

CA-136-13

BLF574 at 434 MHz

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AMPLEON

Application Measurement
Report

Document information

Info	Content
Keywords	BLF574, AB, Pulse
Abstract	RF Performance BLF574; 434MHz; Board 2288

Revision history

Rev	Date	Description
1	20130430	Original
2	20150424	Update for web publication
3	20151005	The format of this document has been redesigned to comply with the new identity guidelines of Ampleon. Legal texts have been adapted to the new company name where appropriate.

1. Demo and Transistor Details

Frequency Band	434 MHz
Modulation	Pulsed 1ms 25%, 50% and 90%
Transistor	BLF574
Date Code	M0831
Board Number	2288

2. Introduction

This report gives the test results for a BLF574, 650W, LDMOS, push-pull class AB demo amplifier.

The following tests have been performed:

- NWA - Gain/ Return loss (CW)
- Pulsed Peak Power sweep

All testing has been performed at $V_{DS} = 48V$, $I_{DQ} = 100mA$, and $T_H = 25^{\circ}C$ unless otherwise specified

3. Test Circuit

A description of this circuit can be found in **chapter 8**. The test circuit has been designed on Taconic RF35 30mil $\epsilon_r=3.5$

Supply voltage (drain-source) is typically 50V. An external bias module supplies the gate bias voltage and can be found in **R_10032 (CA-330-11)**

4. RF Performance

Test Signal	Gain (dB)	Eff(%)	P_{3dB} (dBm)	$P_{PEAK}(W)$
Pulsed/CW 1msec 25% duty cycle	17.8	75.1	58.54	715
Pulsed/CW 1msec 50% duty cycle	16.9	73.9	58.47	703
Pulsed/CW 1msec 90% duty cycle	16.3	71.8	58.23	667
CW	16.2	71.2	58.16	655

Table 1. RF Performance Summary $V_{ds} = 48V$, $I_{dq} = 100mA$, Frequency = 434 MHz

