LTE Base Station MMIC Amplifier

Mini-Circuits GVA-84+ High Dynamic Range MMIC Amplifier is designed specifically for applications which require high linear performance, particularly wideband, advanced digital communications systems such as LTE which require excellent ACLR suppression and low EVM.

The GVA-84+ provides typically +35.8 dBm OIP3 which translates to high linear performance in multi-carrier and complex signal environments such as LTE supporting ACLR_1 Measurements of better than -60 dBc at +6 dBm output.

The GVA-84+ is characterized using a high peak-to-average ratio OFDM signal used for next generation LTE within the 700MHz Downlink Band.

Figure 1 (GVA-84+ Test Board)

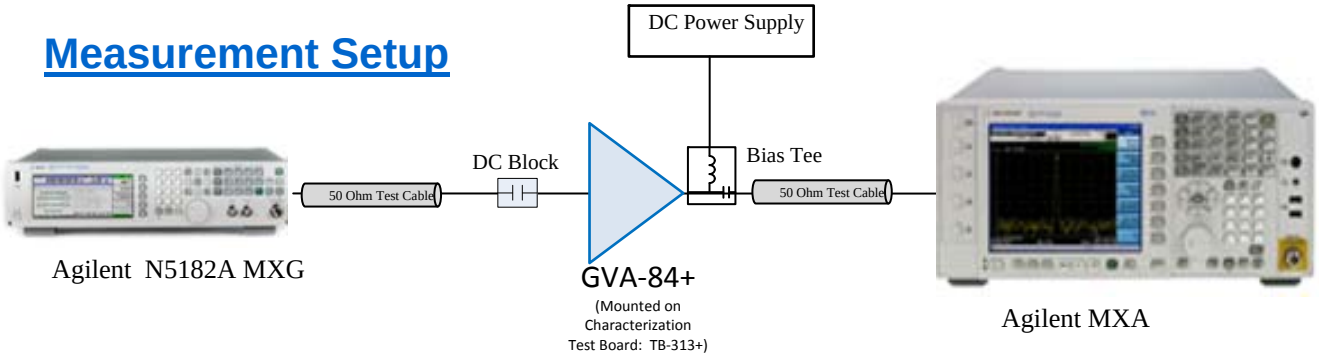
DUT Configuration:
Device: GVA-84+ Test board
Supply Voltage: 5V, 105 mA
Temperature: 25C
Note: All data is referenced to the test board connectors

Test Signal:
LTE FDD Downlink (2009-3),
Full filled 64 QAM,10MHz (50 RB)
Fc = 700 MHz

CCDF	PAR
10%	3.63 dB
1.0%	6.67 dB
0.1%	8.48 dB
0.01%	10.06 dB
0.001%	10.90 dB
0.0001%	11.05 dB

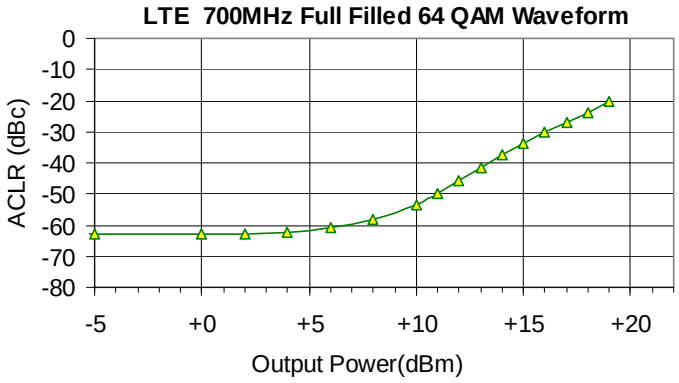
CCDF: Complementary Cumulative Distribution Function
PAR: Peak to Average Ratio

