

# CA-327-12

BLF184XR at 440-460 MHz

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AMPLEON

Application Measurement  
Report

## Document information

Info	Content
<b>Keywords</b>	BLF184XR (T5), AB, Pulse
<b>Abstract</b>	RF Performance BLF184XR (T5); 440-460MHz; Board 2143

**Revision history**

<b>Rev</b>	<b>Date</b>	<b>Description</b>
1	20121129	Original
2	20121204	Updated board to handle wide large duty cycle pulses
3	20130322	Part Number
4	20150424	Update for web publication
5	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	440-460 MHz
Modulation	CW
Transistor	BLF184XR (T5)
Date Code	D124411
Board Number	2143

## 2. Introduction

This report gives the test results for a BLF184XR, 500W, LDMOS, push-pull class AB demo amplifier.

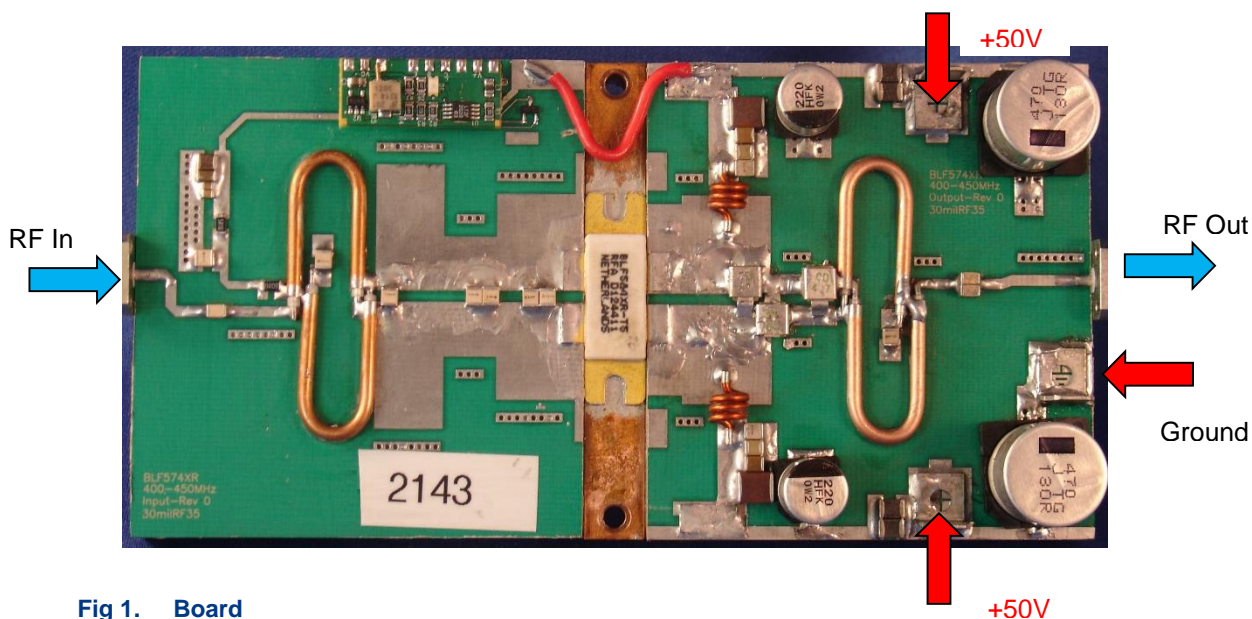


Fig 1. Board

The following tests have been performed:

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

All testing has been performed at  $V_{DS} = 50V$ ,  $I_{DQ} = 100mA$ , and  $T_H = 25^{\circ}C$  unless otherwise specified.

