55GHz



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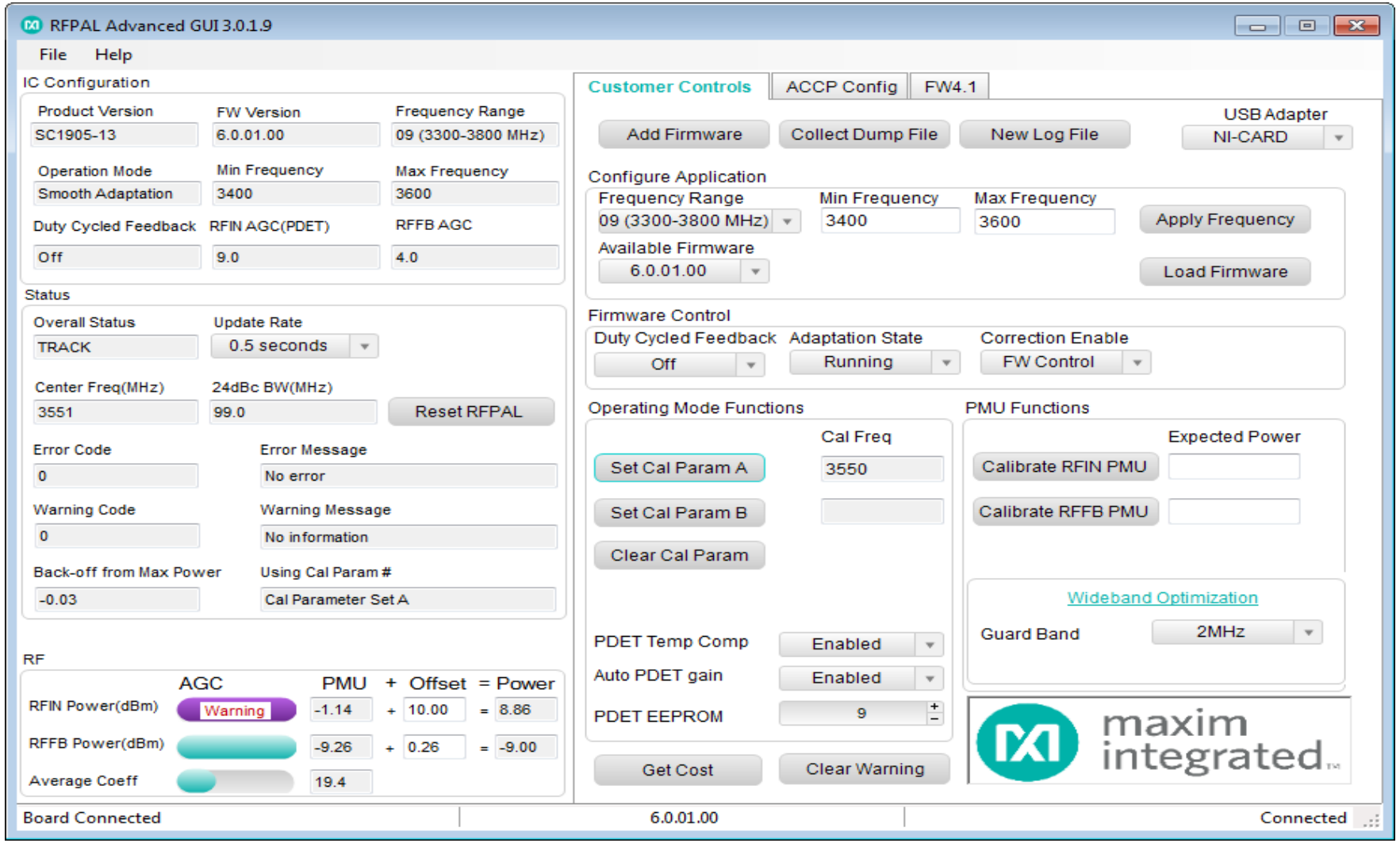
