DPD/PA TEST REPORT

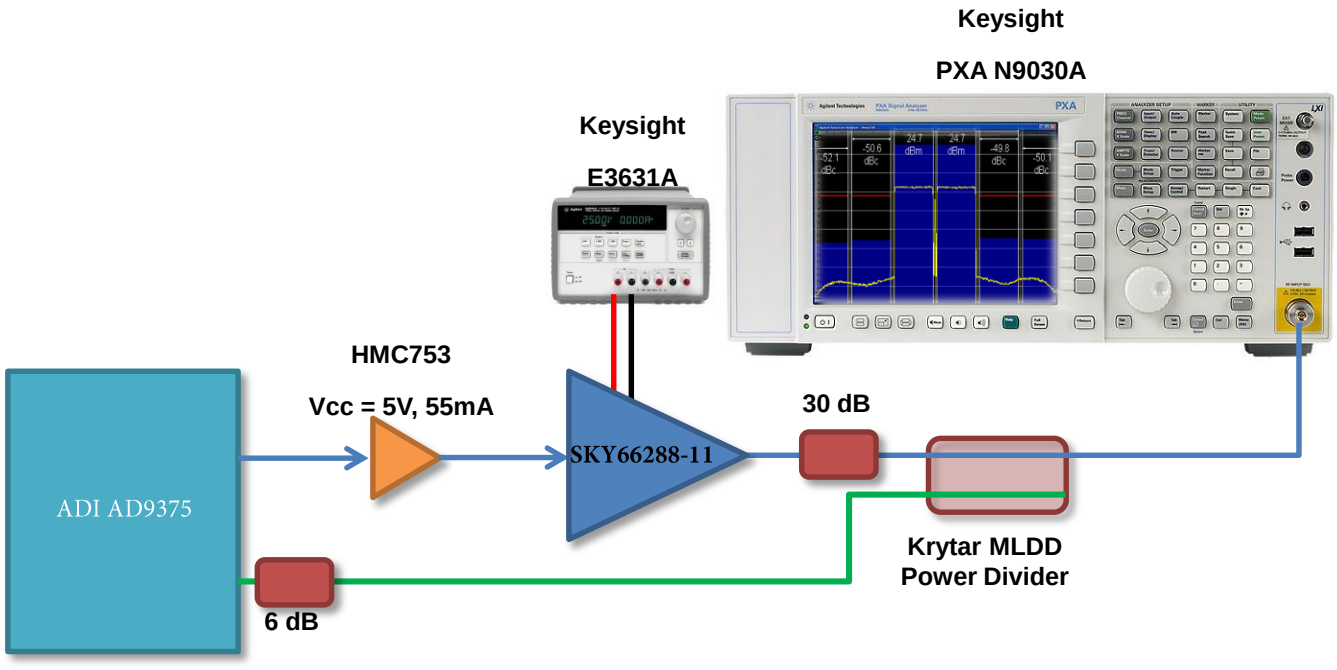
RF Transceiver	AD9375
Power Amplifier	SKY66288-11
PA Type	High Efficiency Semi-Linear PA
Transistor Type	SWKS HBT
Operating Frequency Range (MHz)	5150– 5925
Gain (dB)	34.5 (min)
Power Added Efficiency	28.4%
OP3dB (dBm)	+36
Supply Voltage	5V
Bandwidths Tested	20MHz

5.14GHz to 5.24GHz

SUMMARY

Frequency	Output Power (dBm rms)	Signal Bandwidth	Test Signal	ACLR +1 (dBc)	ACLR-1 (dBc)	ACLR+2 (dBc)	ACLR-2 (dBc)	Power Added Efficiency (%)
5140MHz (Bottom)	28	20MHz	ETM3.1 20MHz LTE	-52.6	-53	-56	-58	28.94
5190MHz (Middle)	28	20MHz	ETM3.1 20MHz LTE	-52.7	-50.7	-56	-55	28.36
5240MHz (Top)	28	20MHz	ETM3.1 20MHz LTE	-50.56	-50.36	-58	-56	29.3

BLOCK DIAGRAM



ACLR RESULTS BOTTOM/MIDDLE/TOP FREQUENCIES

5140MHZ, 20MHZ BANDWIDTH ACLR RESULTS

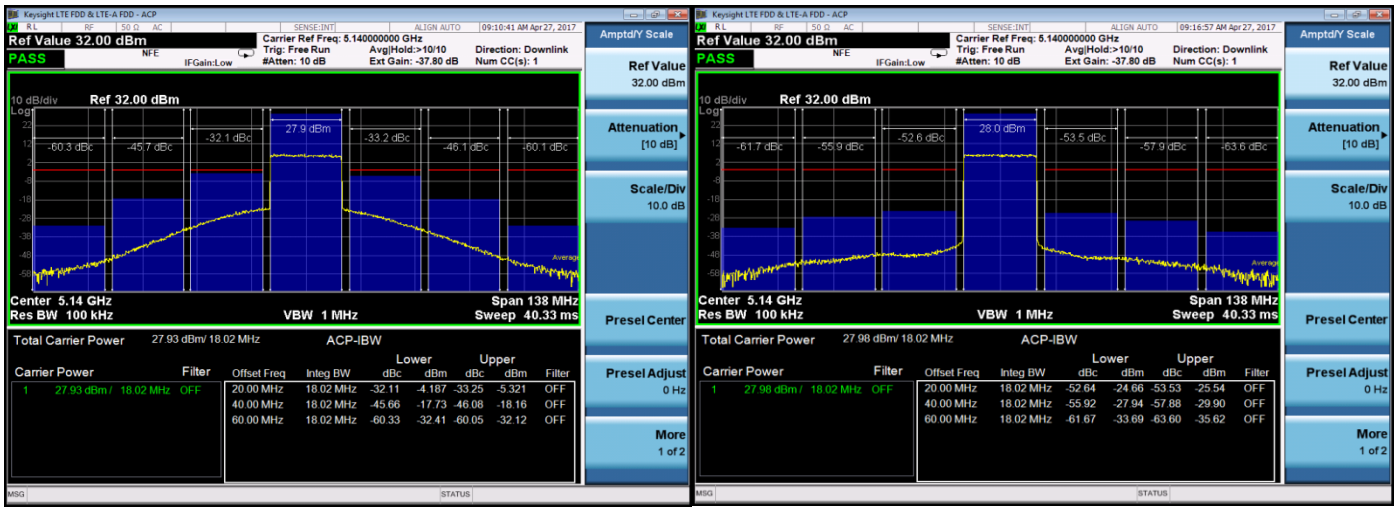


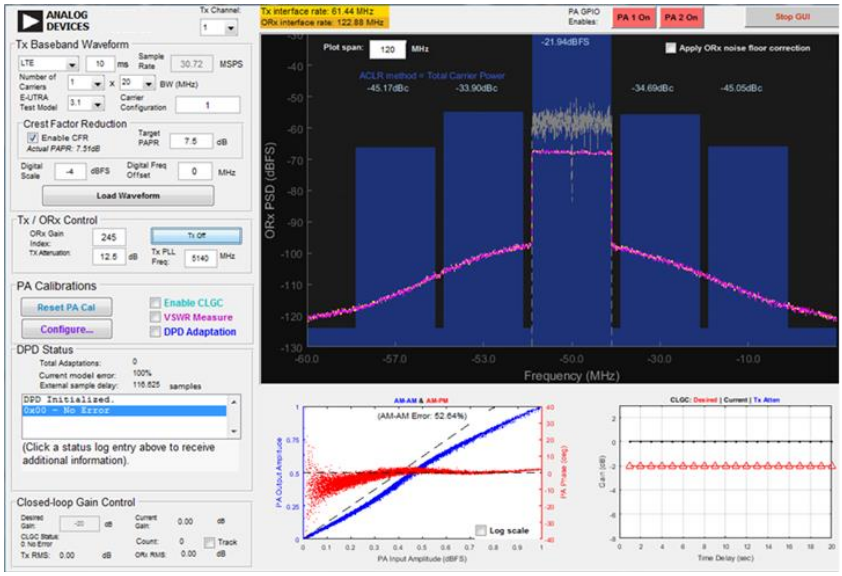
Figure: 1. Frequency 5140MHz, 20MHz ETM3.1 Signal

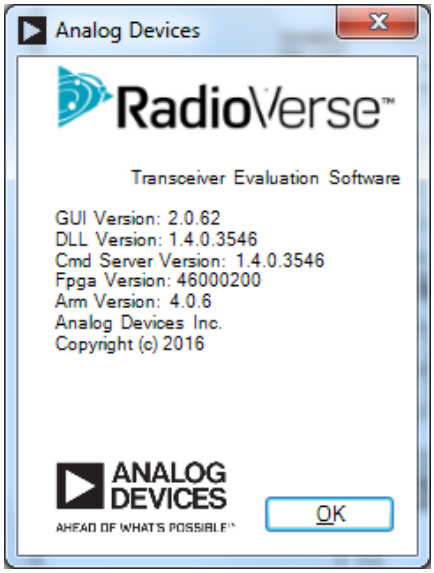
Before/After DPD	Output Power (rms)	ACLR+1 (dBc)	ACLR-1 (dBc)	ACLR+2 (dBc)	ACLR-2 (dBc)	ACLR+3 (dBc)	ACLR-3 (dBc)	Drain Current (mA)	PAE (%)
Before DPD	+28	-32.1	-32.3	-45.7	-45.1	-60.3	-60.1	440	28.7
After DPD	+28	-52.6	-53.5	-56	-57.9	-61.6	-63	436	28.9

