

AR122037

CLF1G0060-30, 500-2500 MHz.

V2.0—4 April 2016

AMPLEON

Application_Report

Document information

Info	Content
Status	Ampleon Internal
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Abstract	RF Performance CLF1G0060-30; 500-2500MHz. Board# 1837

1 Revision History

Table 1. Report revisions

Revision No.	Date	Description	Author
1.0	20091120	Initial document	Tom Kelly
2.0	20160404	Update to Ampleon Template from CA-037-12	Bob Bartola

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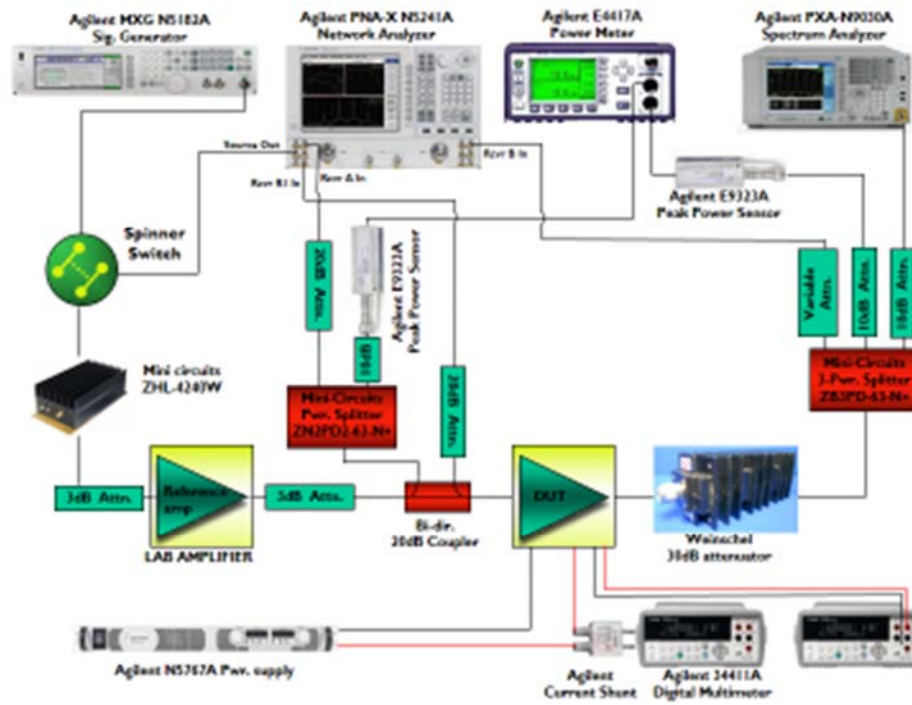
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5 General Description

This report presents the measurement results of the Class AB demo AR122037. The device used is a CLF1G0060-30, 1'st generation GaN in a single ended package, the Device. The presented demo is wideband tuned for the frequency band of 500-2500 MHz. and delivers a saturated power of 30 watts.

6 Test Bench Set Up

Figure 1. Test Bench Equipment set up



7 RF Performance

7.1 RF Performance Summary

Frequency (MHz)	Gain (dB)		Eff(%)	P _{3dB} (dBm)	P _{PEAK} (W)
	@ Pout= 30W (44.7dBm)				
500	16.6		56.8	45.8	38
1000	15.8		50	45.9	39
1500	15.5		52.5	46.4	43.8
2000	14.5		50	45.9	38.7
2500	15.9		59	46.4	43.9

Table 2: RF Performance Summary Pulsed Vds = 50V Idq = 70mA.

