

### LTE Base Station MSiP Amplifier

The HXG-242+ is a High Dynamic Range MSiP (Mini-Circuits System in Package) Amplifier designed over a focused frequency range specifically for applications which require high linear performance, advanced digital communications systems such as LTE which require excellent ACLR suppression and low EVM.

The HXG-242+ provides typically +44 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 +10 dBm output.

The HXG-122+ is characterized using a high peak-to-average ratio OFDM signal used for next generation LTE within the 1900MHz Downlink Band.



Figure 1 (HXG-244+ Test Board)

**DUT Configuration:**

**Device:** HXG-244+ Test board

**Supply Voltage:** 5V, 143 mA

**Temperature:** 25C

**Note:** All data is referenced to the test board connectors

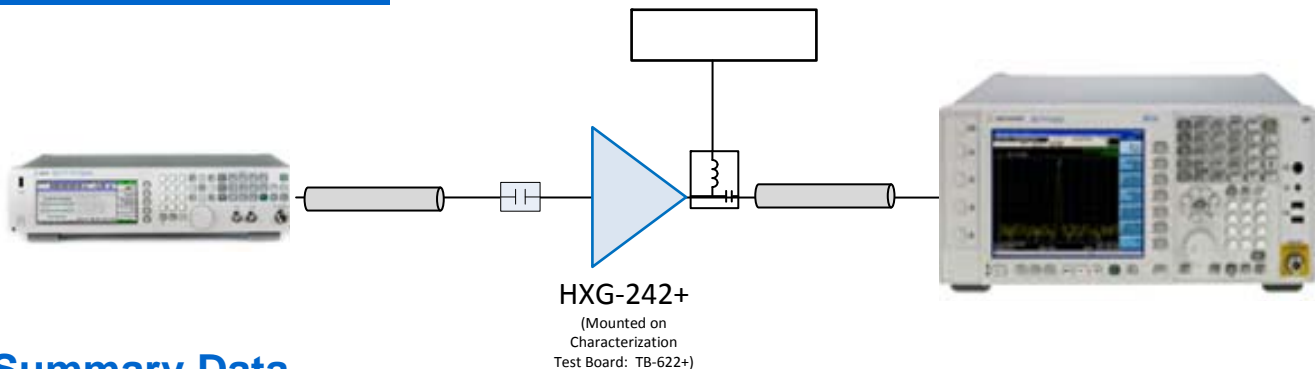
**Test Signal:**

LTE FDD Downlink (2009-3), Full filled 64 QAM, 10MHz (50 RB) Fc = 1900 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

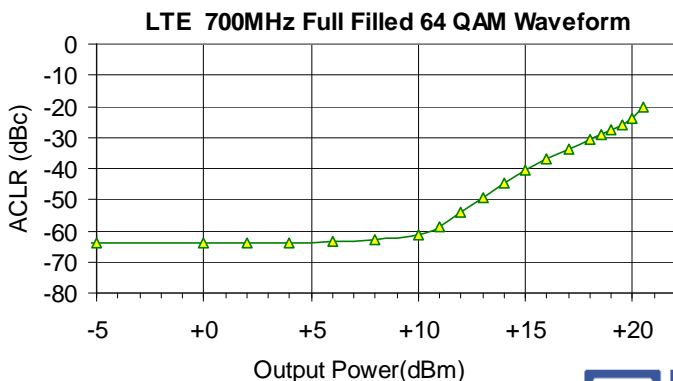
CCDF: Complementary Cumulative Distribution Function  
PAR: Peak to Average Ratio