Table 1. Summary of Results: Frequency: 5140MHz, 20MHZ ETM3.1 Signal

PA settings: Vcc1 = Vcc2 = Vcc3 = VBias = 5.0V, Ven = 2.0V Signal Used: ETM3.1

AD9375 DPD configuration





5190MHZ, 20MHZ BANDWIDTH ACLR RESULTS

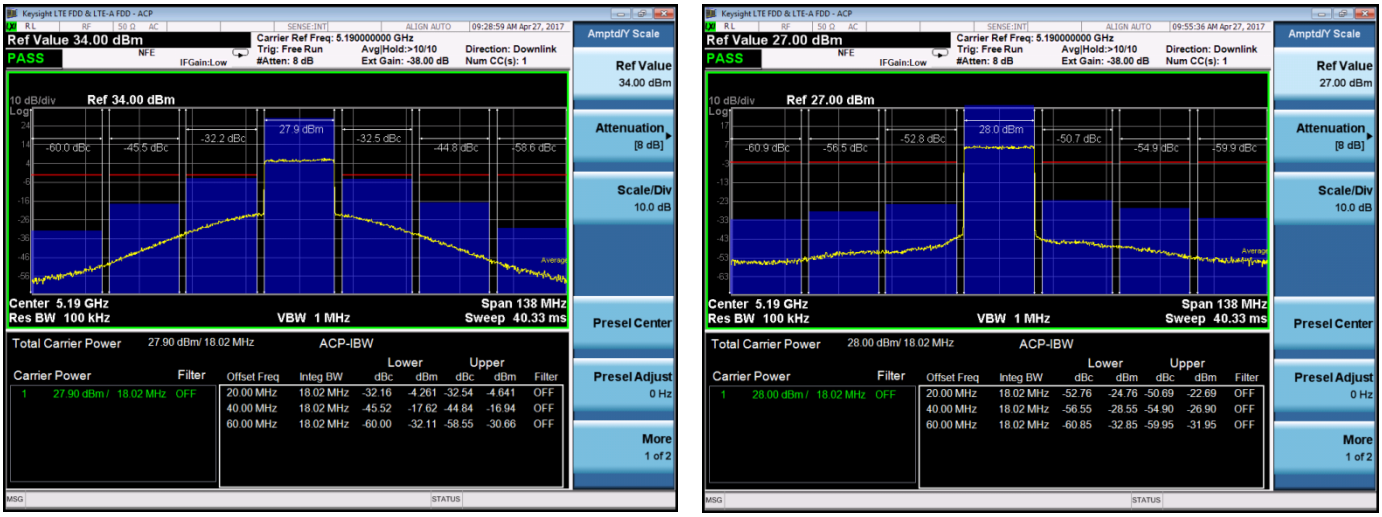


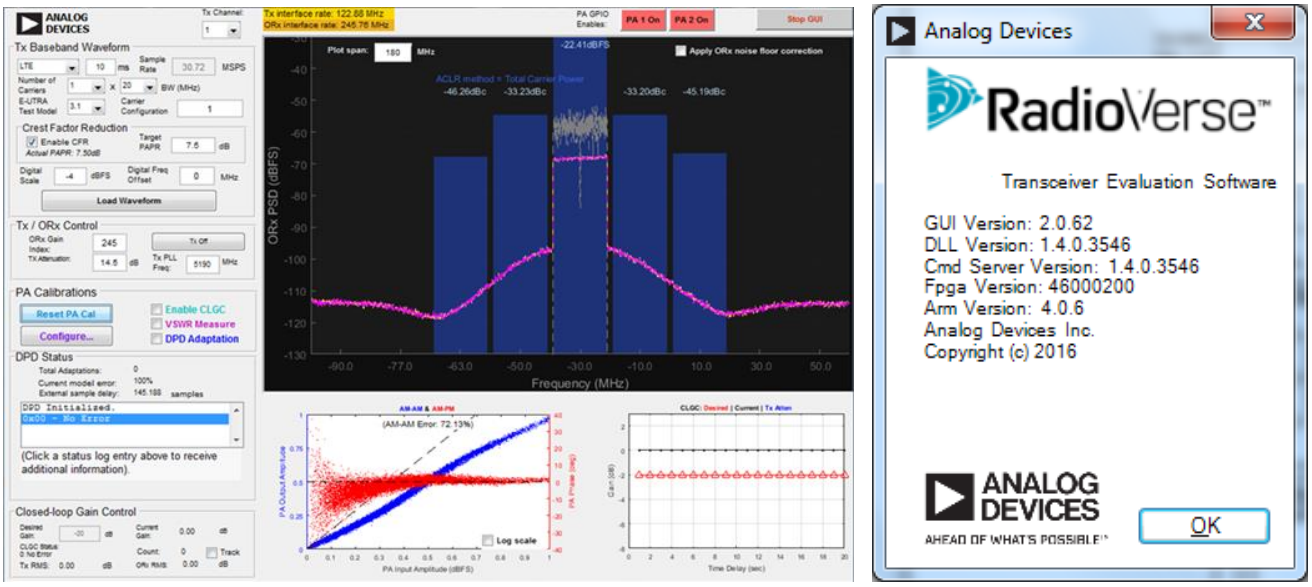
Figure 2: Frequency 5190MHz, 20MHz ETM3.1 Signal

Before/After DPD	Output Power (rms)	ACLR+1 (dBc)	ACLR-1 (dBc)	ACLR+2 (dBc)	ACLR-2 (dBc)	ACLR+3 (dBc)	ACLR-3 (dBc)	Drain Current (mA)	PAE (%)
Before DPD	+28	-32.16	-32.56	-45.54	-44.84	-60	-58.6	430	29.35
After DPD	+28	-52.76	-50.69	-56.55	-54.9	-60	-59.9	426	29.62

Table 2. Summary of Results: Frequency: 5190MHz, 20MHZ ETM3.1 Signal

PA settings: Vcc1 = Vcc2 = Vcc3 = VBias = 5.0V, Ven = 2.0V Signal Used: ETM3.1

AD9375 DPD configuration



5240MHZ, 20MHZ BANDWIDTH ACLR RESULT

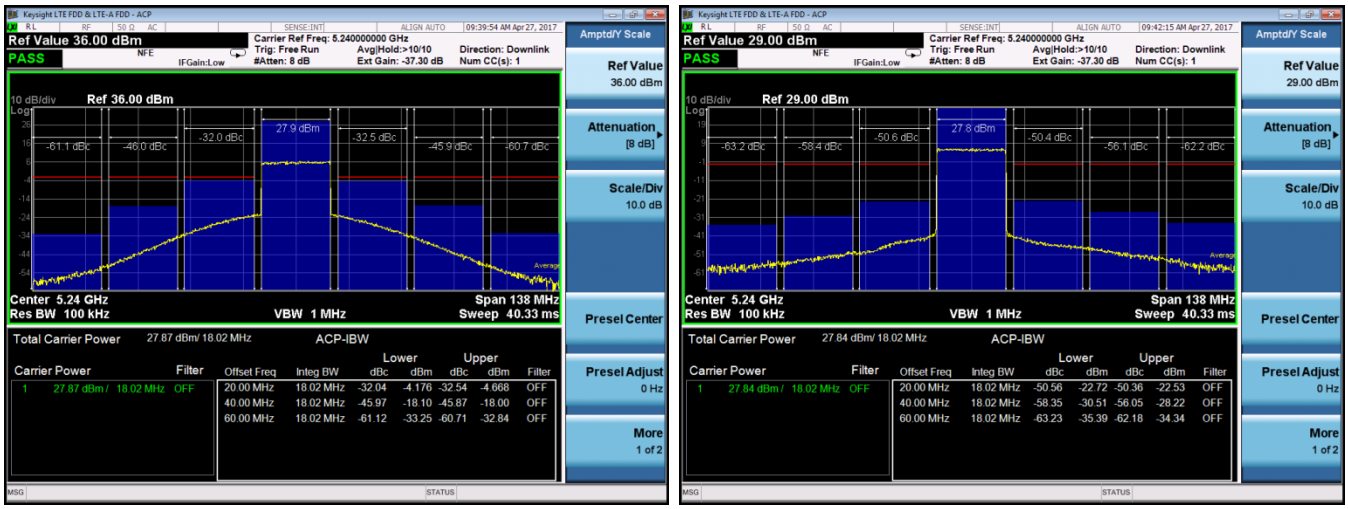


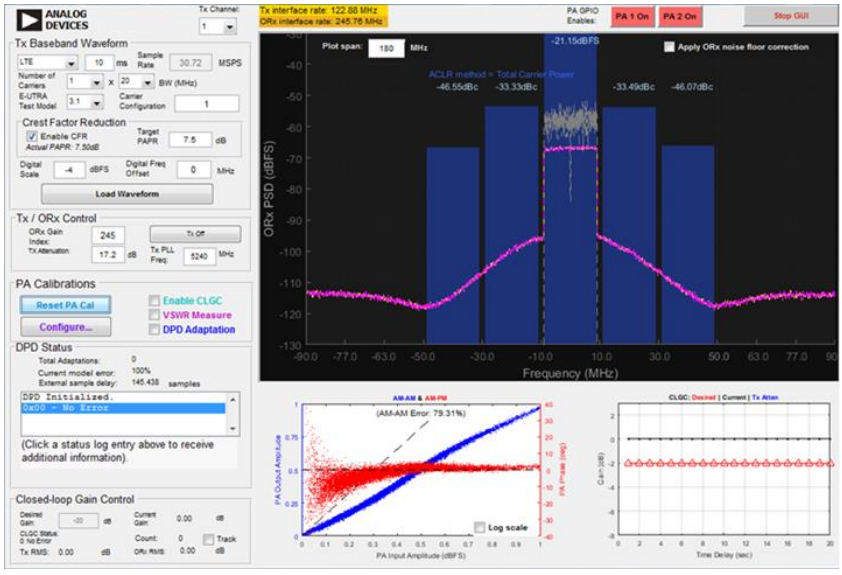
Figure 3: Frequency 5240MHz, 20MHz ETM3.1 Signal

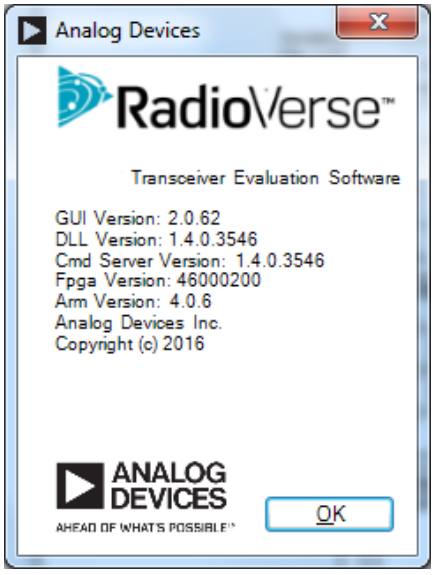
Before/After DPD	Output Power (rms)	ACLR+1 (dBc)	ACLR-1 (dBc)	ACLR+2 (dBc)	ACLR-2 (dBc)	ACLR+3 (dBc)	ACLR-3 (dBc)	Drain Current (mA)	PAE (%)
Before DPD	+28.0	-32.04	-32.54	-45.97	-45.87	-61	-60.7	430	29.35
After DPD	+28	-50.56	-50.36	-58.35	-56.85	-63	-62	430	29.35