8 Gain and Return Loss

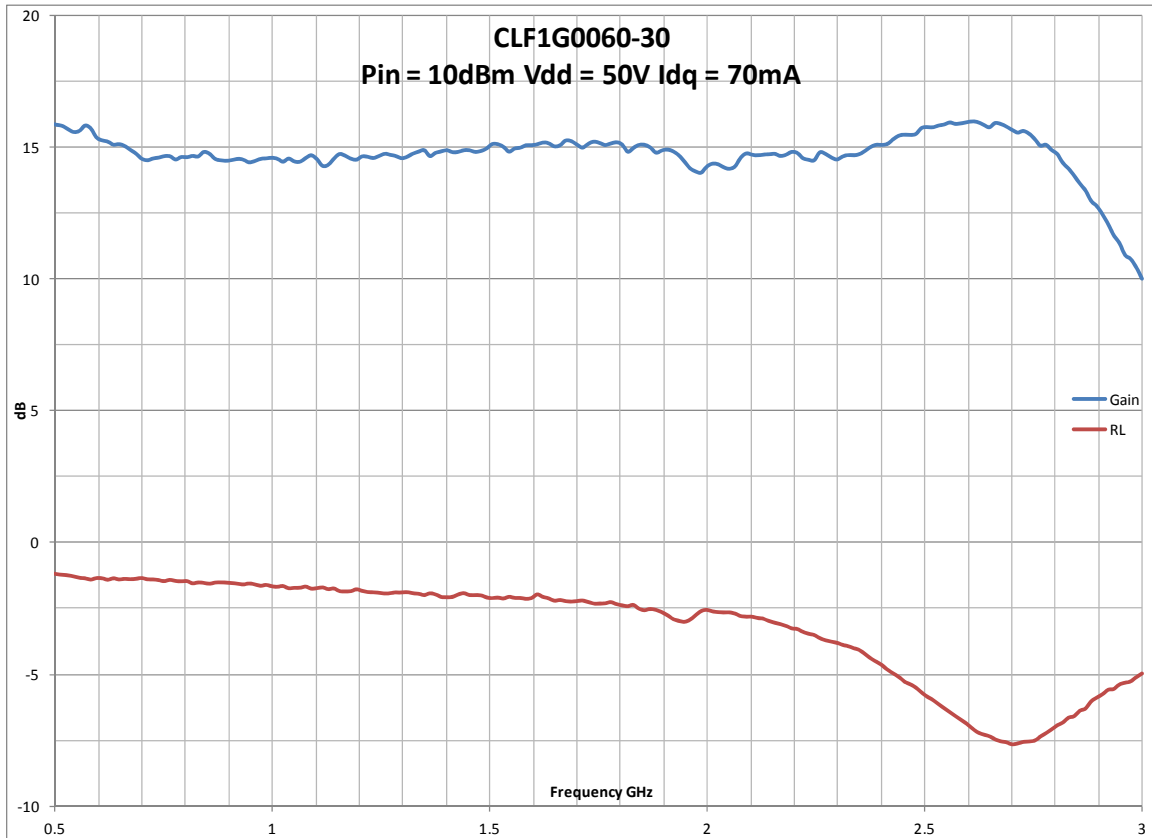