### Measurement Setup

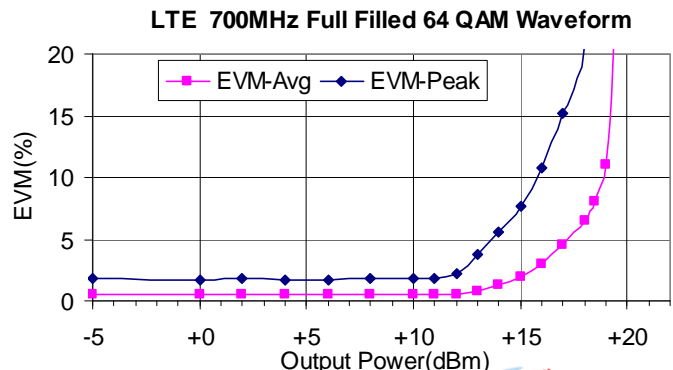


### Summary Data

#### ACLR\_1 vs. Output Power



#### EVM vs. Output Power



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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
+20.5	-41.2	-20.5	-20.4	-41.3	47.264	117.68
+20	-45.2	-23.9	-23.9	-45.7	40.381	98.08
+19.5	-47.1	-25.8	-26.0	-47.5	25.442	97.30
+19	-48.4	-27.3	-27.5	-49.0	10.988	93.52
+18.5	-49.7	-29.0	-29.0	-50.3	8.076	91.49
+18	-51.0	-30.5	-30.7	-51.6	6.514	21.21
+17	-53.8	-33.8	-33.9	-54.2	4.515	15.25
+16	-56.4	-36.9	-37.1	-56.8	3.027	10.82
+15	-59.0	-40.6	-41.1	-59.6	1.958	7.68
+14.09	-61.0	-44.5	-45.3	-61.7	1.270	5.64
+14	-61.3	-44.6	-45.2	-61.8	1.235	5.57
+13	-62.7	-49.1	-49.6	-63.2	0.788	3.72
+12	-63.5	-54.0	-55.1	-63.8	0.581	2.26
+11	-63.7	-58.5	-59.5	-64.3	0.514	1.87
+10	-63.9	-61.4	-62.5	-64.2	0.491	1.80
+8	-63.9	-63.0	-63.7	-64.1	0.488	1.79
+6	-63.9	-63.3	-63.8	-64.0	0.482	1.75
+4	-63.9	-63.7	-63.9	-64.2	0.484	1.65
+2	-64.0	-63.7	-63.8	-64.2	0.481	1.84
+0	-64.1	-63.8	-63.9	-64.0	0.477	1.74
-5	-64.2	-63.8	-64.2	-64.5	0.486	1.85

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

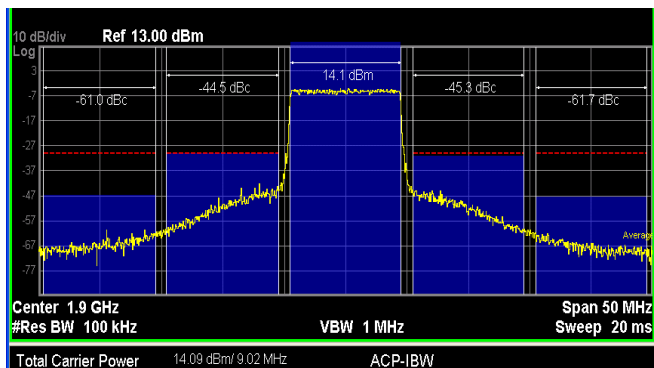


Figure 2 ACLR Plot at Output Power of +14.09 dBm

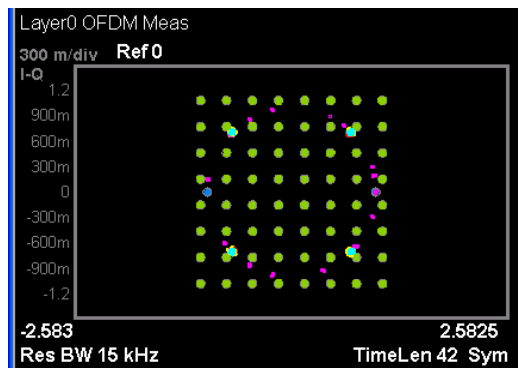


Figure 3 EVM Plot at Output Power of +14.09 dBm

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