Measurement Setup



Summary Data

ACLR 1 vs. Output Power



EVM vs. Output Power

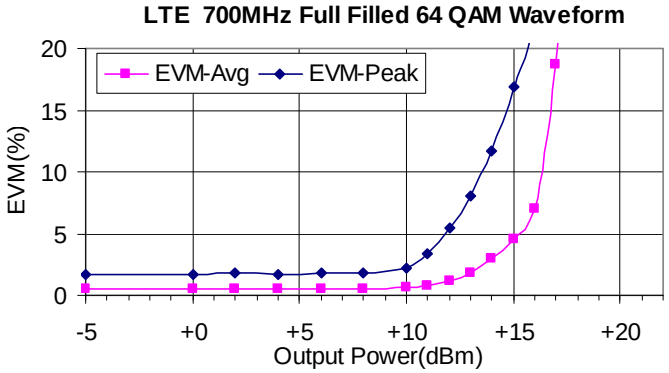


Table 1 Data of ACLR and EVM vs. Output Power

Output Power (carrier) dBm	ACLR (dBc)				EVM (%)	
	ACLR2 LOW 20MHz	ACLR1 LOW 10MHz	ACLR1 HIGH 10MHz	ACLR2 HIGH 20MHz	RMS	Peak
+19	-42.6	-20.4	-20.5	-41.8	47.497	122.81
+18	-46.3	-23.7	-23.8	-45.6	43.202	103.86
+17	-49.2	-26.8	-26.9	-48.7	18.720	96.61
+16	-52.3	-30.1	-30.2	-51.7	7.028	23.73
+15	-55.3	-33.6	-33.8	-54.8	4.608	16.82
+14	-58.2	-37.4	-37.5	-58.1	2.933	11.74
+13	-60.9	-41.6	-41.7	-60.6	1.824	8.00
+12.2	-61.9	-44.6	-44.7	-61.9	1.274	5.78
+12	-62.6	-45.6	-45.8	-62.5	1.147	5.44
+11	-63.6	-49.7	-50.2	-63.5	0.796	3.37
+10	-63.8	-53.5	-54.0	-63.8	0.619	2.23
+8	-64.0	-58.4	-59.1	-64.0	0.525	1.83
+6	-63.7	-61.0	-61.3	-63.9	0.488	1.77
+4	-63.9	-62.5	-62.6	-64	0.483	1.73
+2	-63.7	-62.9	-63.0	-63.8	0.475	1.78
+0	-63.7	-63.0	-63.2	-63.9	0.473	1.677
-5	-63.3	-63.0	-63.1	-63.4	0.463	1.733

Note:
For output powers less than -5dBm, ACLR measurement accuracy is limited by the dynamic range of the test equipment.

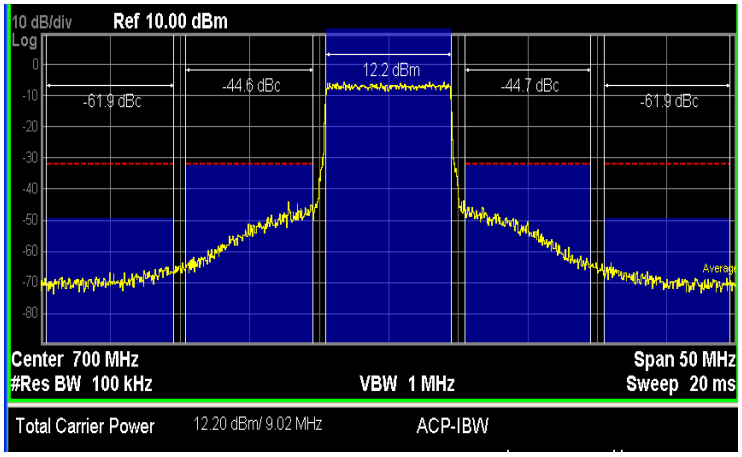


Figure 2 ACLR Plot at Output Power of +12.2 dBm

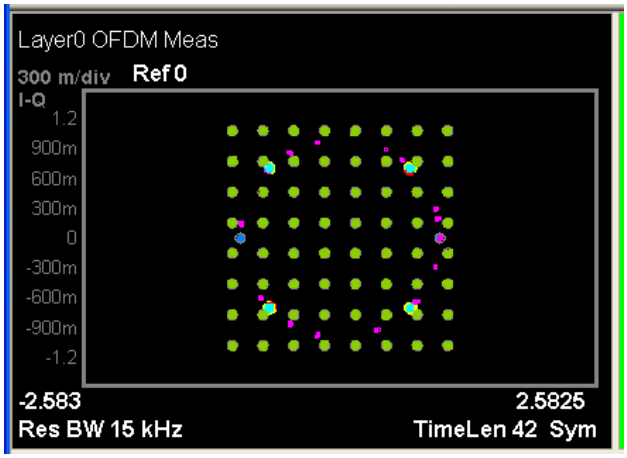


Figure 3 EVM Plot at Output Power of +12.2 dBm