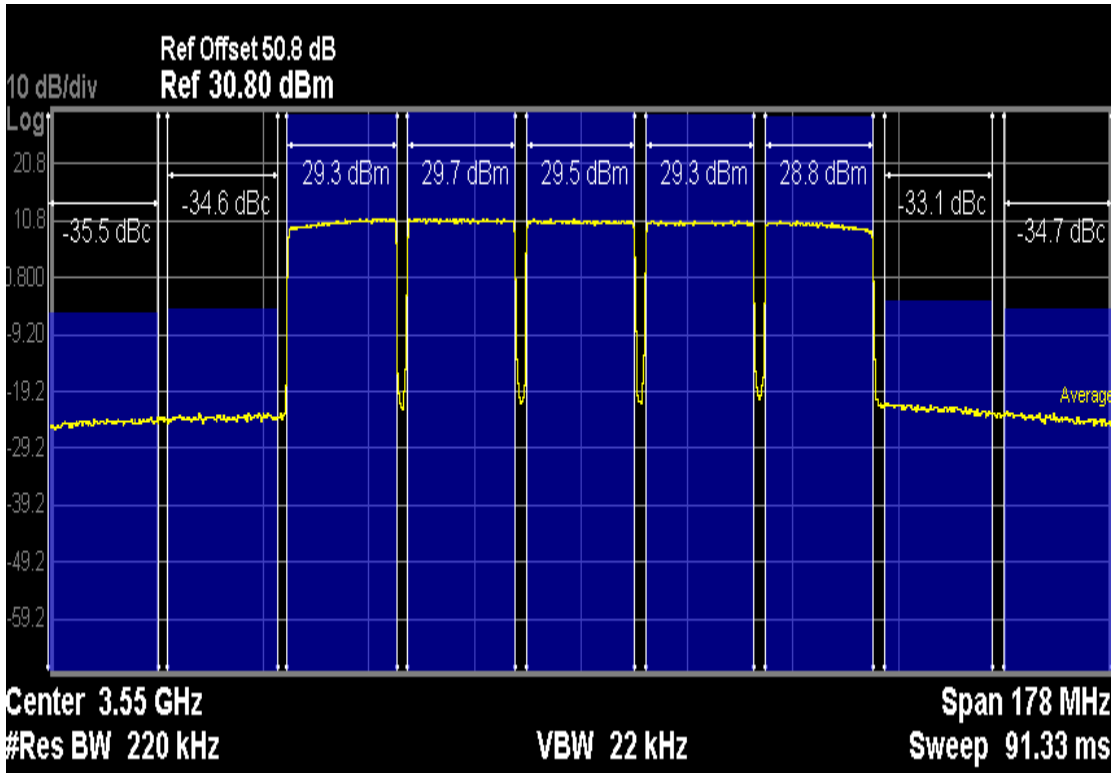
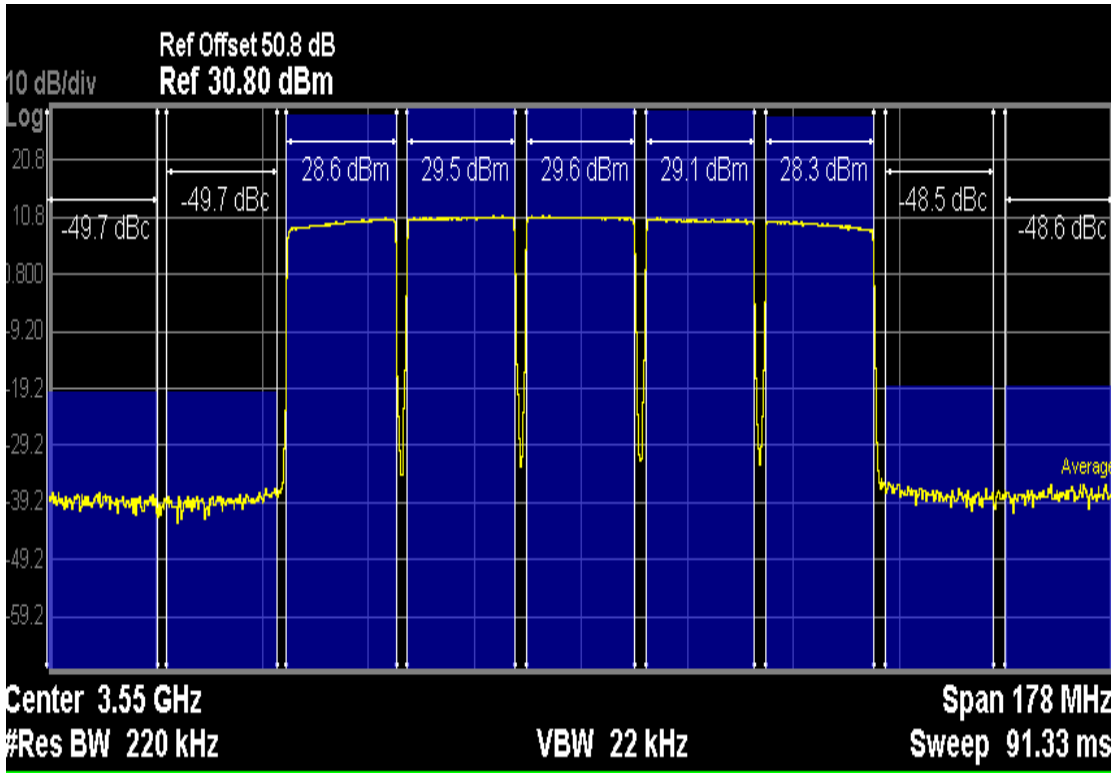
Contiguous Carrier Configuration 5x20MHz (8dB PAR)