5. Small Signal

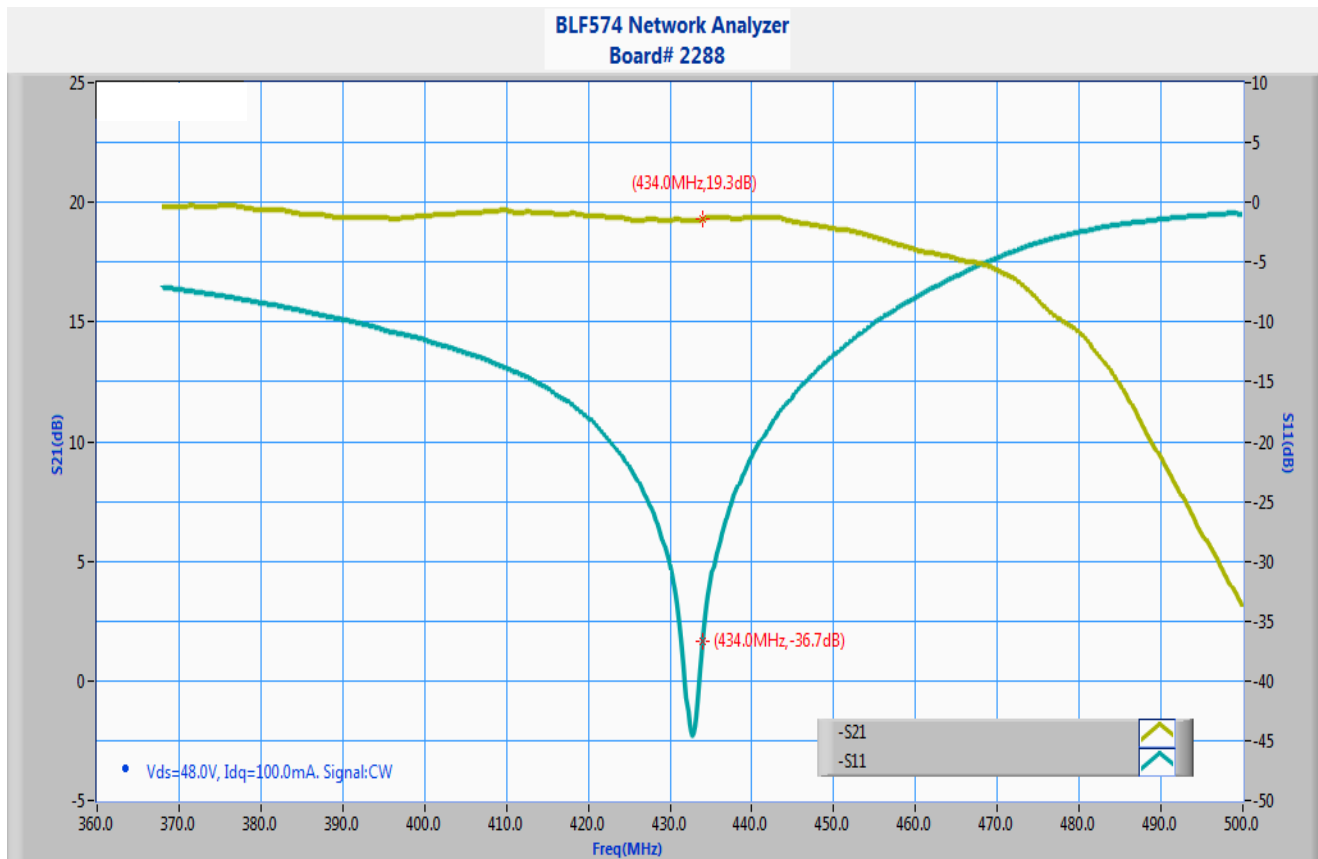


Fig 1. Gain and input RLoss @ pin = 30dBm CW

6. Gain and Efficiency

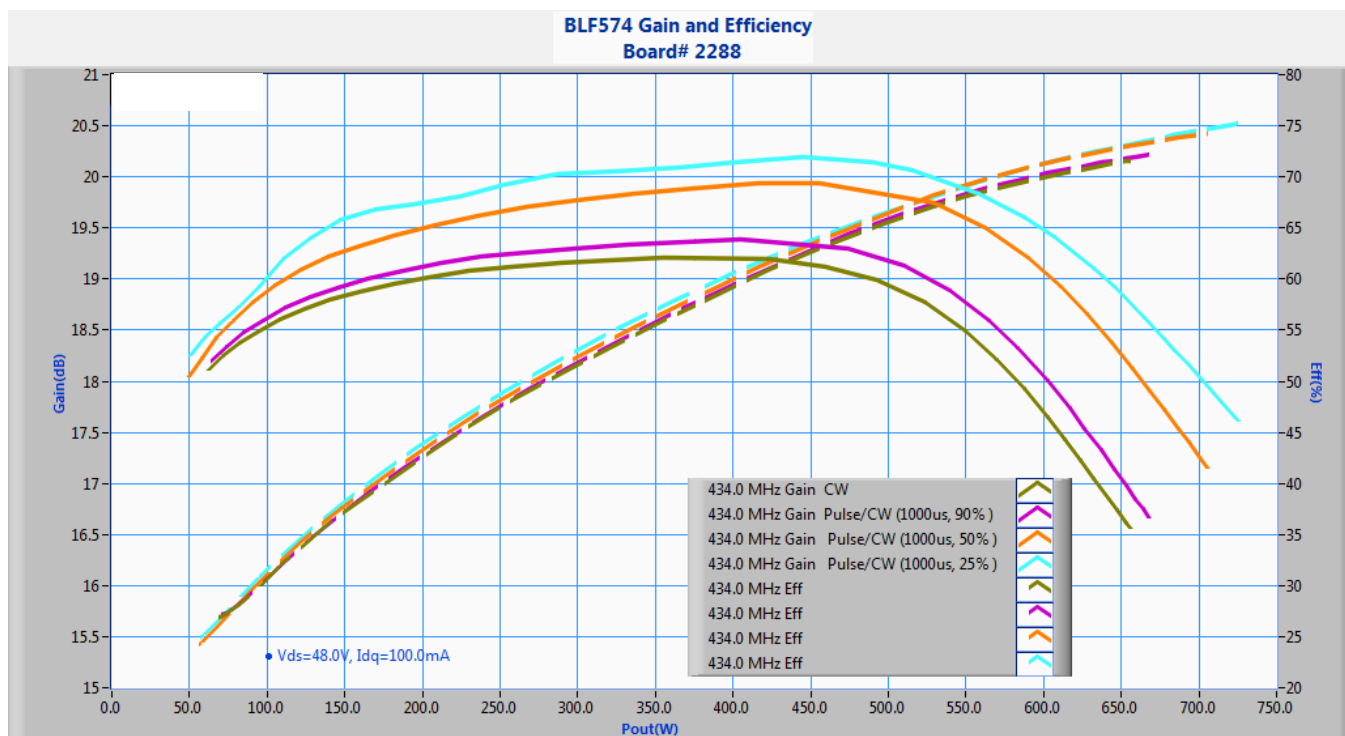


Fig 2. Gain and efficiency

7. Harmonics

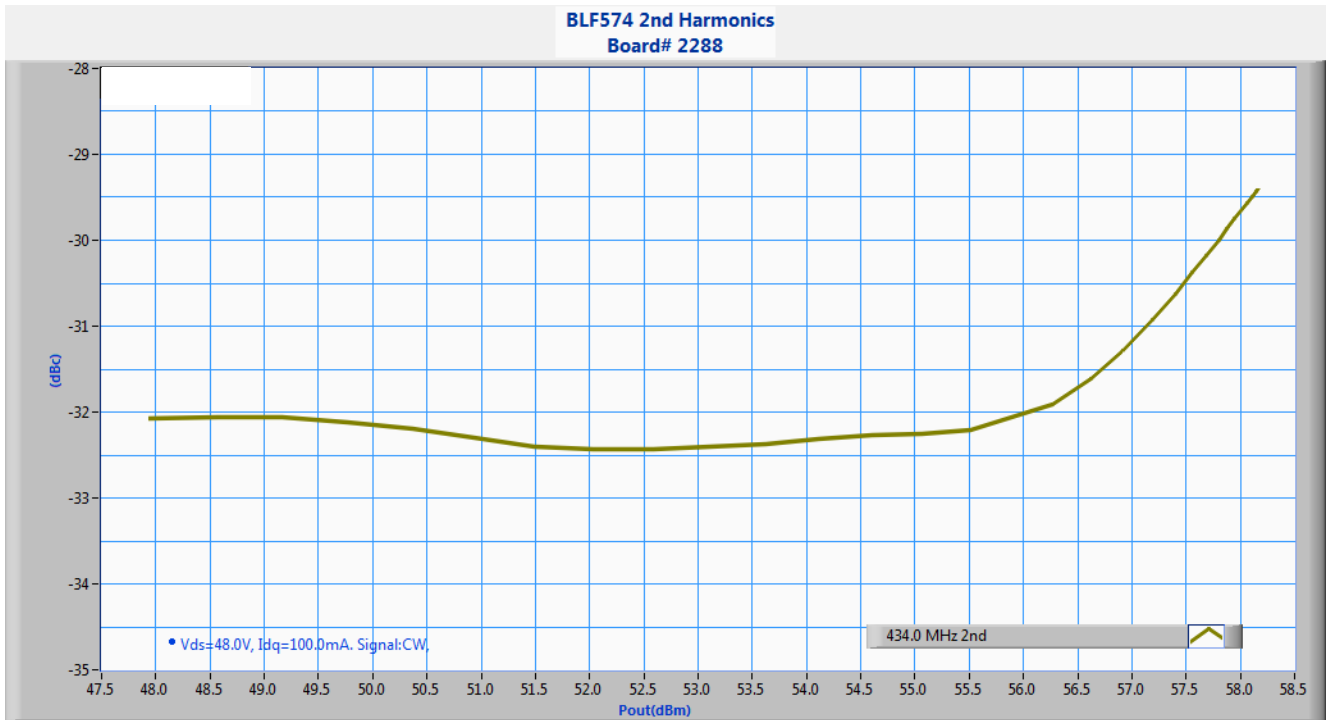


Fig 3. 2nd Harmonics

8. Test Circuit and Component List

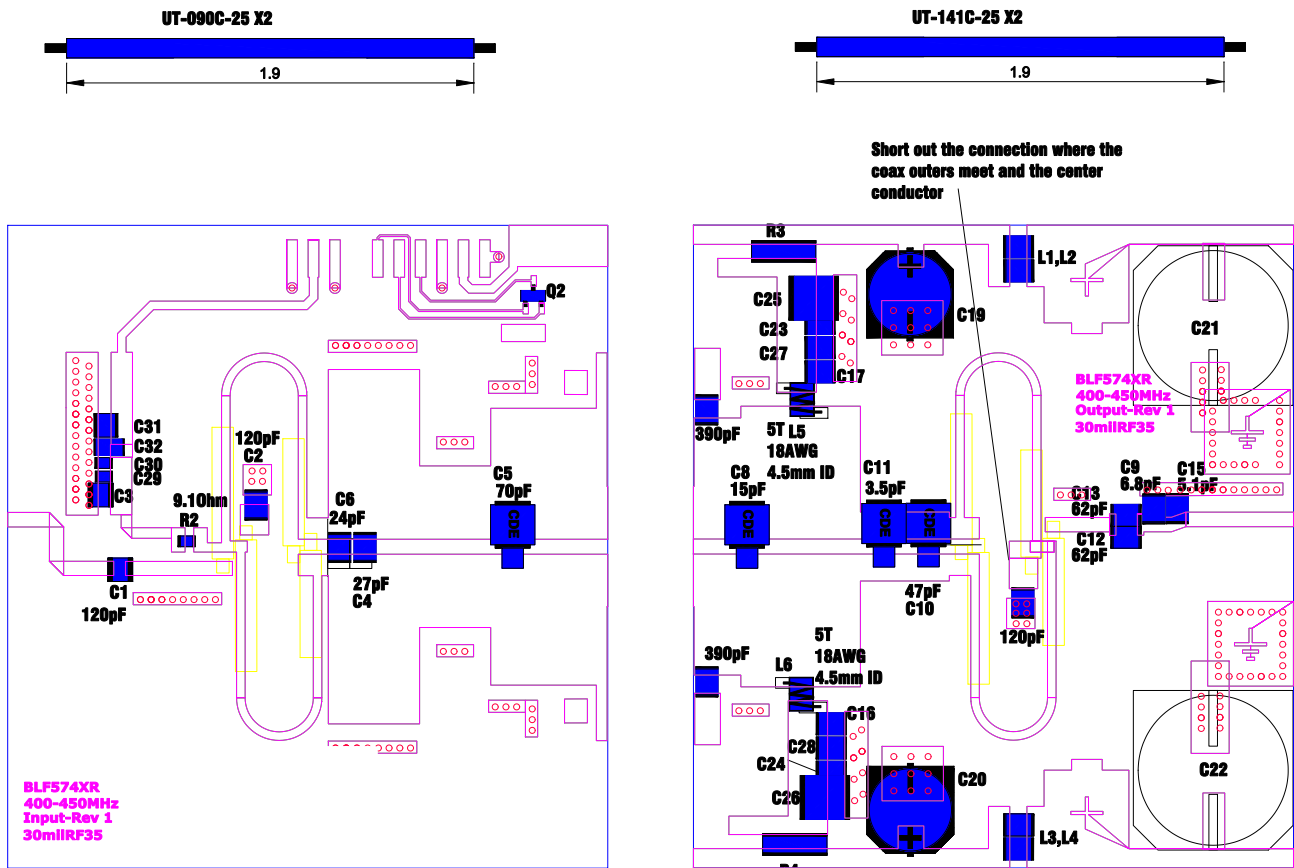


Fig 4. Test Circuit

Designator	Description	Manufacturer	Part #
Input PCB	BLF574XR 400-450MHz Rev 0	Avanti	
Output PCB	BLF574XR 400-450MHz Rev 0	Avanti	