Table 3: Summary of Results: Frequency: 5240MHz, 20MHZ ETM3.1 Signal

PA settings: Vcc1 = Vcc2 = Vcc3 = VBias = 5.0V, Ven = 2.0V Signal Used: ETM3.1

AD9375 DPD





WIDEBAND PLOTS, BOTTOM/MIDDLE/TOP FREQUENCIES

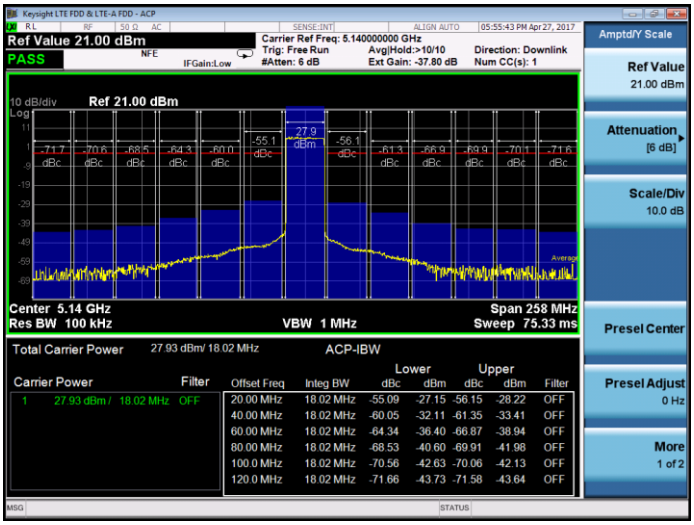


Figure 4: Wideband Spectrum Analyser Plot: Frequency 5140MHZ, 20MHz ETM3.1 Signal

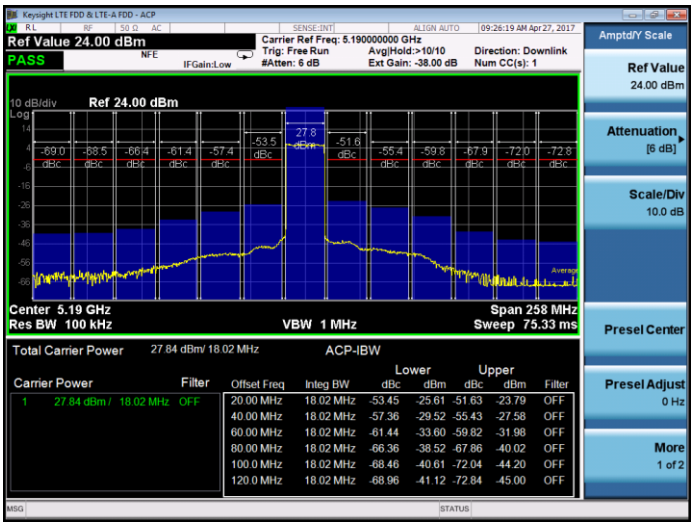


Figure 5: Wideband Spectrum Analyser Plot: Frequency 5190MHZ, 20MHz ETM3.1 Signal

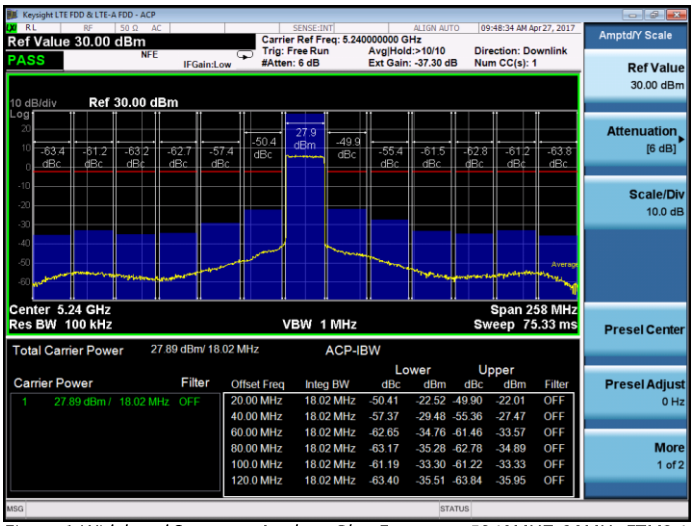


Figure 6: Wideband Spectrum Analyser Plot: Frequency 5240MHZ, 20MHz ETM3.1 Signal

ACLR VS POUT

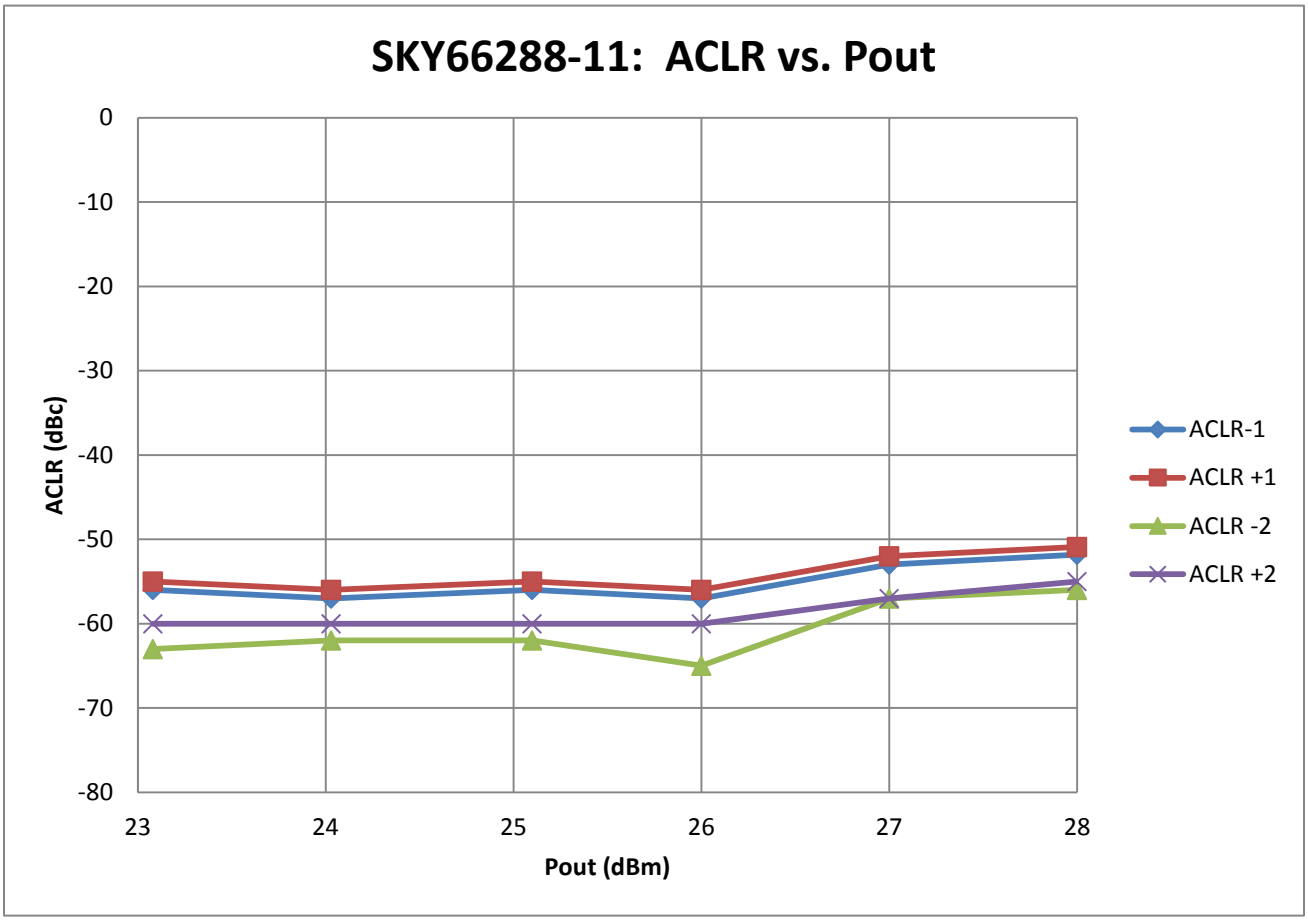


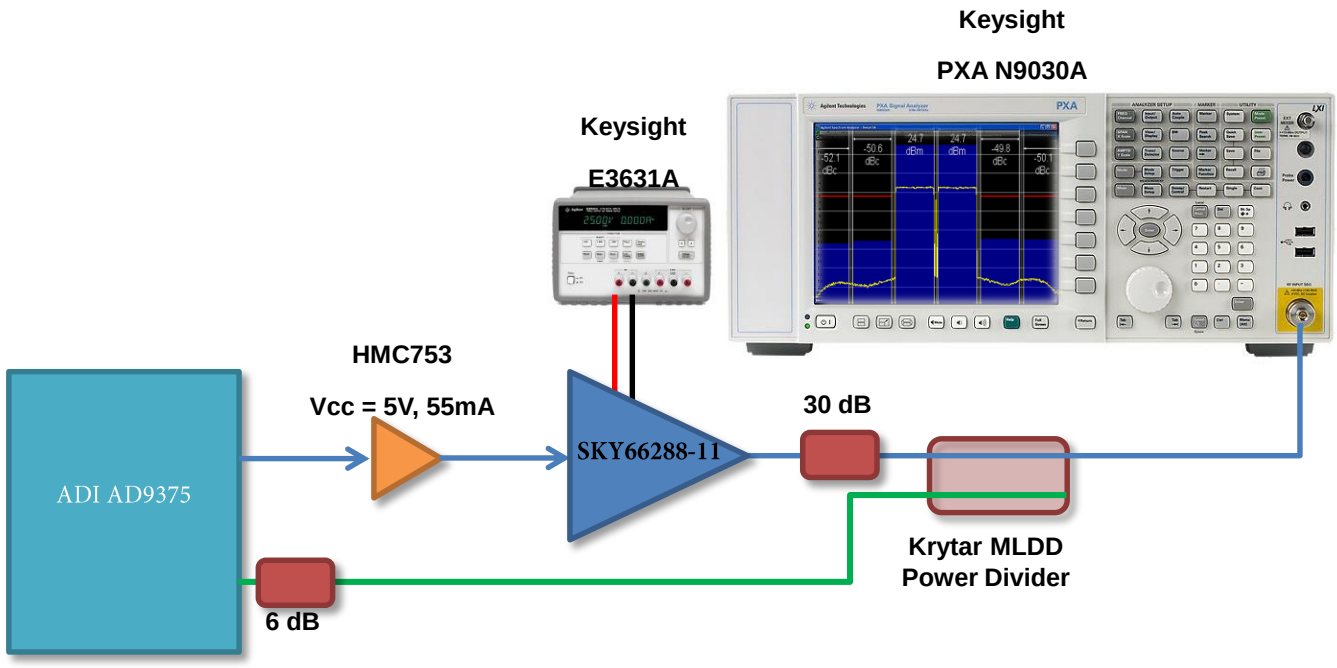
Figure 7. ACLR vs Output Power (5190 MHz)