ACLR Performance with 5x20MHz (8dB PAR) at 3.5GHz 36dBm. Efficiency: 24.5%



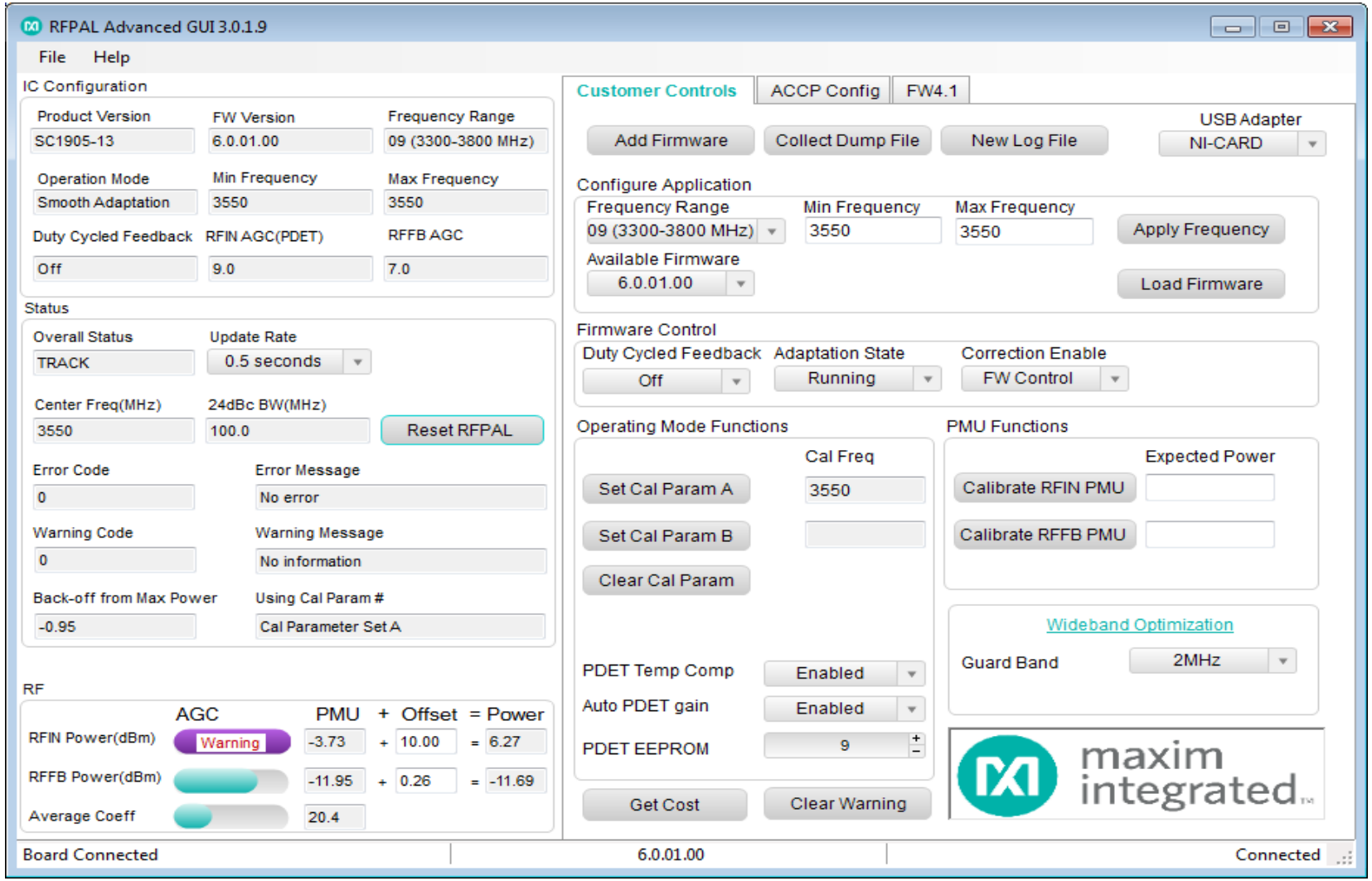


SC1905 OFF
-34.6/-33.1dBC

15dB correction

SC1905 ON
-49.7/-48.5dBc

Non-Contiguous Carrier Configuration

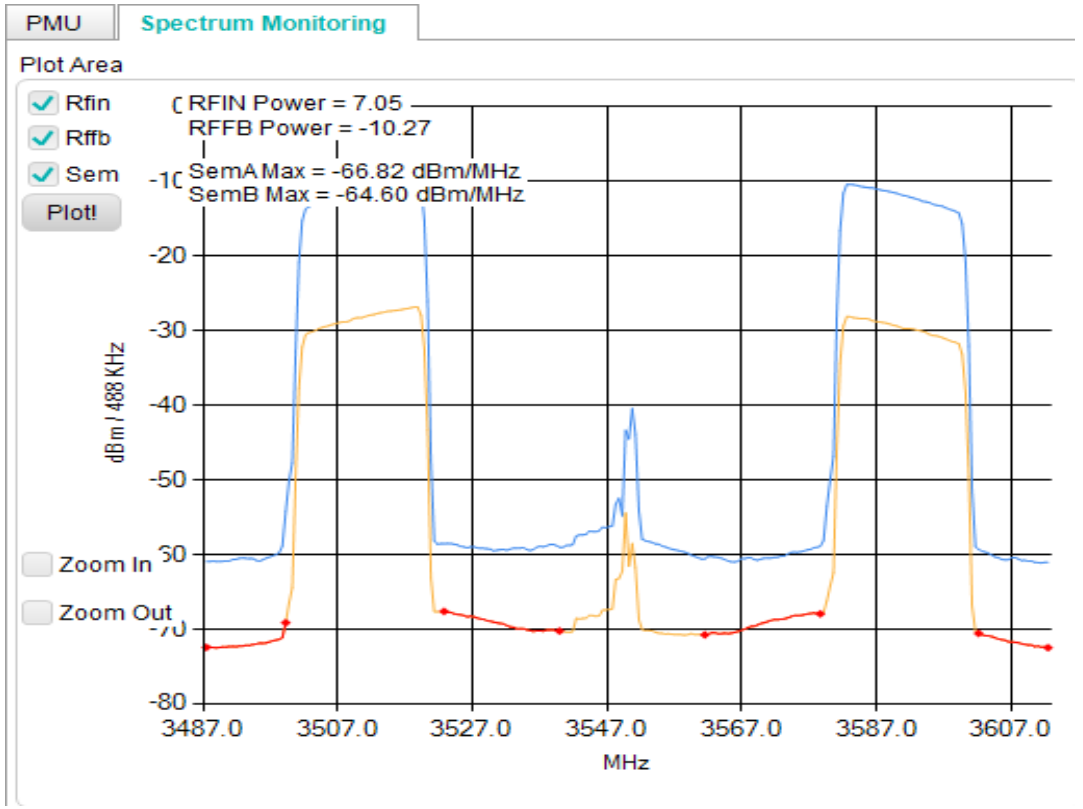