Figure 2: Pulsed Gain and Return Loss 100uSec 10% pulse

9 CW Power Output VS. Frequency

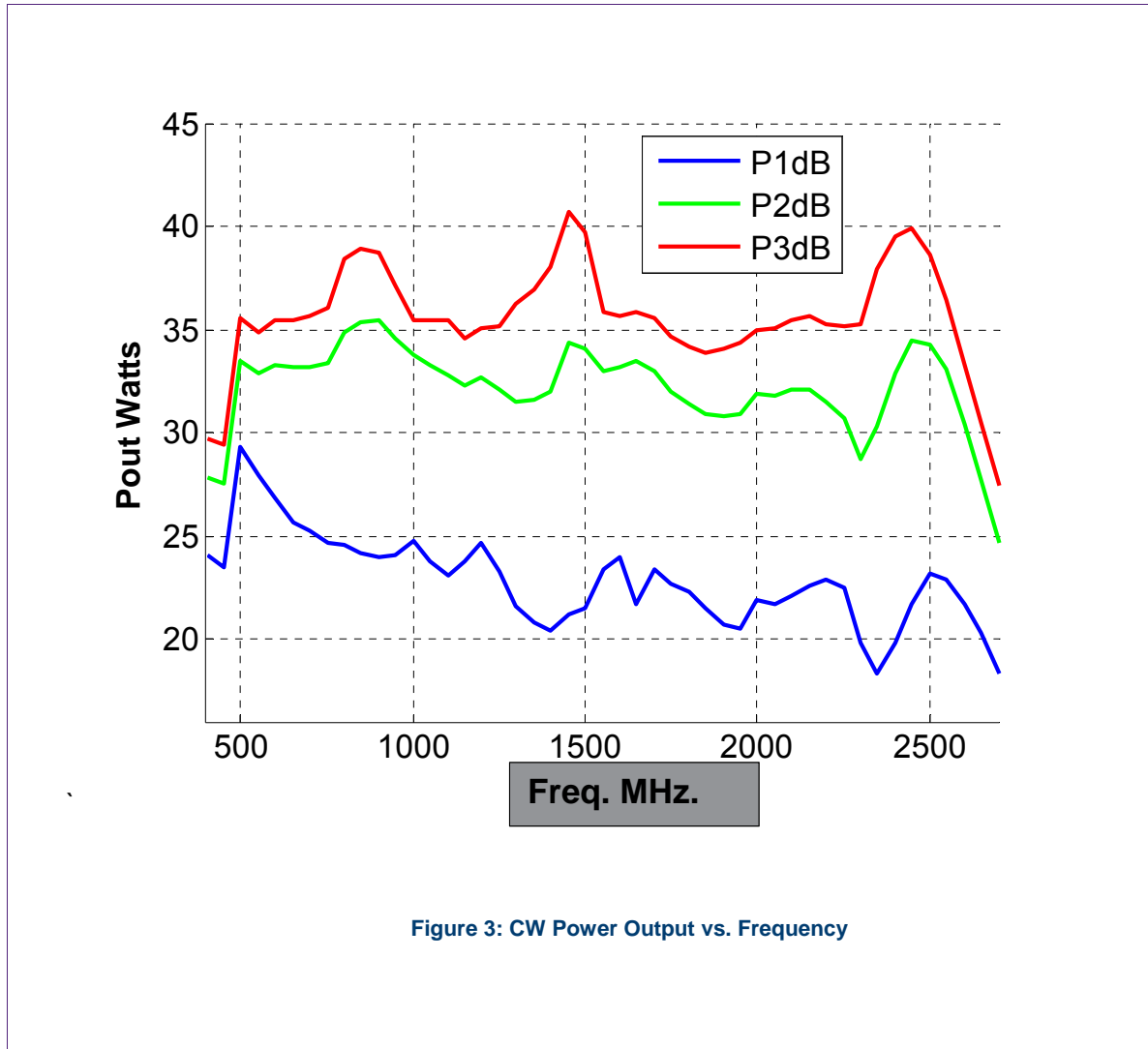