Q1	600W LDMOS	Ampleon	BLF574
Q2	Transistor, NPN 2N2222	NXP	BC847
R1	5.1Ω	Vishay Dale	0805
R2	9.1Ω	Vishay Dale	0805
R3,R4	0.005Ohm sense Resistor	*Shorted On this board*	
C19,C20	220uF, Electrolytic SM	Panasonic	PCE3474CT-ND
C21,C22	470uF, Electrolytic SM	Panasonic	EEE-TK1J471AM
C1,C2,C14	120pF	Passive Plus / ATC	1111P / 100B
C3	100pF	Passive Plus / ATC	1111P / 100B
C4	27pF	Passive Plus / ATC	1111P / 100B
C6	24pF	Passive Plus / ATC	1111P / 100B
C9	6.8pF	Passive Plus / ATC	1111P / 100B
C8	15pF	CDE	MIN02-002
C5	70pF	CDE	MIN02-002
C10	47pF	CDE	MIN02-002
C11	3.5pF	CDE	MIN02-002
C13,C12	62pF	Passive Plus / ATC	1111P / 100B
C15	5.1pF	Passive Plus / ATC	1111P / 100B
C16,C17	47pF	Passive Plus / ATC	1111P / 100B
C27,C28	100nF	Murata	GRM31CR72E104KW03L
C23,C24	2.2uF	Murata	GRM32ER72A225KA35L
C25,C26	10uF Capacitor, 100V 10% X7S, 2220	TDK	C5750X7S2A106M
C30	100nF Capacitor, 50V 10% X7R, 0805	Generic	
C29	10nF Capacitor, 50V 10% X7R, 0805	Generic	
C31	10uF Capacitor, 50V	Murata	GRM32DF51H106ZA01L