Required Configuration for Non-contiguous carrier configuration
Min Frequency = Max Frequency

Linearizer Operation Mode 1 to Improve In-Band Correction

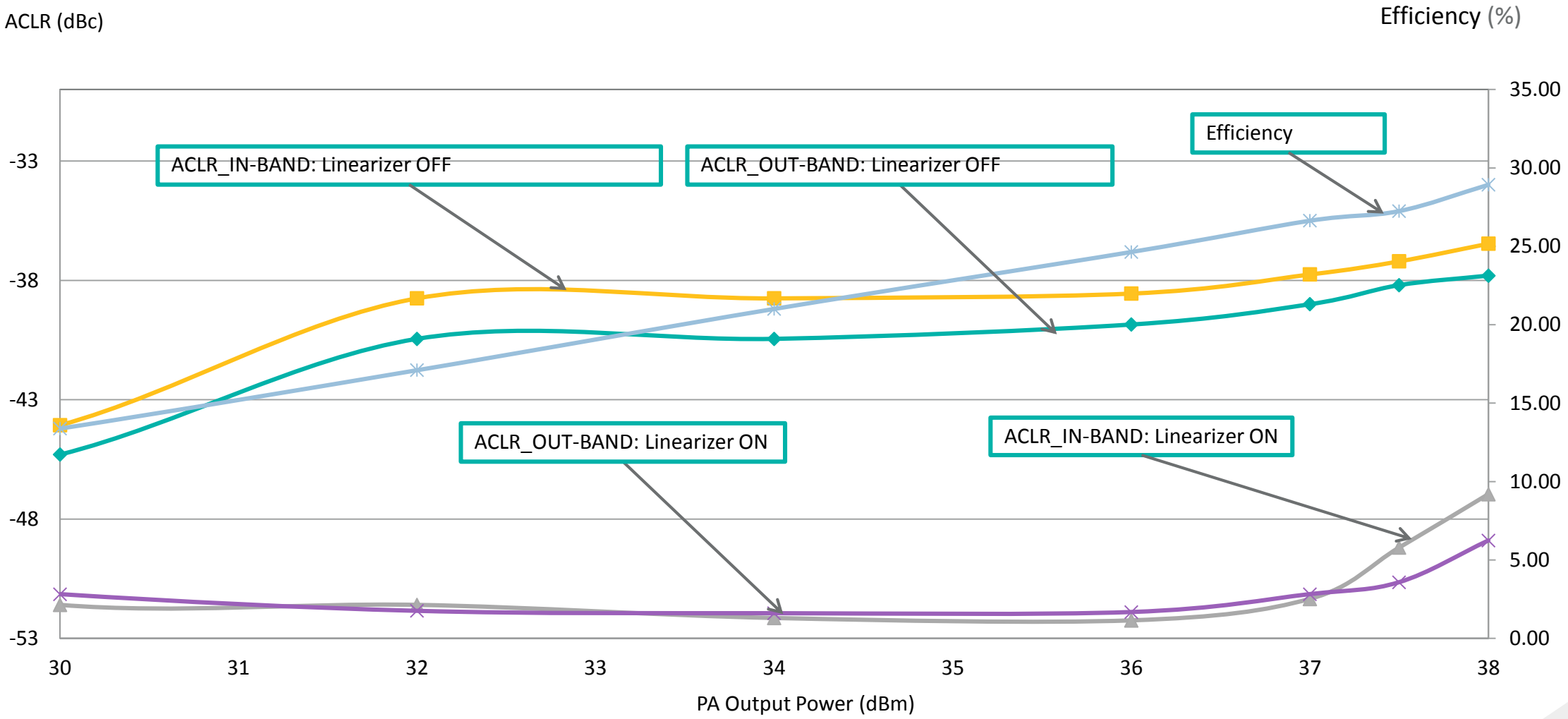
Group	Variable Name	Address	Value
WideBand	NoobWeightFactorUpper	0xFD95	0
WideBand	LowerSemFreqB_MHz	0xFCF0	-79
WideBand	SemMeasBW_MHz	0xFC10	36
WideBand	UpperSemFreqA_MHz	0xFCF1	3
WideBand	UpperSemFreqB_MHz	0xFCF2	-79
WideBand	LowerSemFreqA_MHz	0xFC11	3
WideBand	Linearizer Operation Mode	0xFD5E	1
WideBand	NoobWeightFactorLower	0xFD94	0
WideBand	Customer Definable Guard Bin	0xFC62	3