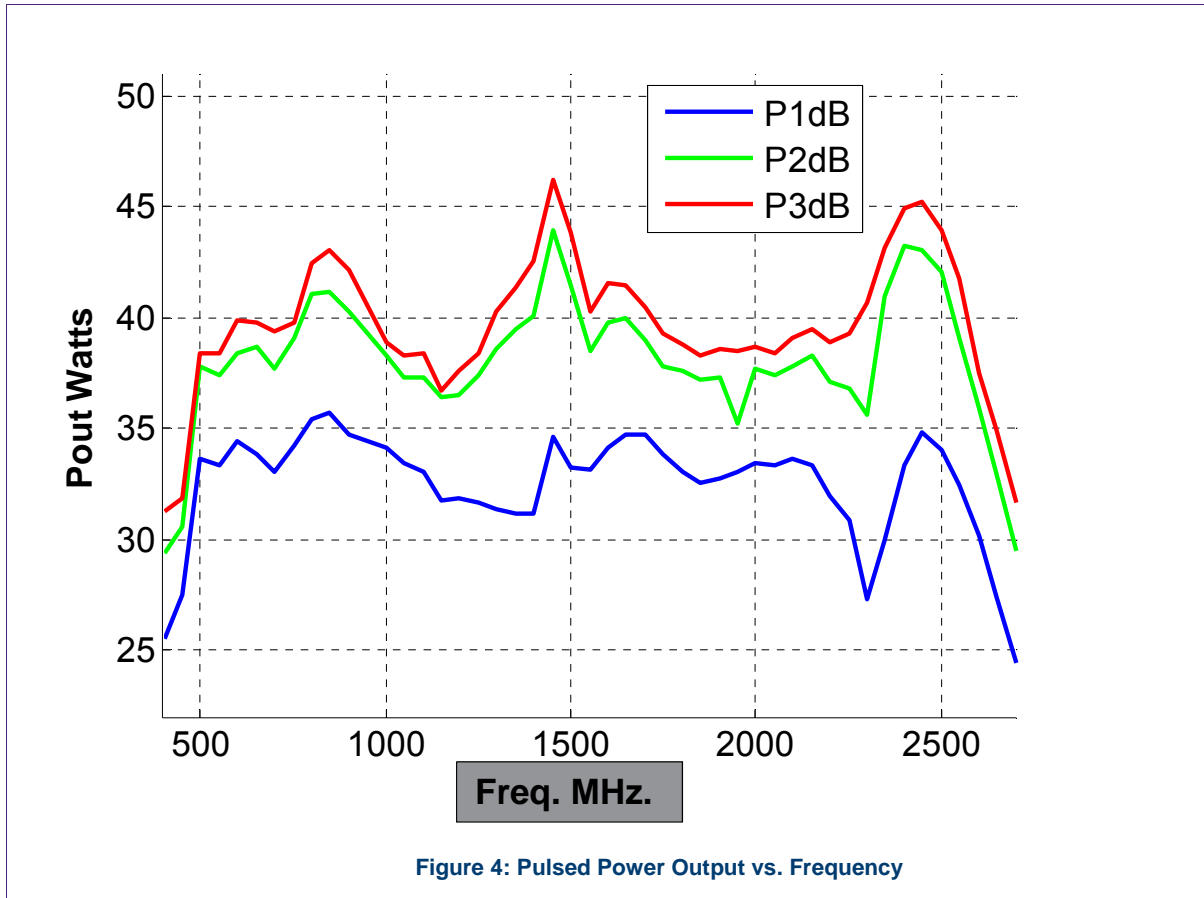
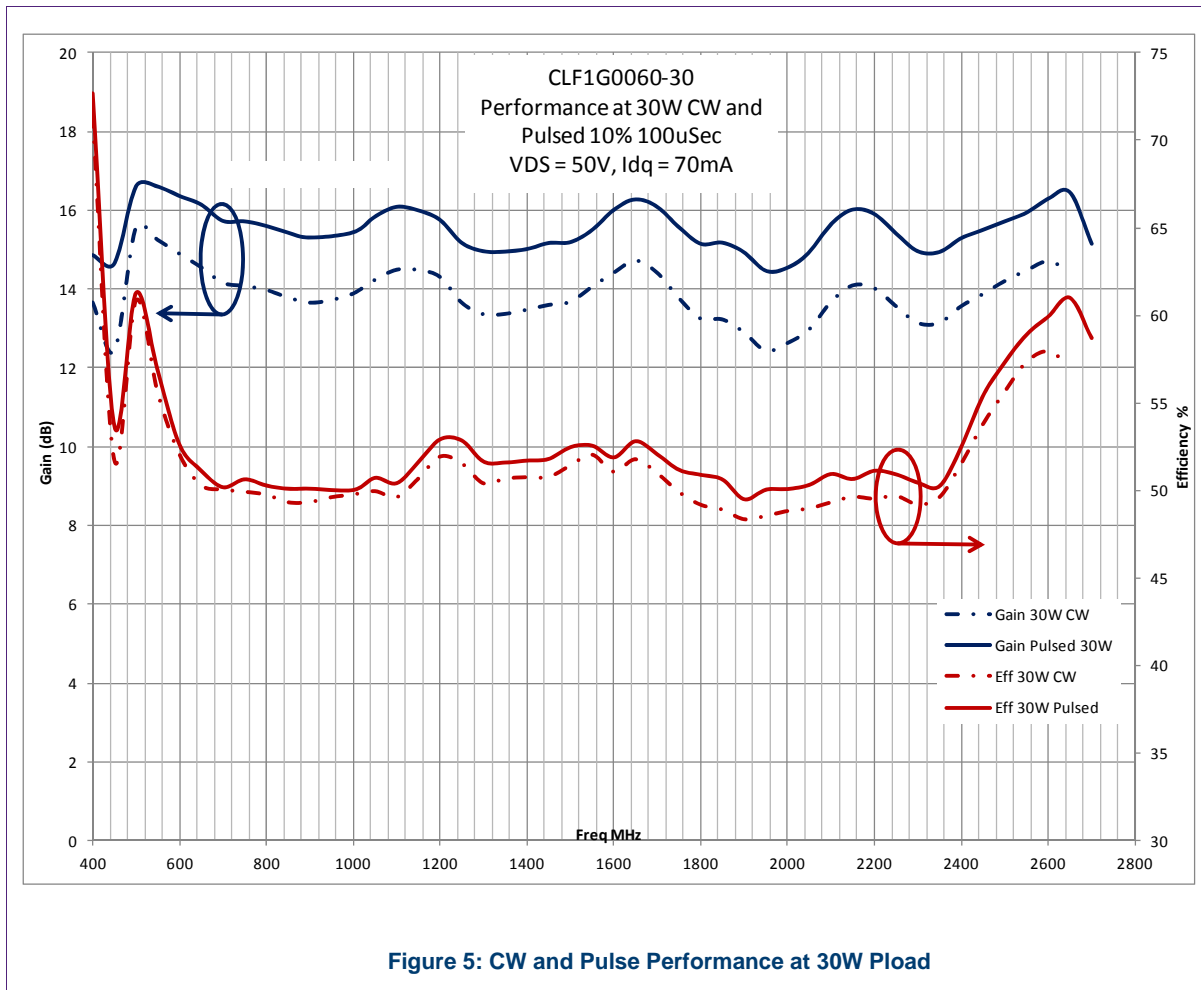