### 3. Test Circuit

A description of this circuit can be found in **chapter 5**. 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 CA-330-11

### 4. RF Performance

Frequency (MHz)	Gain (dB)		Eff(%)	$P_{3dB}$ (dBm)	$P_{PEAK}(W)$
	@ Pout= 500W (57dBm)				
440	21.5		57	57	500
450	22.5		64	57.5	570
460	21.3		63	57	500

**Table 1. RF Performance Summary Vds = 50V, Idq = 100mA, CW**

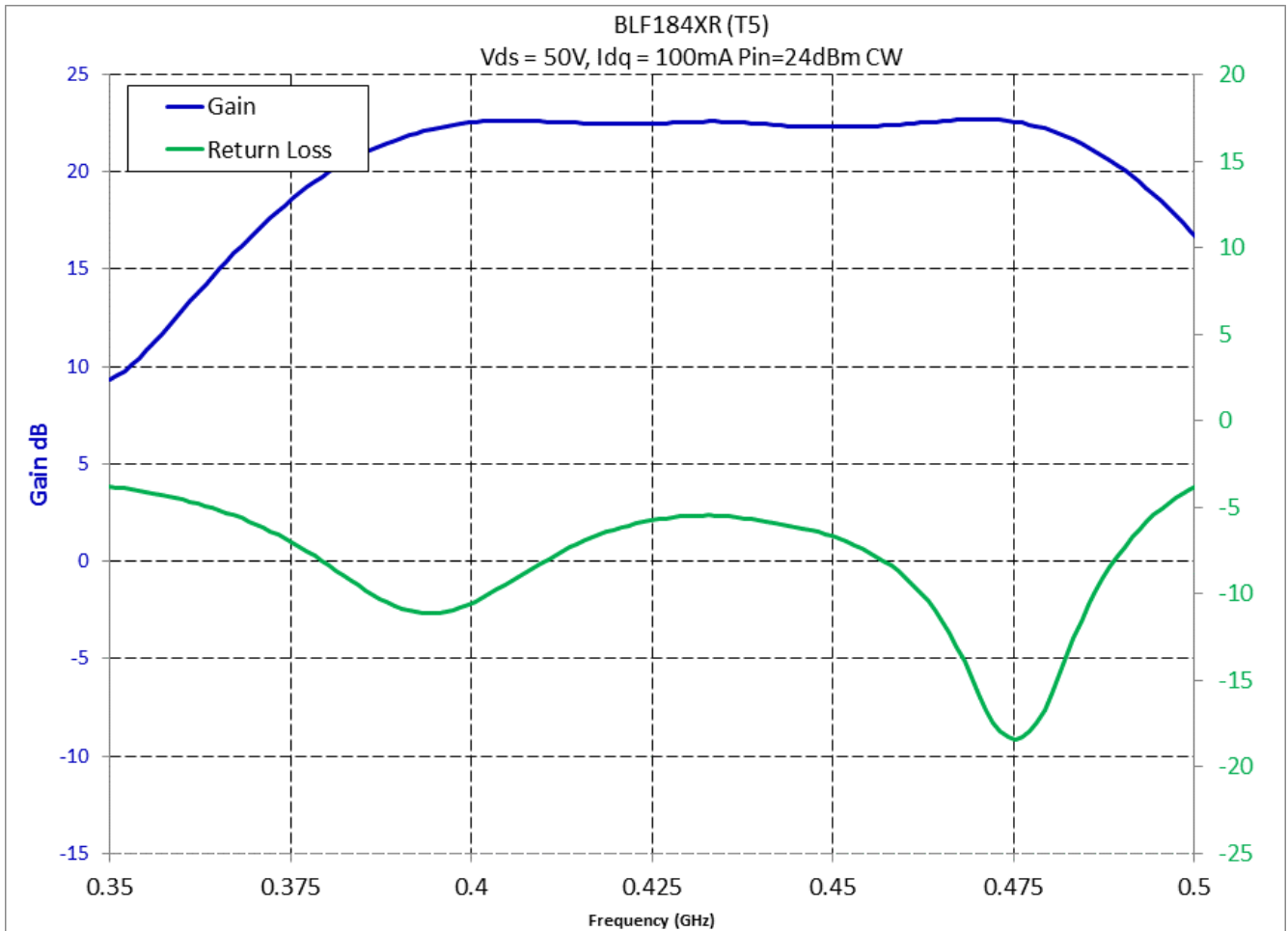


Fig 2. Gain RL pin = 24dBm CW

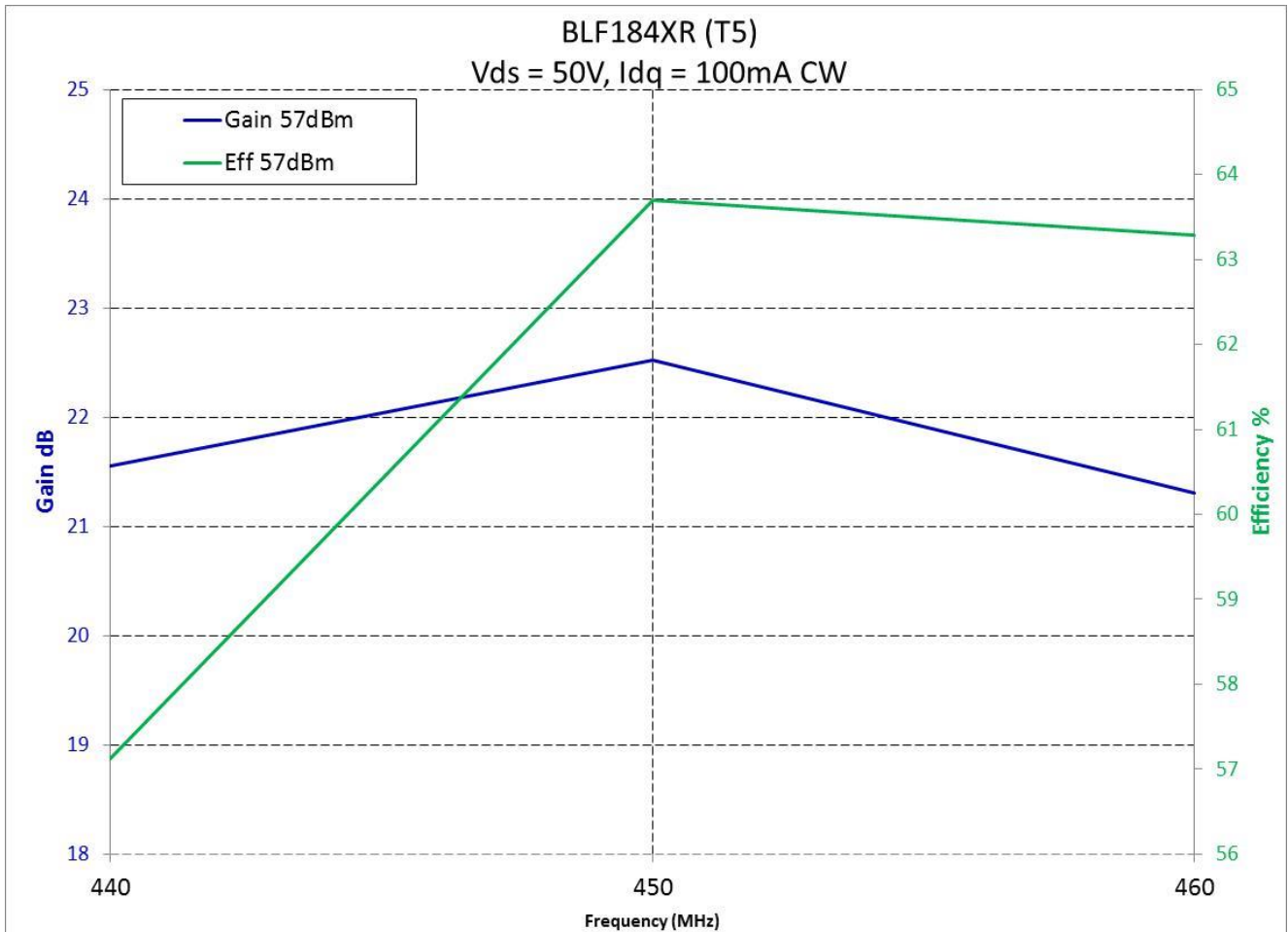


Fig 3. Gain and efficiency at Pout = 500W CW Vdd=50V Idq = 100mA

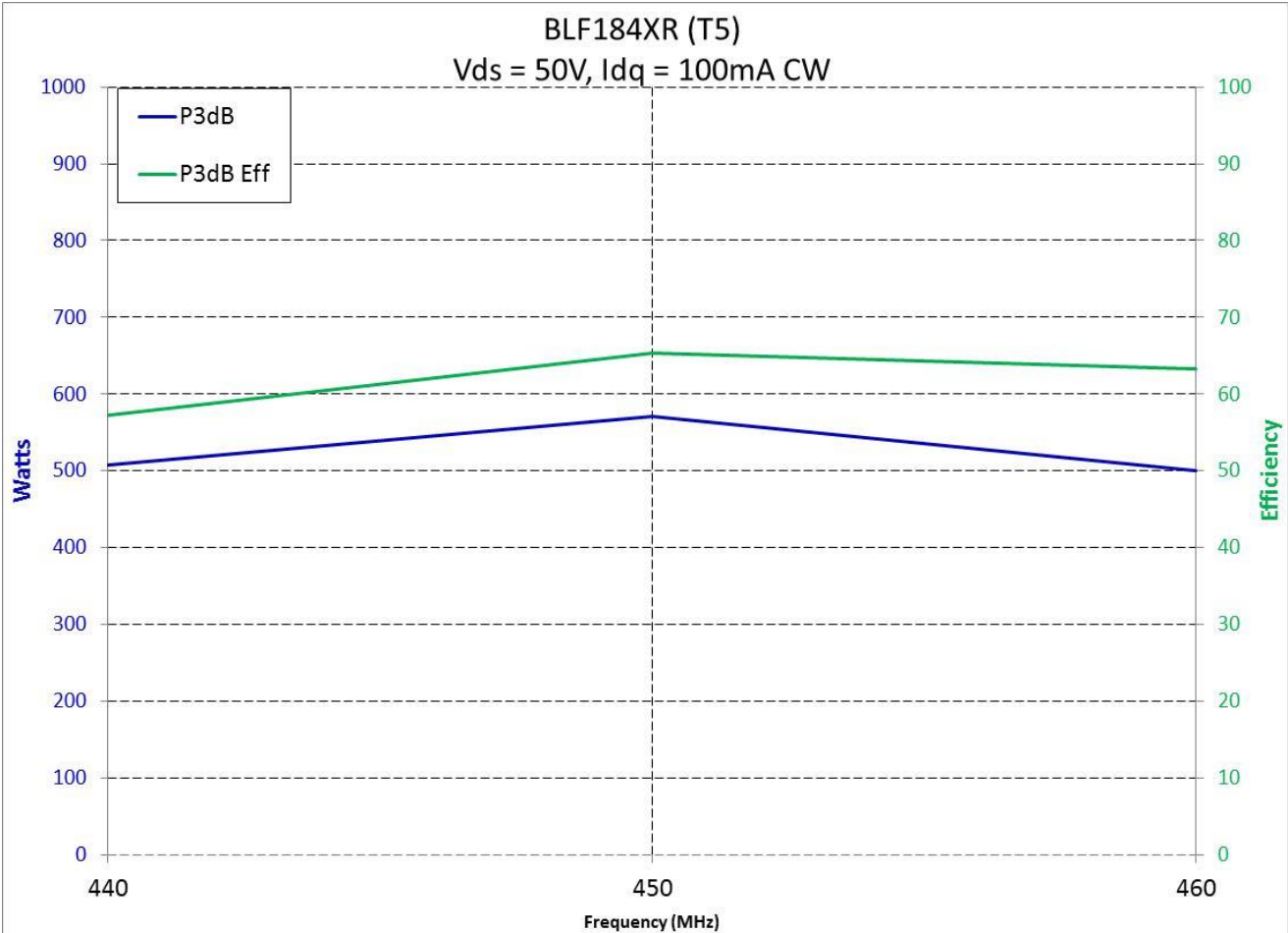


Fig 4. Peak Power / peak efficiency CW Vdd=50V Idq = 100mA

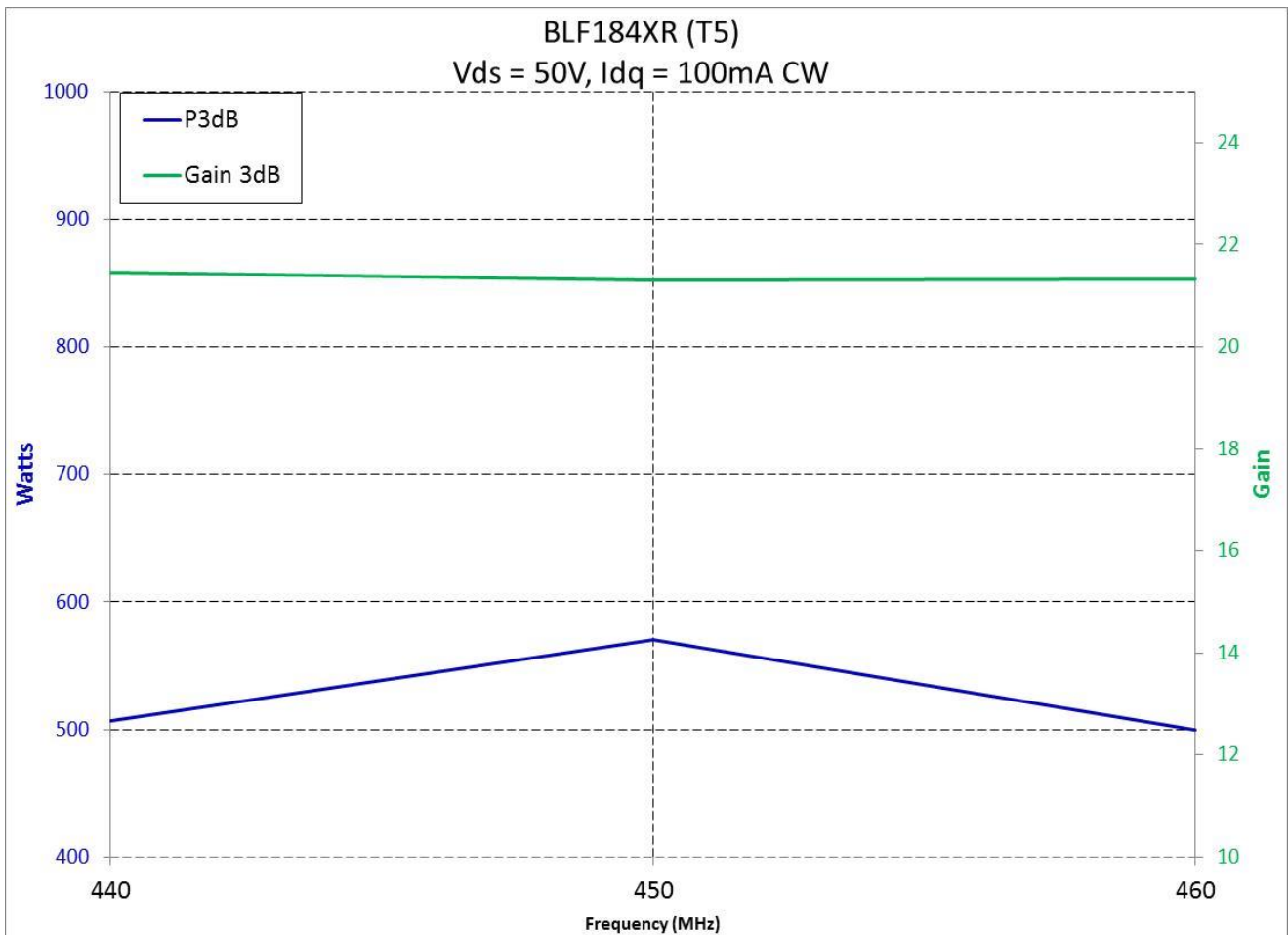