Wideband Parameters to be configured to define the 4 adaptation zone



The 4 red zones are defined by the different wideband parameters in the ACCP Config tab of the AdvGUI2.5.10

ACLR Performance with 10001 100MHz (8dB PAR) at 3.55GHz



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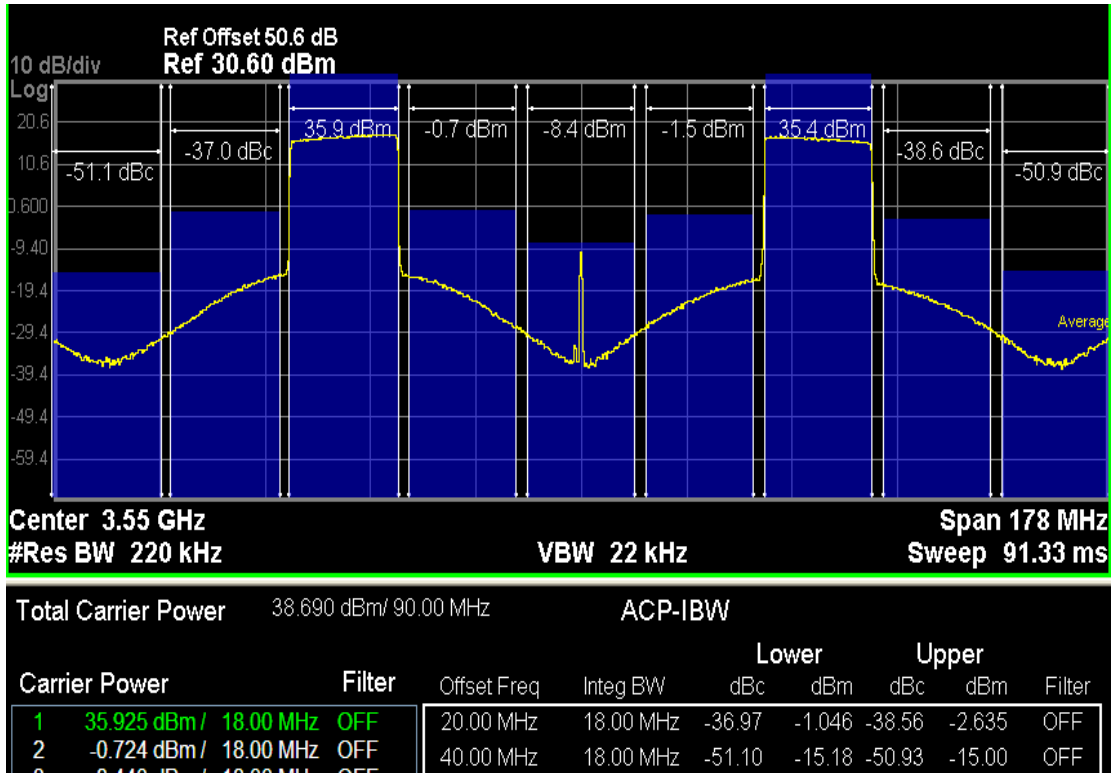