5.75GHz to 5.825GHz

SUMMARY

Frequency	Output Power (dBm rms)	Signal Bandwidth	Test Signal	ACLR +1 (dBc)	ACLR-1 (dBc)	ACLR+2 (dBc)	ACLR-2 (dBc)	Power Added Efficiency (%)
5715MHz (Bottom)	28	20MHz	ETM3.1 20MHz LTE	-48.6	-48.8	-53.7	-56.17	25.65
5765MHz (Middle)	28	20MHz	ETM3.1 20MHz LTE	-49.2	-49	-57.5	-54	25.65
5815MHz (Top)	28	20MHz	ETM3.1 20MHz LTE	-48.15	-48.	-53.8	-53	25.6

BLOCK DIAGRAM



ACLR RESULTS BOTTOM/MIDDLE/TOP FREQUENCIES

5715MHZ, 20MHZ BANDWIDTH ACLR RESULTS

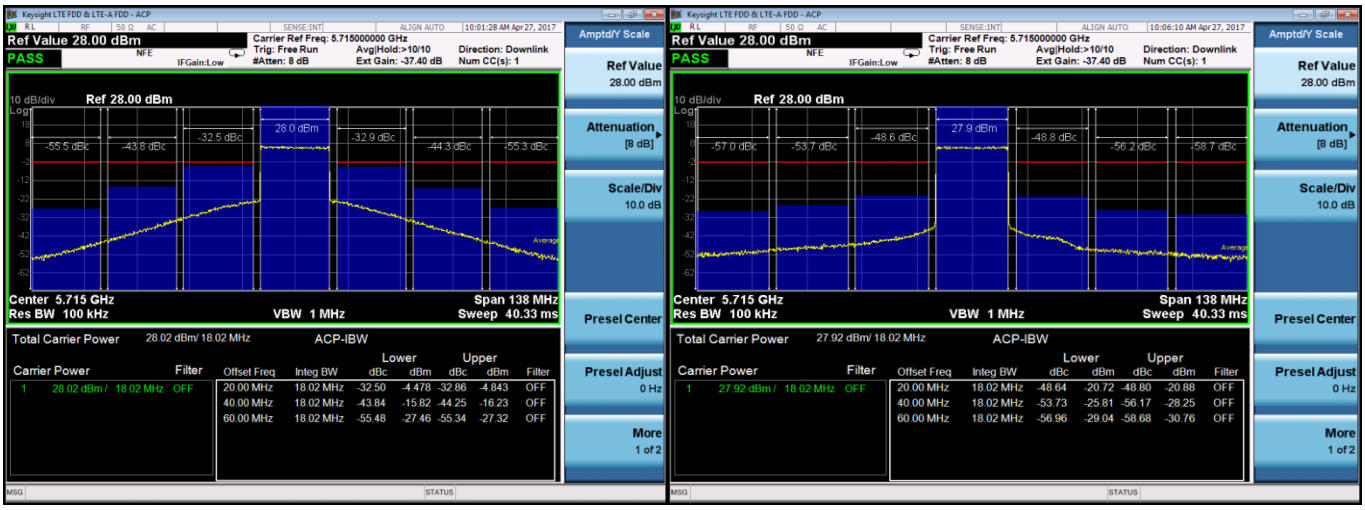


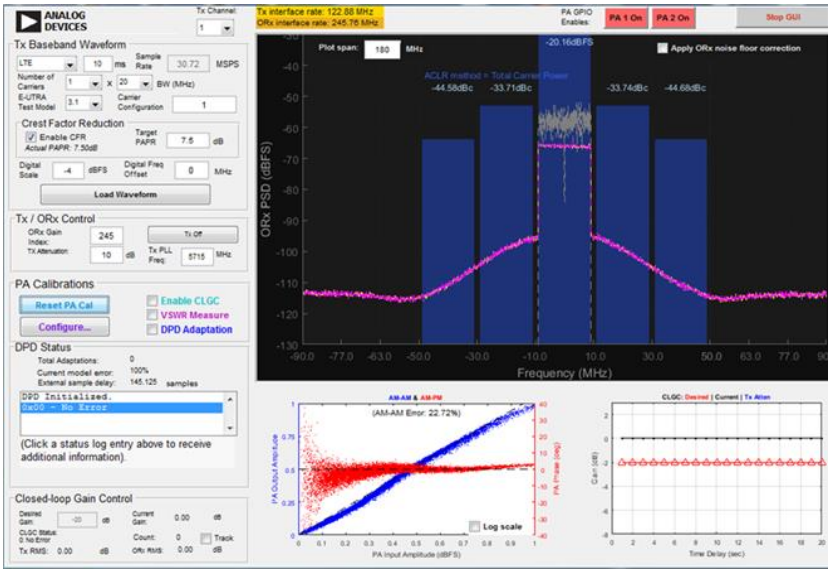
Figure 8: Frequency 5715MHz, 20MHz ETM3.1 Signal

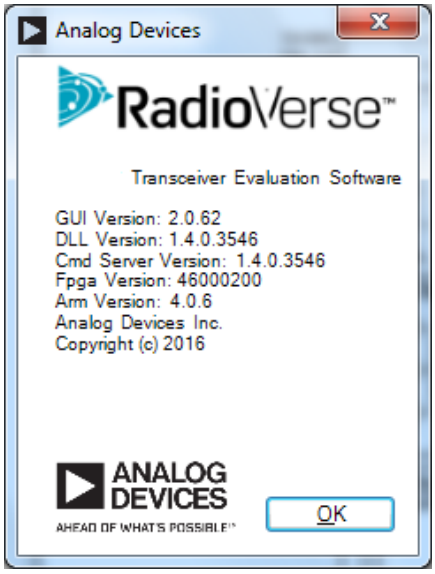
Before/After DPD	Output Power (rms)	ACLR+1 (dBc)	ACLR-1 (dBc)	ACLR+2 (dBc)	ACLR-2 (dBc)	ACLR+3 (dBc)	ACLR-3 (dBc)	Drain Current (mA)	PAE (%)
Before DPD	+28	-32.5	-32.06	-43.8	-44.26	-55.48	-55.34	493	25.6
After DPD	+28	-48.64	-48.8	-53.73	-56.17	-57	-58.68	492	25.65