C32	1uF Capacitor, 50V	Murata	GRM31CR72A105KA01L
L1,L2,L3,L4	Ferrite Bead (10A)	Laird	HI1612X560R-10
L5,L6	18G, 5T,4.5mm ID		
T1,T2 Balun	1.9" x 4	Microcoax	UT-090C-25
T3,T4 Balun	1.9" x 4	Microcoax	UT-141C-25

PC-board Material: Taconic RF35, $\epsilon_r = 3.5$, thickness 30mils, 1oz copper each side

Table 2. BOM

9. Photo

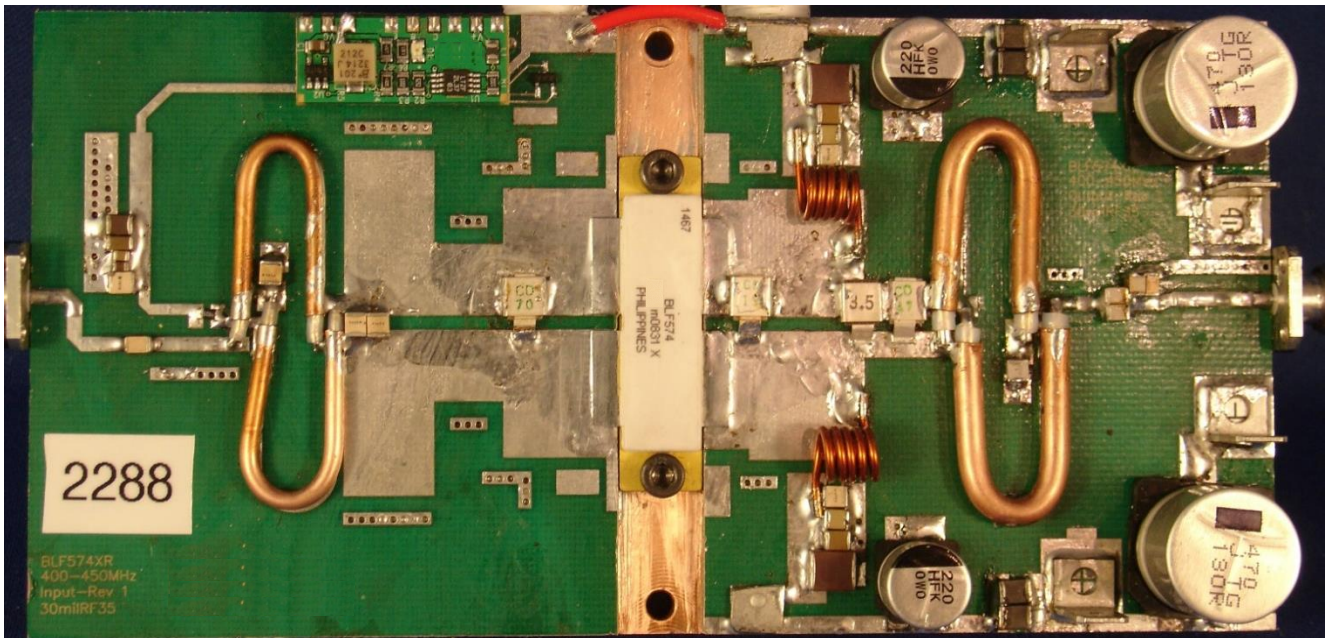


Fig 5. BLF574 Photo

10. Attachments

Please see the attachment for the support files.

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