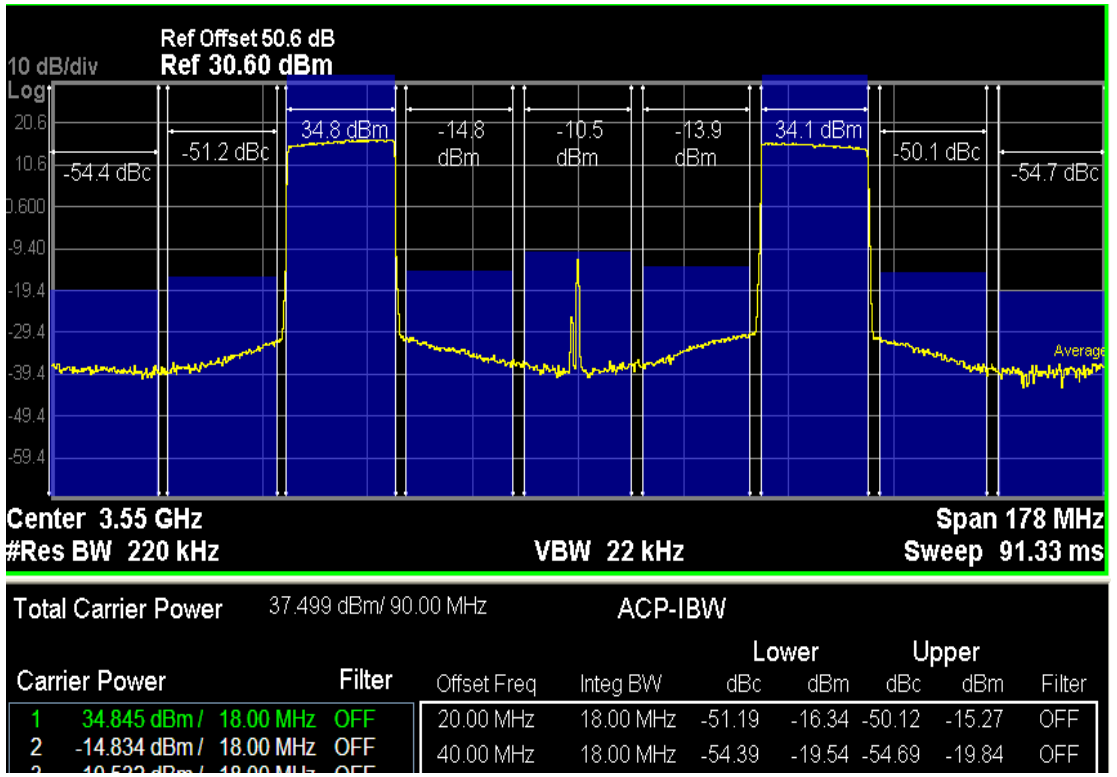
ACLR Performance with 5x20MHz 10001 (~8dB PAR) at 3.55GHz 37.5dBm. Efficiency: 27.25%





SC1905 OFF
Out-of-band IMs
-37/-38.6dBC
In-band IMs
-0.7/-1.5dBm

12-14dB Correction for Out-of-band and for In-band

SC1905 ON
Out-of-band IMs
-51.2/-50.1dBc
In-band IMs
-14.8/-13.9dBm

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