Table 4. Summary of Results: Frequency: 5715MHz, 20MHZ ETM3.1 Signal

PA settings: Vcc1 = Vcc2 = Vcc3 = VBias = 5.0V, Ven = 2.0V Signal Used: ETM3.1

AD9375 DPD configuration





5765MHZ, 20MHZ BANDWIDTH ACLR RESULTS

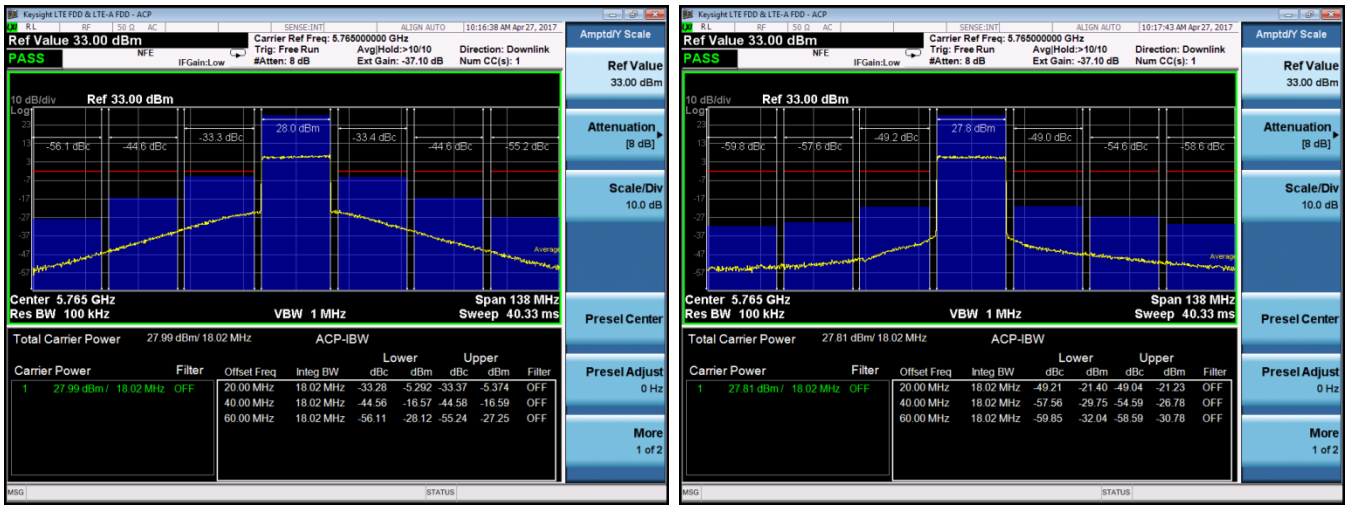


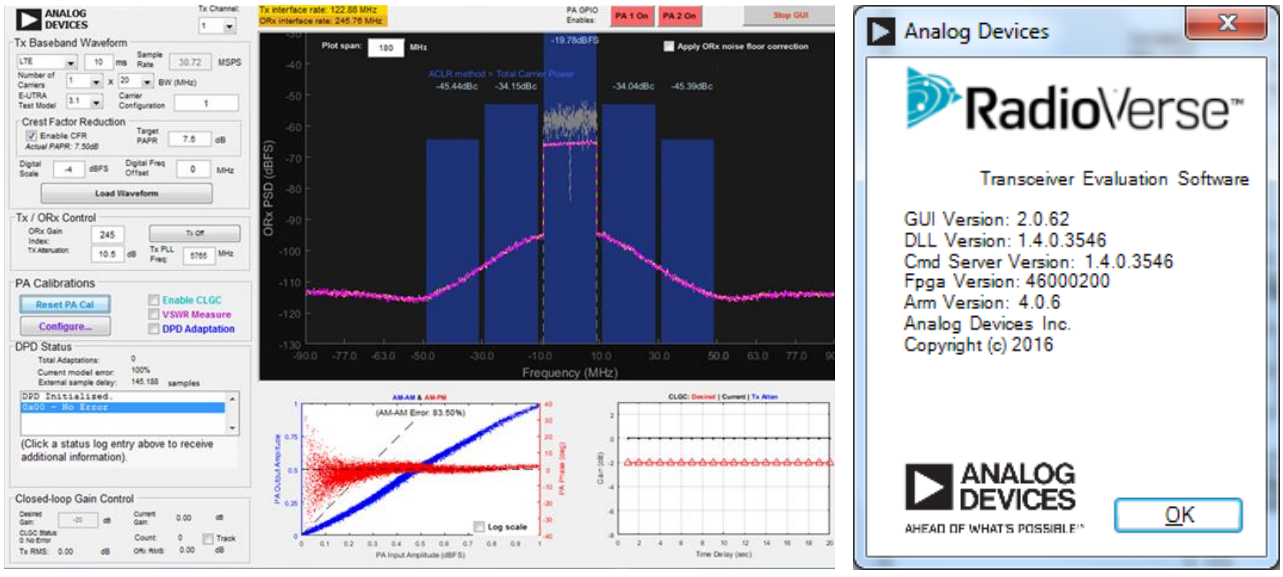
Figure 9: Frequency 5765MHz, 20MHz ETM3.1

Before/After DPD	Output Power (rms)	ACLR+1 (dBc)	ACLR-1 (dBc)	ACLR+2 (dBc)	ACLR-2 (dBc)	ACLR+3 (dBc)	ACLR-3 (dBc)	Drain Current (mA)	PAE (%)
Before DPD	+28	-33.28	-33.37	-44.56	-44.58	-56	-55.24	492	25.65
After DPD	+28	-49.21	-49	-57.56	-54.59	-59.85	-58.59	490	25.75

Table 5. Summary of Results: Frequency: 5765MHz, 20MHZ ETM3.1 Signal

PA settings: Vcc1 = Vcc2 = Vcc3 = VBias = 5.0V, Ven = 2.0V Signal Used: ETM3.1

AD9375 DPD configuration



5815MHZ, 20MHZ BANDWIDTH ACLR RESULT

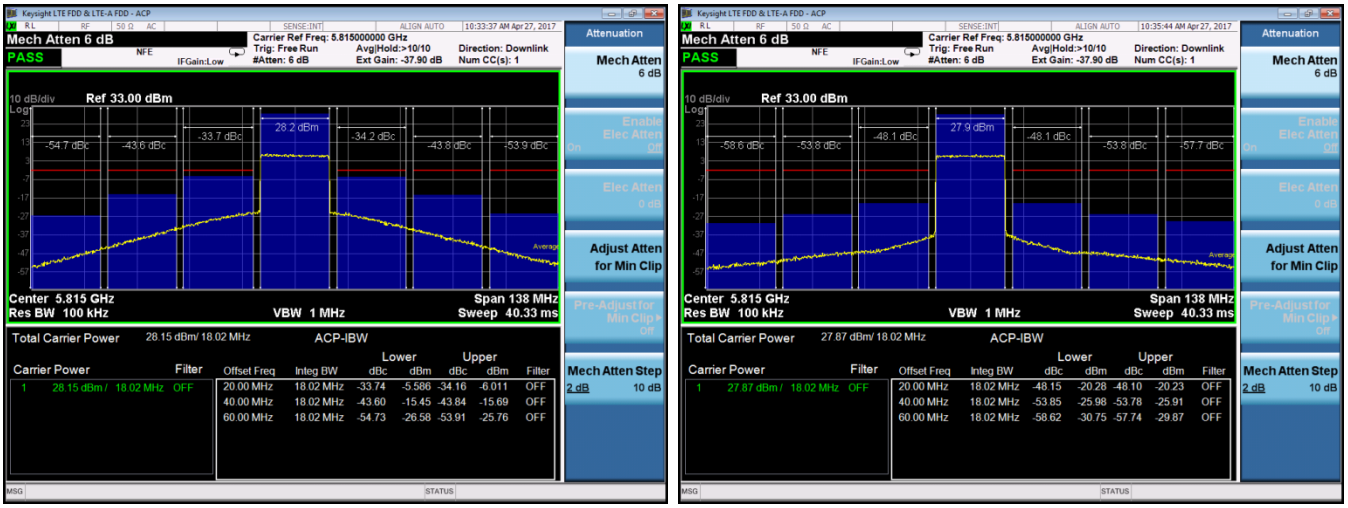


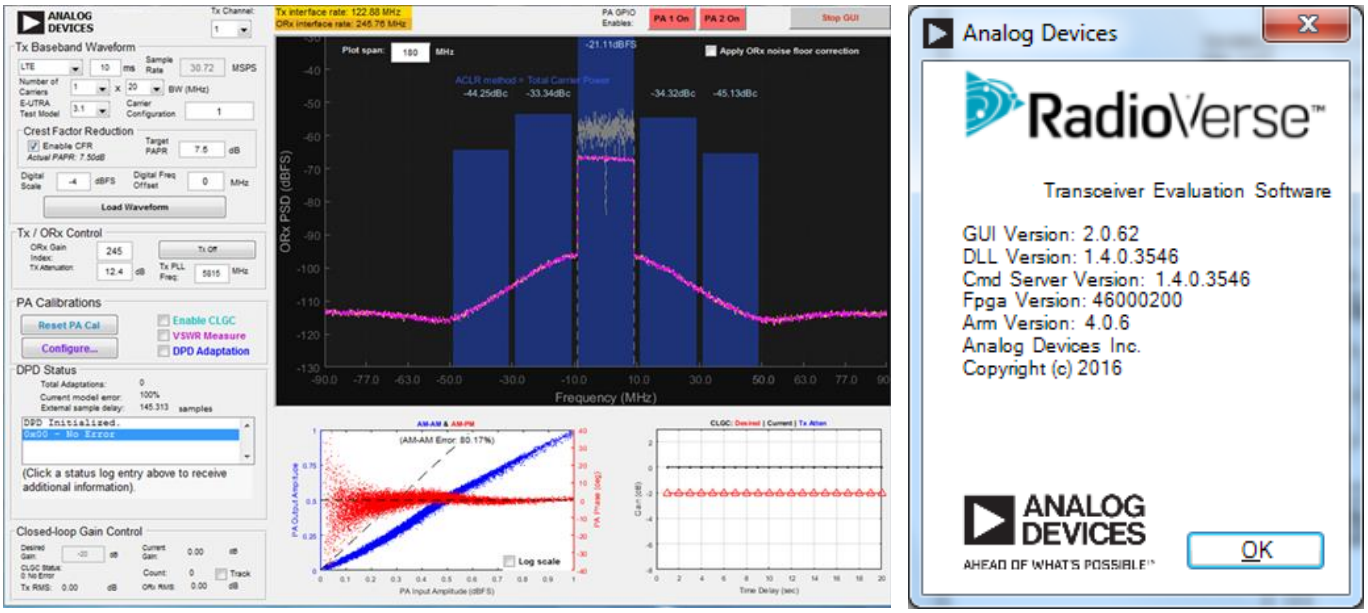
Figure 10:. Frequency 5815MHz, 20MHz ETM3.1 Signal

Before/After DPD	Output Power (rms)	ACLR+1 (dBc)	ACLR-1 (dBc)	ACLR+2 (dBc)	ACLR-2 (dBc)	ACLR+3 (dBc)	ACLR-3 (dBc)	Drain Current (mA)	PAE (%)
Before DPD	+28.0	-33.74	-34.16	-45.45	-43.84	-54.7	-54.84	493	25.6
After DPD	+28	-48.15	-48.1	-53.85	-53.76	-58.3	-57.7	493	25.6

Table 6. Summary of Results: Frequency: 5815MHz, 20MHZ ETM3.1 Signal

PA settings: Vcc1 = Vcc2 = Vcc3 = VBias = 5.0V, Ven = 2.0V Signal Used: ETM3.1

AD9375 DPD configuration



WIDEBAND PLOTS, BOTTOM/MIDDLE/TOP FREQUENCIES

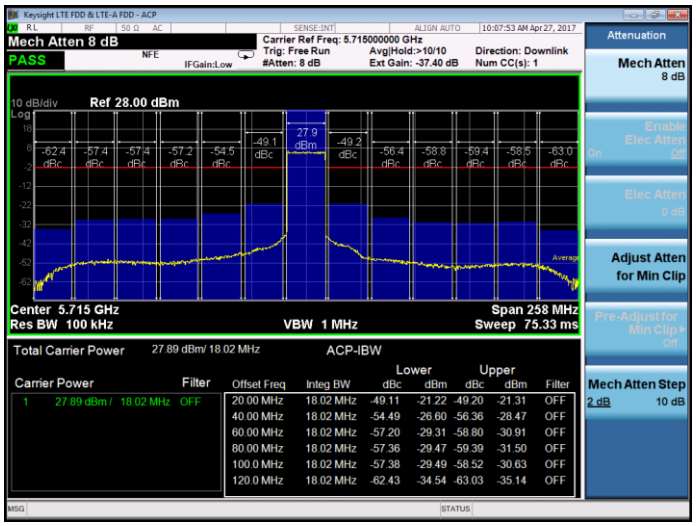


Figure 11: Wideband Spectrum Analyser Plot: Frequency 5715MHZ, 20MHz ETM3.1 Signal