Figure 3: CW Power Output vs. Frequency

10 Pulsed Power Output VS. Frequency



11 CW and Pulse Performance at 30W Pout



12 PCB Layout

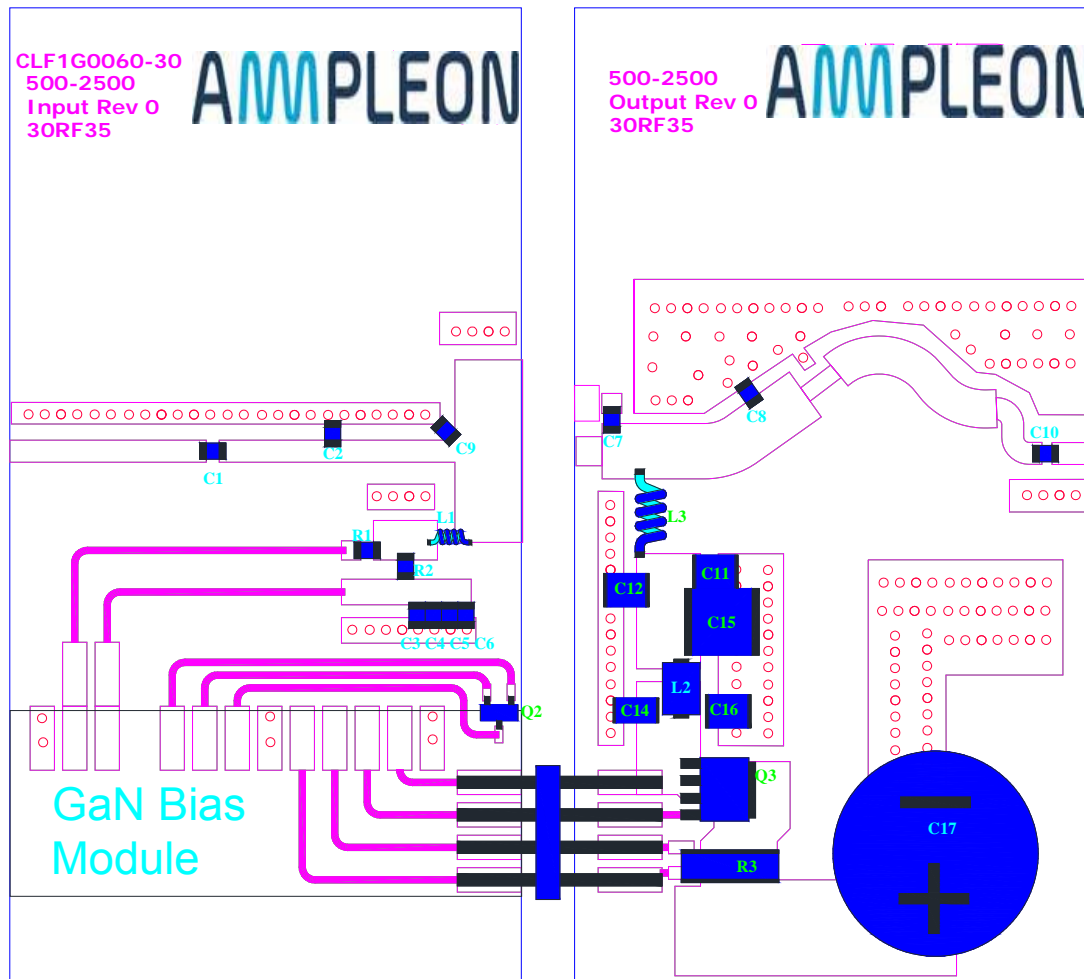


Figure 6: PCB Layout

13 Bill of Materials

Designator	Description	Manufacturer	Part #
Input PCB	CLF1G3060-30 500-2500 Input Rev0	Metro Circuits	
Output PCB	CLF1G3060-30 500-2500 Output Rev0	Metro Circuits	
Q1	30W GaN	Ampleon	CLF1G0060-30
Q2	Transistor, PNP 45V 100mA GP	NXP	BC857B
Q3	Transistor, N-ch MOS 80V 80A	NXP	BSMN8R2-80YS
R1	10k Ω	Vishay Dale	
R2	10 Ω	Vishay Dale	
R3	0.005 Ω 1% 100ppm MF, 2W, 3008	Susumu	RL7520WT-R005-F
C17	470uF, 63V Electrolytic SM	Panasonic	PCE3667CT-ND
C9	1pF	ATC	ATC 600F
C2	0.8pF	ATC	ATC 600F
C1,C10	8.2pF	ATC	ATC 600F
C9	0.5pF	ATC	ATC 600F
C8	1.2pF	ATC	ATC 600F
C11	100pF	ATC	ATC 100B
C12	1nF	ATC	700B
C3	100nF Capacitor, 50V 10% X7R, 0805	Generic	
C4	10nF Capacitor, 50V 10% X7R, 0805	Generic	
C5	22pF Capacitor, 100V 5% NP0, 0805	Generic	
C6	1nF Capacitor, 100V 5% NP0, 0805	Generic	
C14	1uF Capacitor, 100V 10% X7R, 1206	Generic	
C16	10nF Capacitor, 200V 5% NP0, 1210	Generic	
C15	10uF Capacitor, 100V 10% X7S, 2220	TDK	C5750X7S2A106M
L1	330nH	Coil Craft	1008CS-100XJB
L2	Ferrite bead, 5A	Fair Rite	2743019447
L3	Inductor, air core	1T 18 AWG 0.16" ID	
PC-board Material: Taconic RF35, $\epsilon_r = 3.5$, thickness 30mils, 1oz copper each side			