Fig 5. Gain and P3dB CW Vdd=50V Idq = 100mA



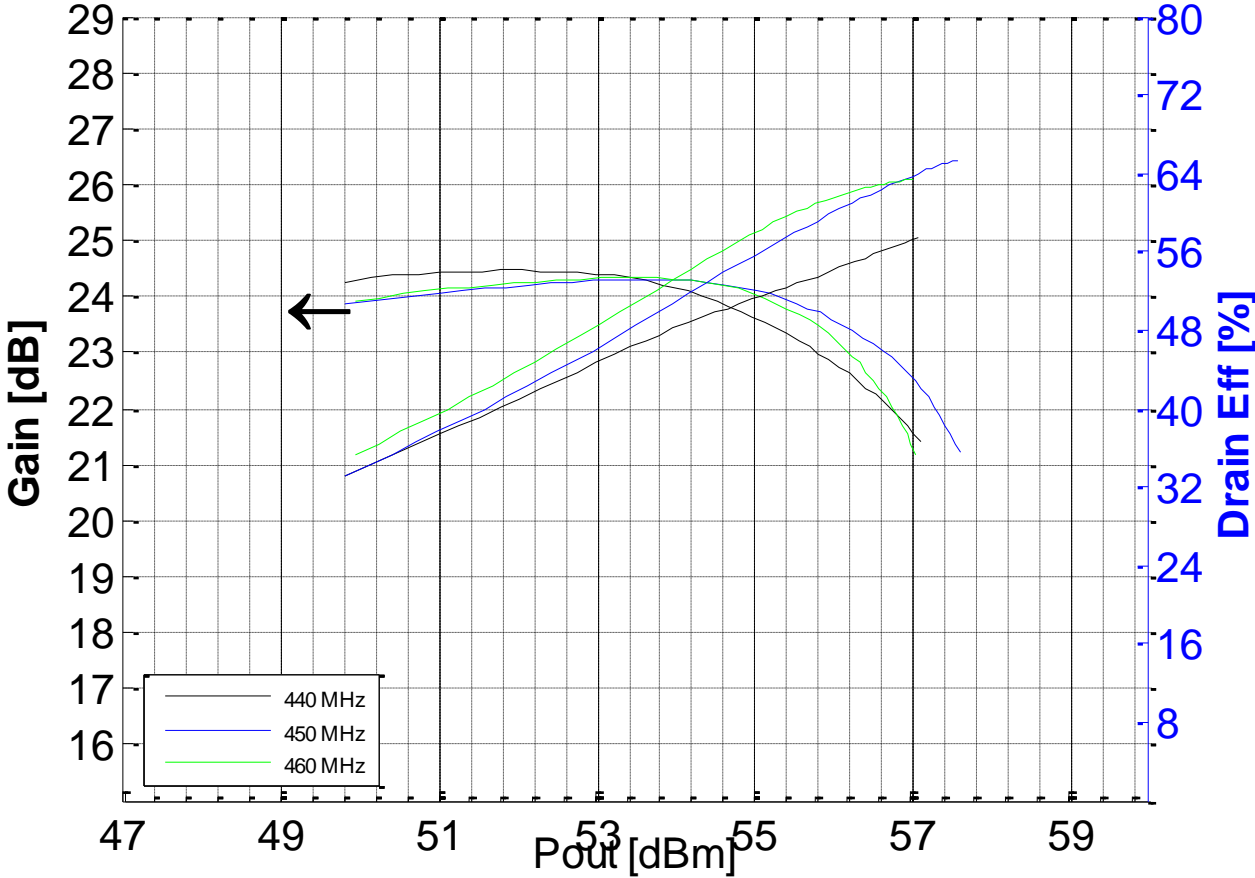


Fig 6. AM-AM CW Vdd=50V Idq = 100mA

### 5. Test Circuit and Component List

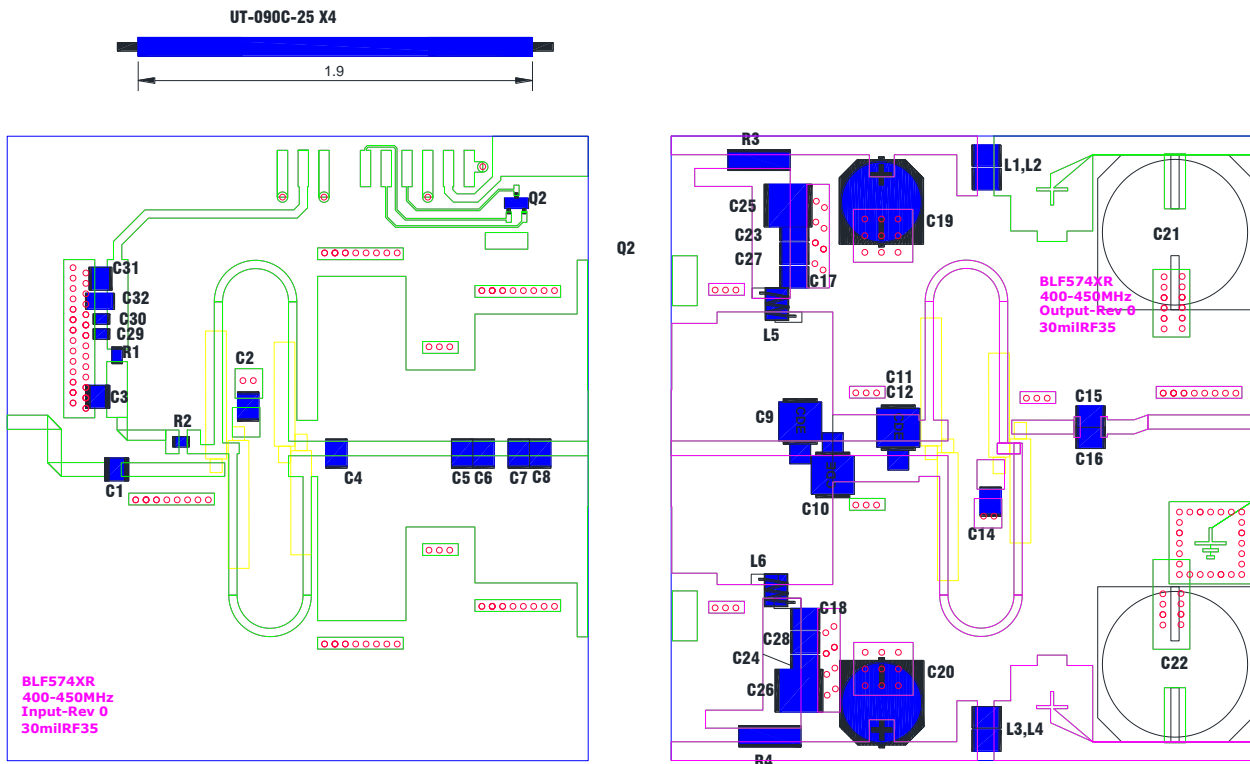


Fig 7. Test Circuit

Designator	Description	Manufacturer	Part #
Input PCB	BLF574XR 400-450MHz Rev 0	Avanti	
Output PCB	BLF574XR 400-450MHz Rev 0	Avanti	
