

LTE Base Station MSiP Amplifier

Mini-Circuits YSF-322+ High Dynamic Range MSiP Amplifier is designed specifically for applications which require high linear performance, advanced digital communications systems such as LTE which require excellent ACLR suppression and low EVM.

The YSF-322+ provides typically +35 dBm OIP3 which translates to high linear performance in multi-carrier and complex signal environments such as LTE supporting ACLR₁ Measurements of better than -60 dBc at +4 dBm output.

The YSF-322+ is characterized using a high peak-to-average ratio OFDM signal used for next generation LTE within the 1900MHz Downlink Band.



Figure 1 YSF-322 + Test Board

DUT Configuration:

Device: YSF-322+ Test board.

Supply Voltage: 5V, 123 mA

Temperature: 25C

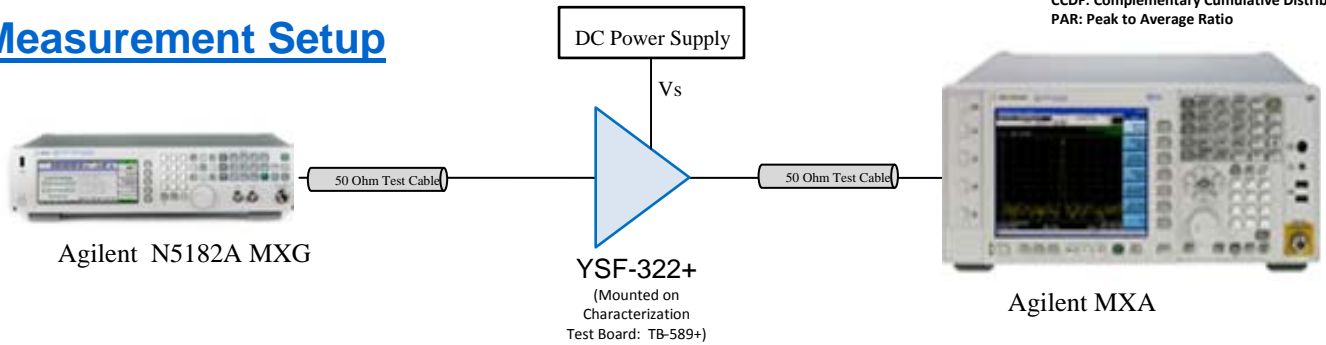
Note: All data is referenced to the test board connectors

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

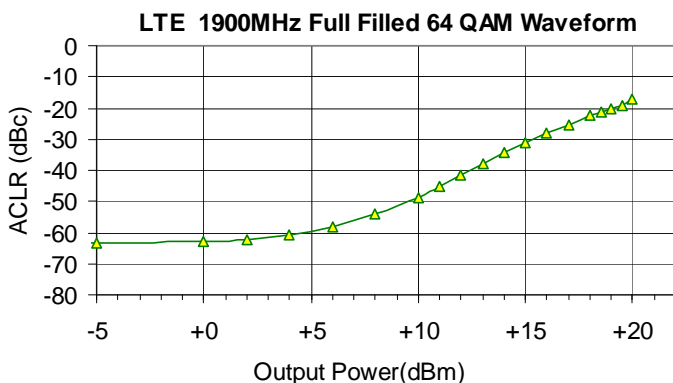
Measurement Setup



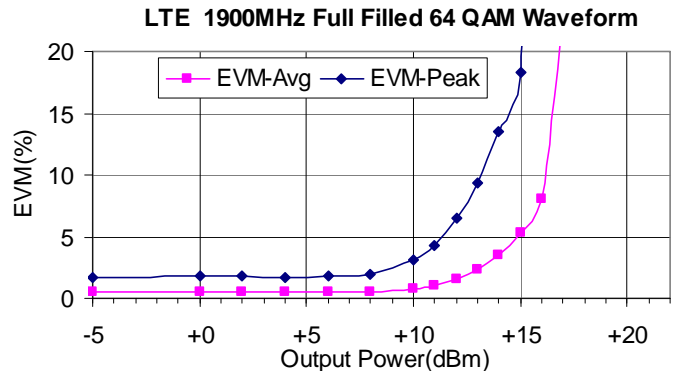
CCDF: Complementary Cumulative Distribution Function
PAR: Peak to Average Ratio

Summary Data

ACLR₁ 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	-34.6	-17.3	-17.1	-34.4	48.312	125.32
+19.5	-39.0	-19.0	-19.0	-38.8	47.475	116.61
+19	-41.7	-20.4	-20.3	-41.5	46.711	112.24
+18.5	-43.2	-21.2	-21.2	-43.0	45.780	107.01
+18	-45.3	-22.5	-22.6	-45.1	42.405	100.57
+17	-49.0	-25.5	-25.5	-48.8	22.797	95.35
+16	-52.0	-28.1	-28.3	-51.8	8.050	91.52
+15	-54.7	-31.2	-31.4	-54.7	5.368	18.35
+14	-57.4	-34.4	-34.7	-57.5	3.570	13.44
+13	-59.8	-37.8	-38.1	-60.1	2.309	9.30
+12	-61.8	-41.5	-41.9	-62.0	1.520	6.52
+11.45	-62.4	-44.5	-45.0	-62.9	1.317	5.58
+11	-62.8	-45.2	-45.7	-63.2	1.022	4.31
+10	-63.4	-48.9	-49.6	-63.8	0.760	3.07
+8	-63.8	-54.0	-54.9	-64.0	0.565	1.93
+6	-63.6	-58.3	-59.3	-64.0	0.506	1.85
+4	-64.2	-60.9	-61.5	-64.0	0.494	1.72
+2	-63.9	-62.2	-62.9	-64.2	0.493	1.82
+0	-63.8	-63.0	-63.4	-64.2	0.488	1.77
-5	-64.0	-63.6	-64.0	-64.2	0.476	1.75

Note:

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

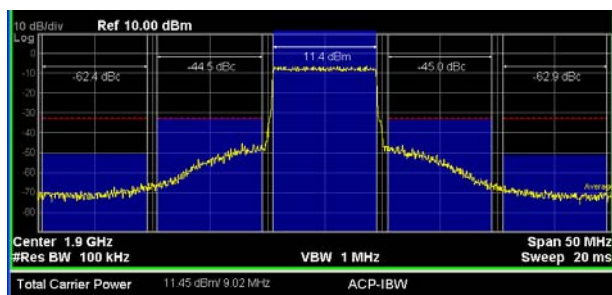


Figure 2 ACLR Plot at Output Power of +11.45 dBm

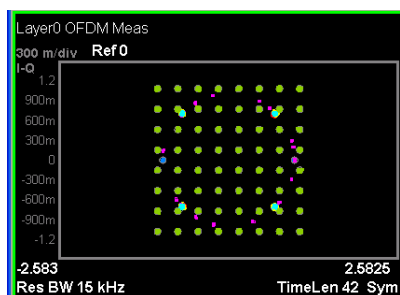


Figure 3 EVM Plot at Output Power of +11.45 dBm

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