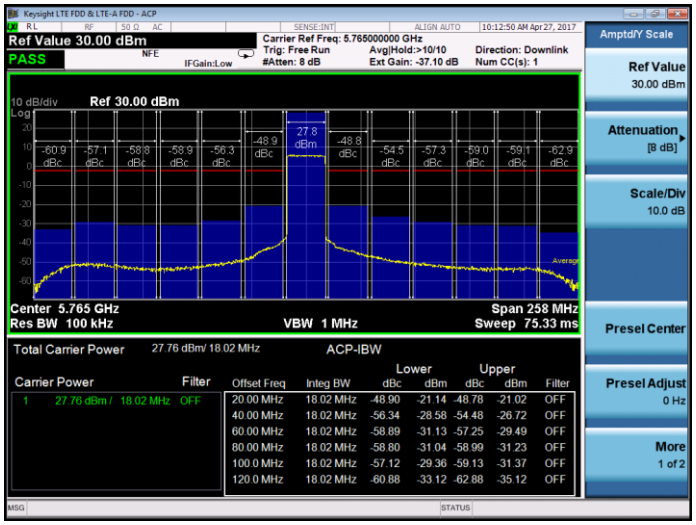


Figure 12: Wideband Spectrum Analyser Plot: Frequency 5765MHZ, 20MHz ETM3.1 Signal

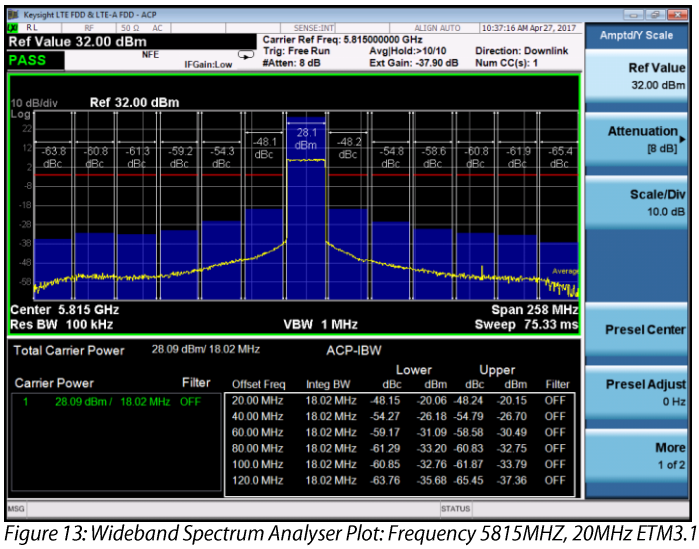


Figure 13: Wideband Spectrum Analyser Plot: Frequency 5815MHZ, 20MHz ETM3.1 Signal

ACLR VS POUT

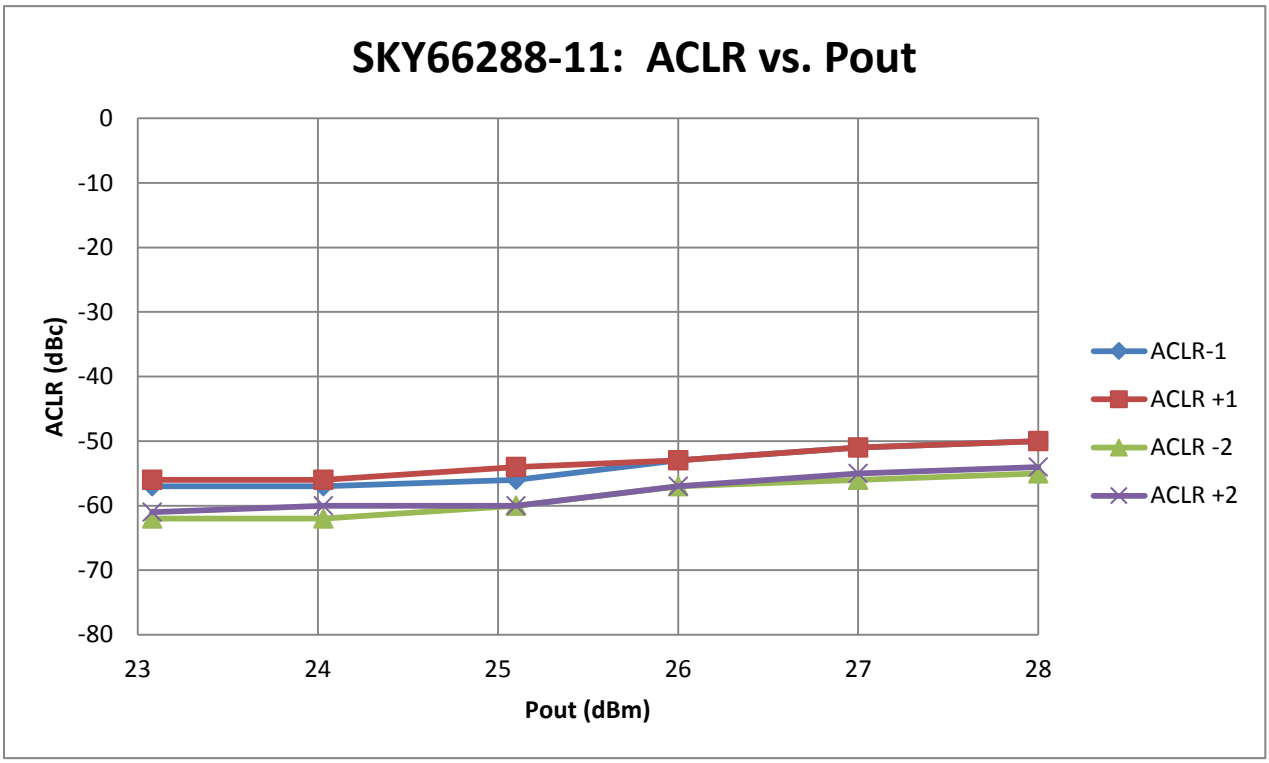


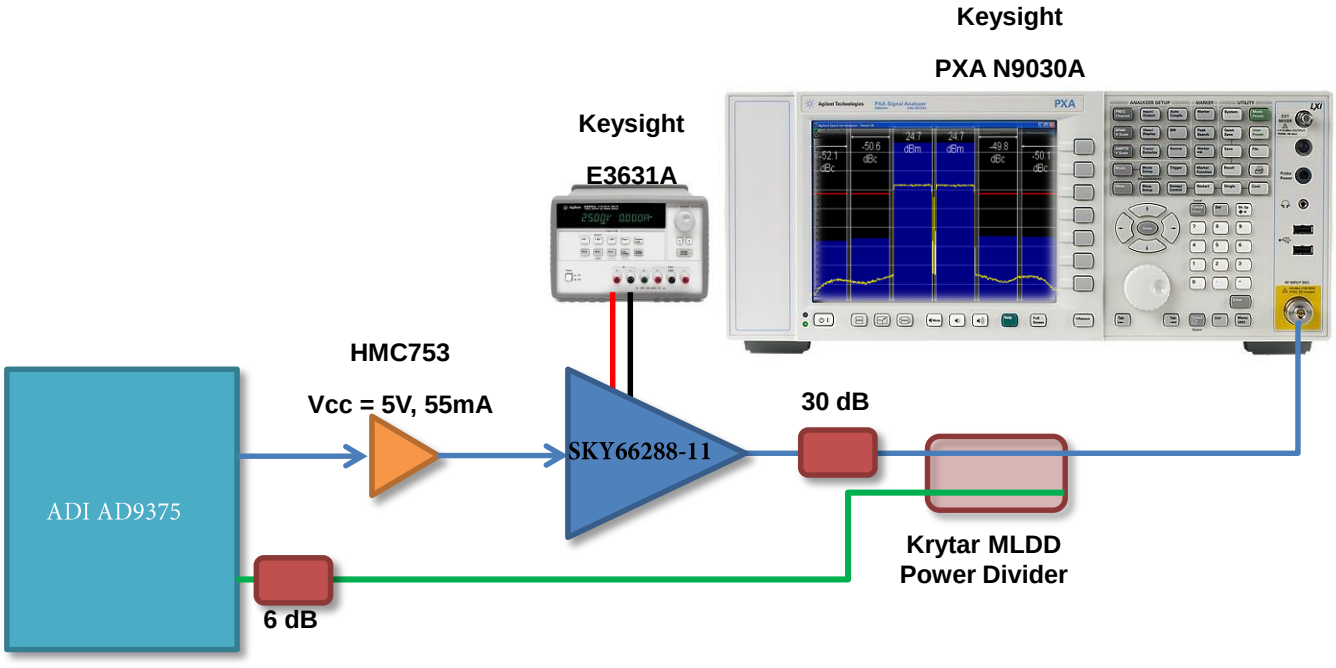
Figure 14: ACLR vs Output Power (5765 MHz)

5.84GHz to 5.925GHz

SUMMARY

Frequency	Output Power (dBm rms)	Signal Bandwidth	Test Signal	ACLR +1 (dBc)	ACLR-1 (dBc)	ACLR+2 (dBc)	ACLR-2 (dBc)	Power Added Efficiency (%)
5840 MHz (Bottom)	28	20MHz	ETM3.1 20MHz LTE	-48.6	-48.8	-53.7	-56.17	25.65
5877.5 MHz (Middle)	28	20MHz	ETM3.1 20MHz LTE	-49.2	-49	-57.5	-54	25.65
5915 MHz (Top)	28	20MHz	ETM3.1 20MHz LTE	-48.15	-48.2	-53.8	-53	25.6