Q1	500W LDMOS	Ampleon	BLF184XR T5
Q2	Transistor, NPN 2N2222	NXP	BC847
R1	5.1Ω	Vishay Dale	0805
R2	9.1Ω	Vishay Dale	0805
R3,R4	0.005Ohm sens Resistor		
C19,C20	220uF, Electrolytic SM	Panasonic	PCE3474CT-ND
C21,C22	470uF, Electrolytic SM	Panasonic	EEE-TK1J471AM
C1,C2	120pF	Passive Plus / ATC	1111P / 100B
C3	100pF	Passive Plus / ATC	1111P / 100B
C4	36pF	Passive Plus / ATC	1111P / 100B
C5	30pF	Passive Plus / ATC	1111P / 100B
C7	33pF	Passive Plus / ATC	1111P / 100B
C6	15pF	Passive Plus / ATC	1111P / 100B
C8	62pF	Passive Plus / ATC	1111P / 100B
C9,C12	22pF	CDE	MIN02-002
C10	15pF	CDE	MIN02-002
C11	4.7pF	CDE	MIN02-002
C15,C16	56pF	Passive Plus / ATC	1111P / 100B
C14	270pF	Passive Plus / ATC	1111P / 100B
C17,C18	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	12nH 16Gauge 3T, 3.8mm Dia		
Balun	1.9" x 4	Microcoax	UT-090C-25
PC-board Material: Taconic RF35, εr = 3.5 , thickness 30mils, 1oz copper each side			

Table 2. BOM

## 6. Attachments

Please see the attachment for the support files.

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