Table 3: BOM

14 Hardware

14.1 Board Photo

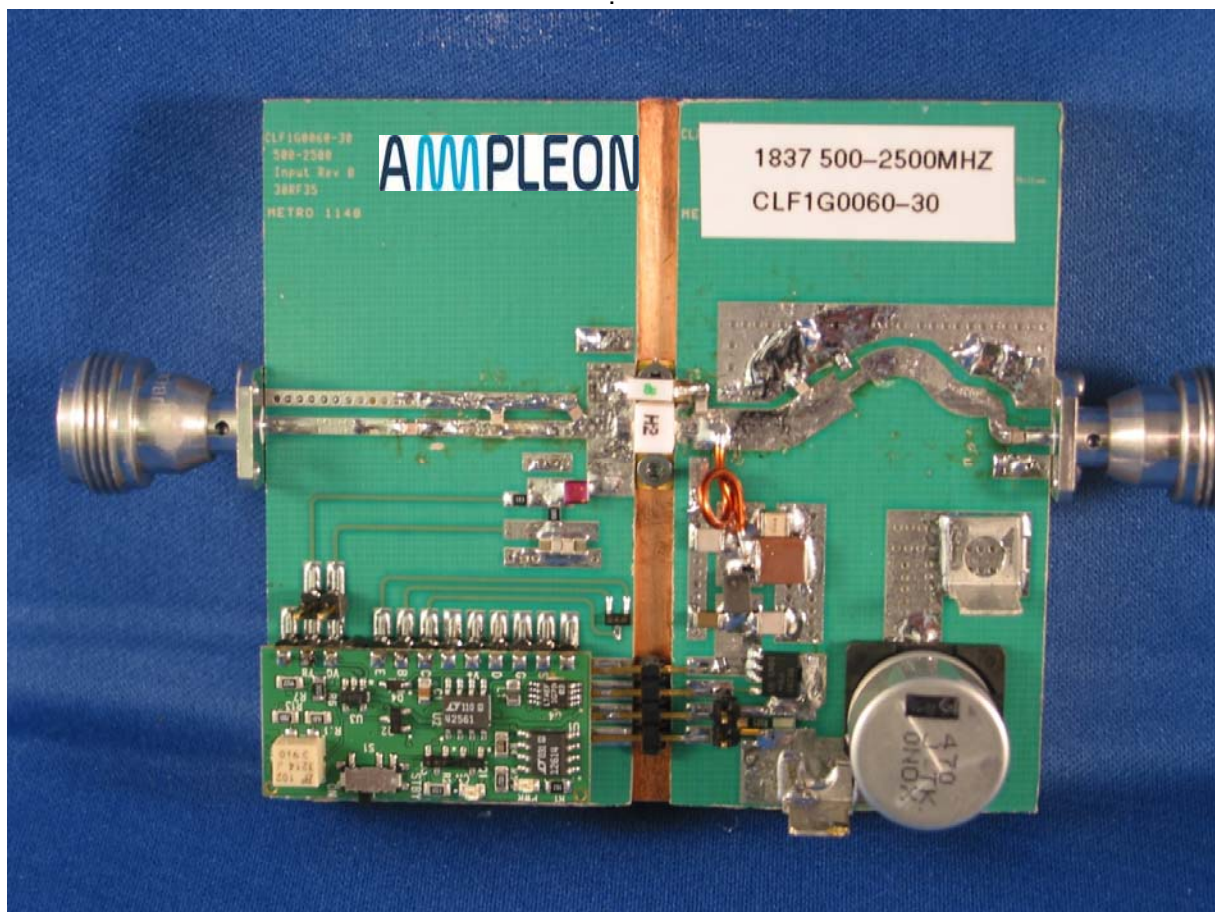


Figure 7: Demo Board Photo

14.1 PCB materials

Table 4. Board Specifications

Parameter	Value
Manufacturer	Taconic
Type	RF35, $\epsilon_r = 3.5$
Thickness	30mils, 1oz. copper
Layers	2, top/bottom. Bottom all copper

14.2 Device markings

Table 5. Device Specifications

Parameter	Value
Manufacturer	Ampleon
Device	CLF1G0060-30
Date Code	H2

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