BLOCK DIAGRAM



ACLR RESULTS BOTTOM/MIDDLE/TOP FREQUENCIES

5840MHZ, 20MHZ BANDWIDTH ACLR RESULTS

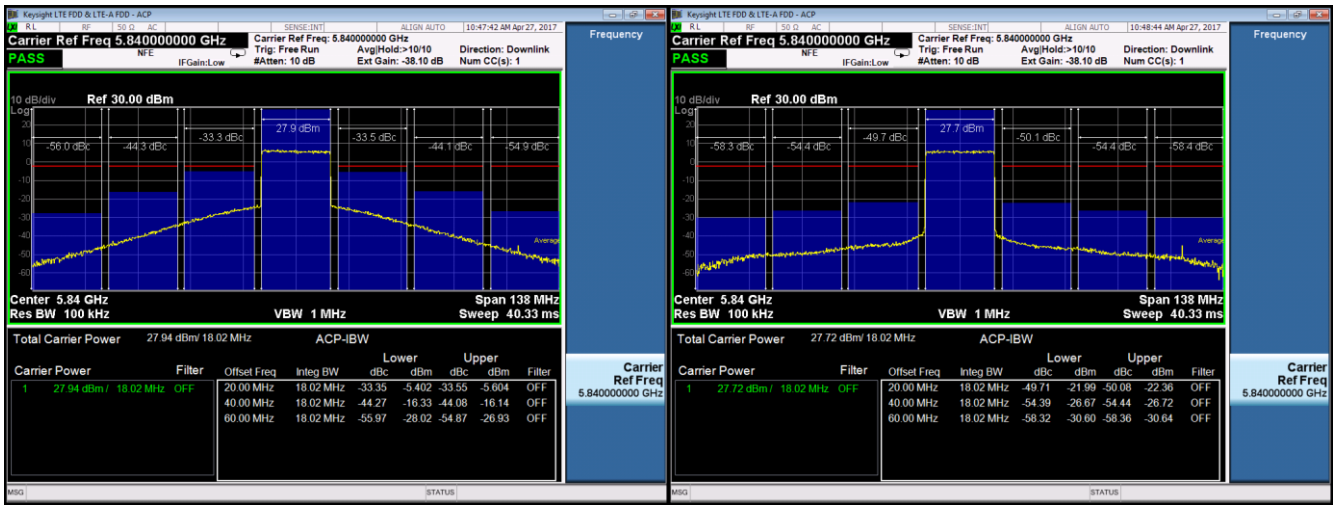


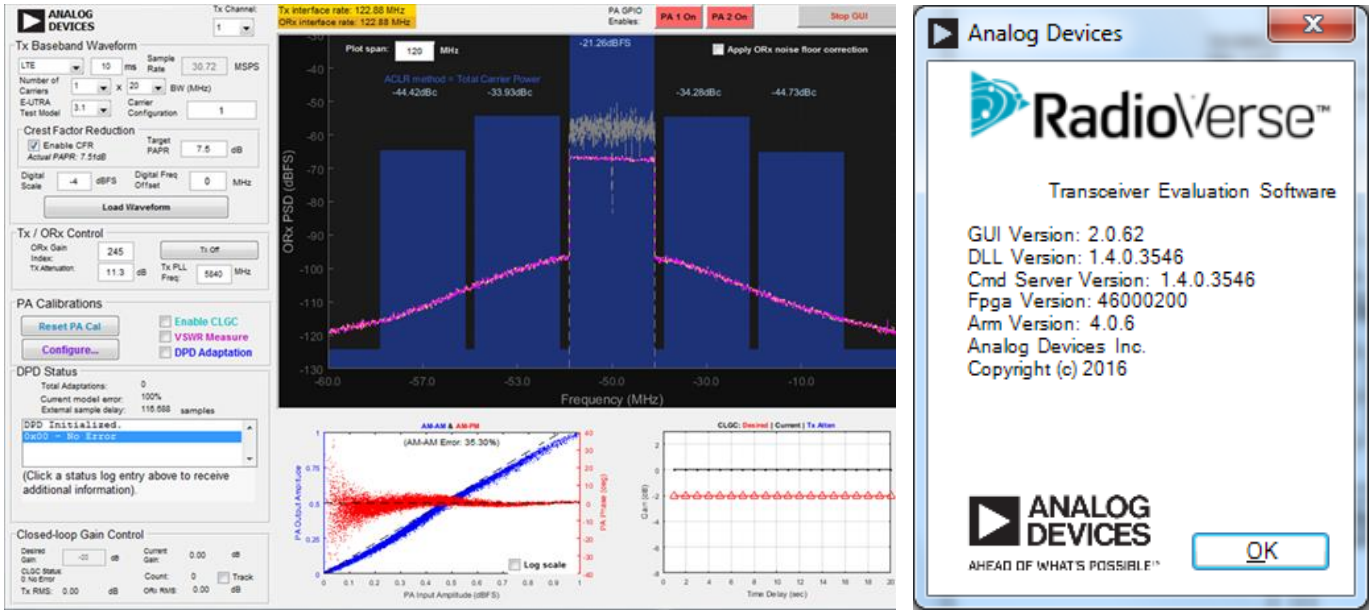
Figure: 15. Frequency 5840MHz, 20MHz ETM3.1 Signal

Before/After DPD	Output Power (rms)	ACLR+1 (dBc)	ACLR-1 (dBc)	ACLR+2 (dBc)	ACLR-2 (dBc)	ACLR+3 (dBc)	ACLR-3 (dBc)	Drain Current (mA)	PAE (%)
Before DPD	+28	-33.35	-33.55	-44.27	-44.08	-55.97	-55	472	26.74
After DPD	+28	-49.71	-50.08	-54.39	-54.44	-58.32	-58.36	470	26.85

Table 7. Summary of Results: Frequency: 5840MHz, 20MHZ ETM3.1 Signal

PA settings: Vcc1 = Vcc2 = Vcc3 = VBias = 5.0V, Ven = 2.0V Signal Used: ETM3.1

AD9375 DPD configuration



5877.5MHZ, 20MHZ BANDWIDTH ACLR RESULTS

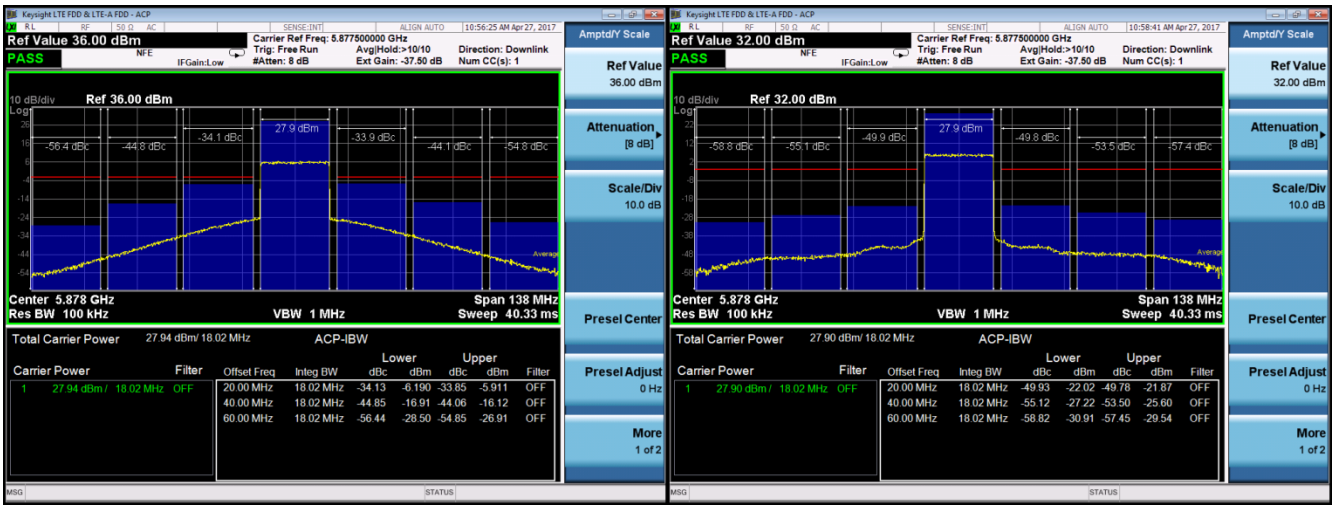


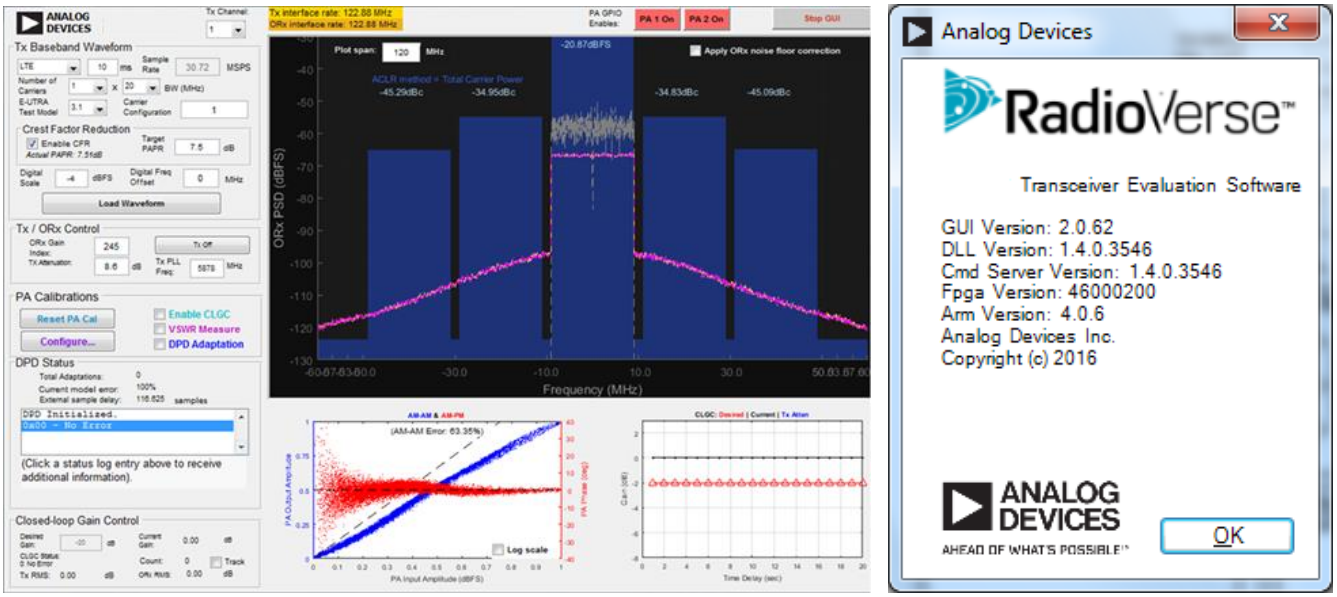
Figure 16: Frequency 5877.5MHz, 20MHz ETM3.1 Signal

Before/After DPD	Output Power (rms)	ACLR+1 (dBc)	ACLR-1 (dBc)	ACLR+2 (dBc)	ACLR-2 (dBc)	ACLR+3 (dBc)	ACLR-3 (dBc)	Drain Current (mA)	PAE (%)
Before DPD	+28	-34.13	-33.85	-44.85	-44.06	-56.44	-54.85	477	26.46
After DPD	+28	-49.93	-49.78	-55.12	-53.5	-58.85	-57.59	473	26.68

Table 8. Summary of Results: Frequency: 5877.5MHz, 20MHZ ETM3.1 Signal

PA settings: Vcc1 = Vcc2 = Vcc3 = VBias = 5.0V, Ven = 2.0V Signal Used: ETM3.1

AD9375 DPD configuration



5915MHZ, 20MHZ BANDWIDTH ACLR RESULT

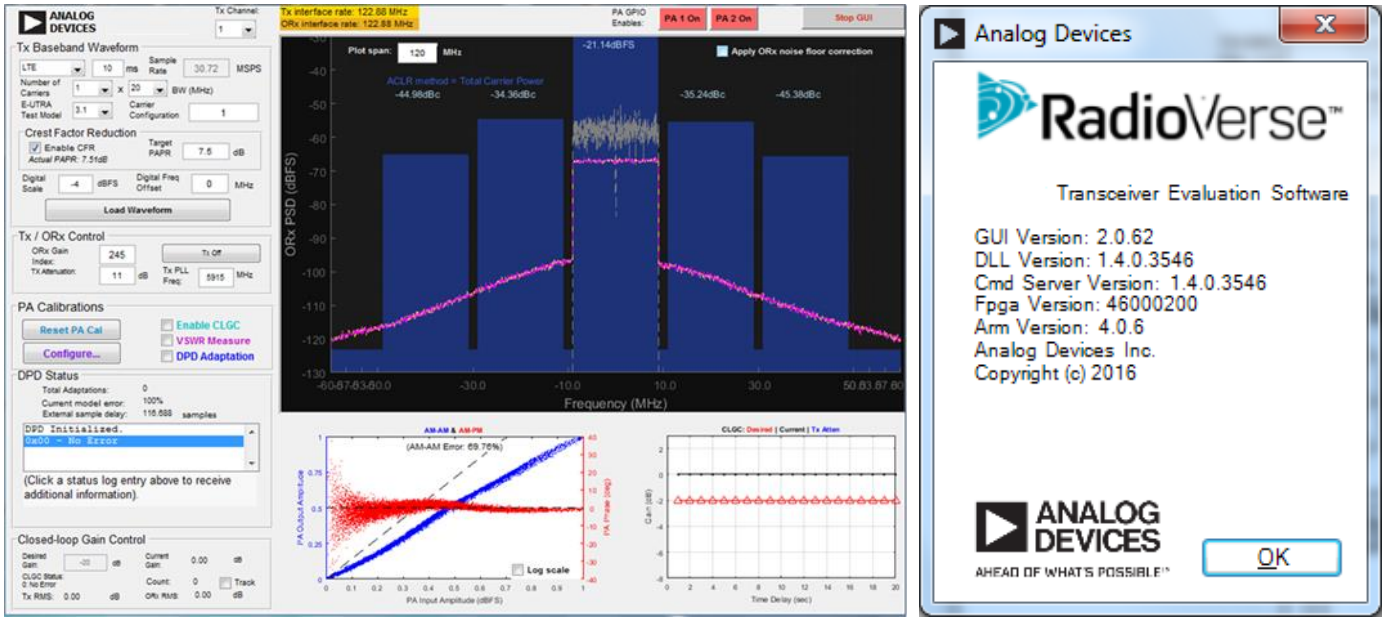
Figure 17: Frequency 5915MHz, 20MHz ETM3.1 Signal

Before/After DPD	Output Power (rms)	ACLR+1 (dBc)	ACLR-1 (dBc)	ACLR+2 (dBc)	ACLR-2 (dBc)	ACLR+3 (dBc)	ACLR-3 (dBc)	Drain Current (mA)	PAE (%)
Before DPD	+28.0	-34.56	-34.9	-44.78	-44.57	-56.4	-54.74	495	25.49
After DPD	+28	-49.8	-49.7	-56.23	-54.32	-59.3	-57.79	495	25.49

Table 9: Summary of Results: Frequency: 5915MHz, 20MHZ ETM3.1 Signal

PA settings: Vcc1 = Vcc2 = Vcc3 = VBias = 5.0V, Ven = 2.0V Signal Used: ETM3.1

AD9375 DPD configuration



WIDEBAND PLOTS, BOTTOM/MIDDLE/TOP FREQUENCIES

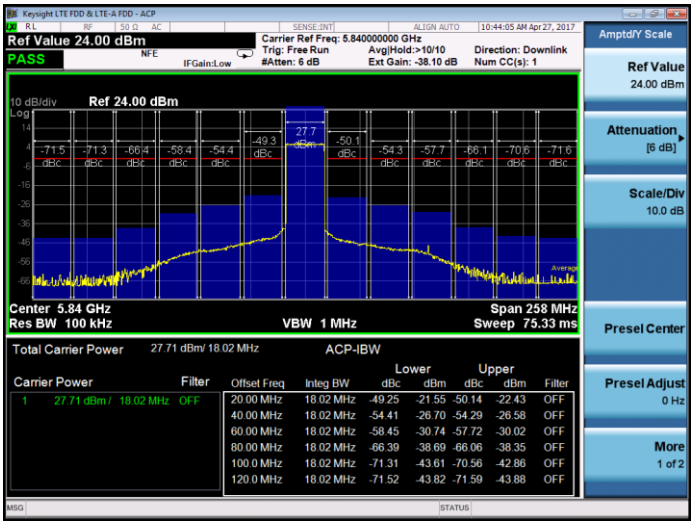


Figure 18: Wideband Spectrum Analyser Plot: Frequency 5840MHZ, 20MHz ETM3.1 Signal

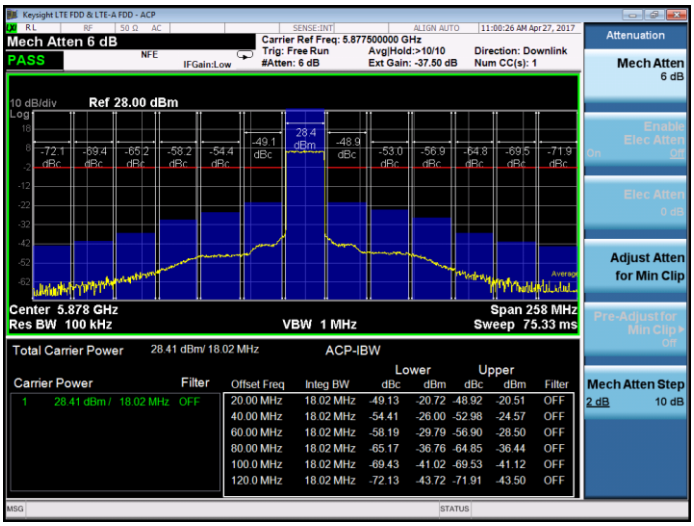


Figure 19: Wideband Spectrum Analyser Plot: Frequency 5877.5MHZ, 20MHz ETM3.1 Signal

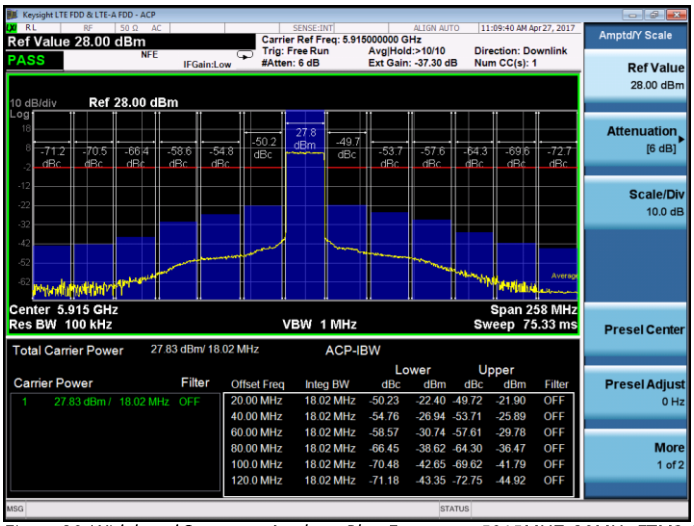


Figure 20: Wideband Spectrum Analyser Plot: Frequency 5915MHZ, 20MHz ETM3.1 Signal

ACLR VS POUT

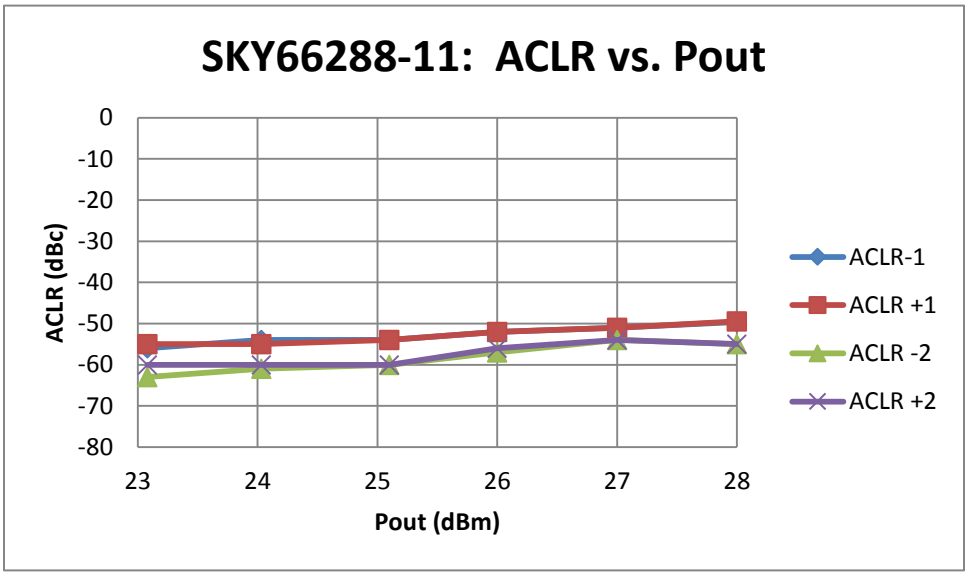


Figure 21: ACLR vs Output Power (5877.5 MHz)