

AR204007

BLP15H9S100, 470-700MHz

V1.0---8 September 2020

Application
Measurement
Report

Document information

Status Public

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Abstract This demo designed for DVB-T digital TV transmitter application with BLP15H9S100, this circuit works at 470-700MHz, it can output >10W with <-42dBc shoulder.

1. Revision History

Table 1: *Report revisions*

Revision	Date	Description	Author
1.0	20200908	Initial document	Rock Qiu

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General description

This report presents the measurement results of the demo AR204007. The device is BLP15H9S100 LDMOS in a plastic package, which can handle 30:1 VSWR.

This demo is tuned for the frequency 470-700MHz, which can output >10W DVB-T UHF digital TV signal with <-42dBc shoulder.

5. Biasing

The biasing is as follows:

$$V_{DS} = 50V$$

$$I_{dq} = 300mA$$

6. Performance Indication

Table 2: *Performance indication*

Parameter	Condition	Unit	Pulsed(100us 10%)
V _{DD}		V	50
S ₁₁ at input		dB	-6
P _{1dB}	G _{MAX} -1dB	W	90
P _{3dB}	G _{MAX} -3dB	W	110
Gain	@P _o	dB	20
Drain Efficiency	@P _o	%	30 (20W DVB-T OUTPUT)

7. Performance Details

7.1 Test data

7.1.1 gain and efficiency vs output power (100us 10%)

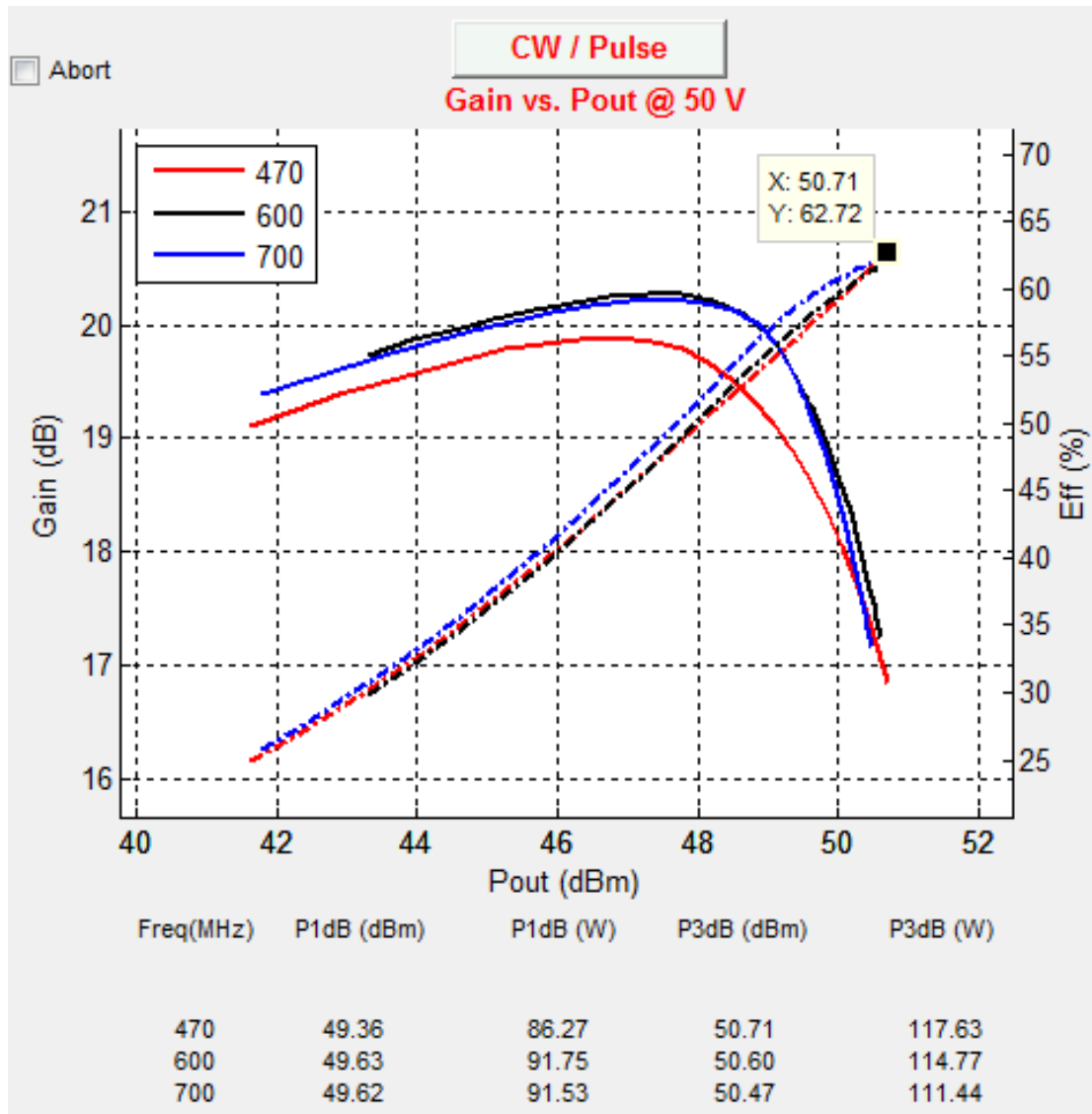


Figure 1 gain and efficiency vs output power

7.1.2 liner test of 10W output (50V 300mA, DVB-T 8MHz bandwidth)

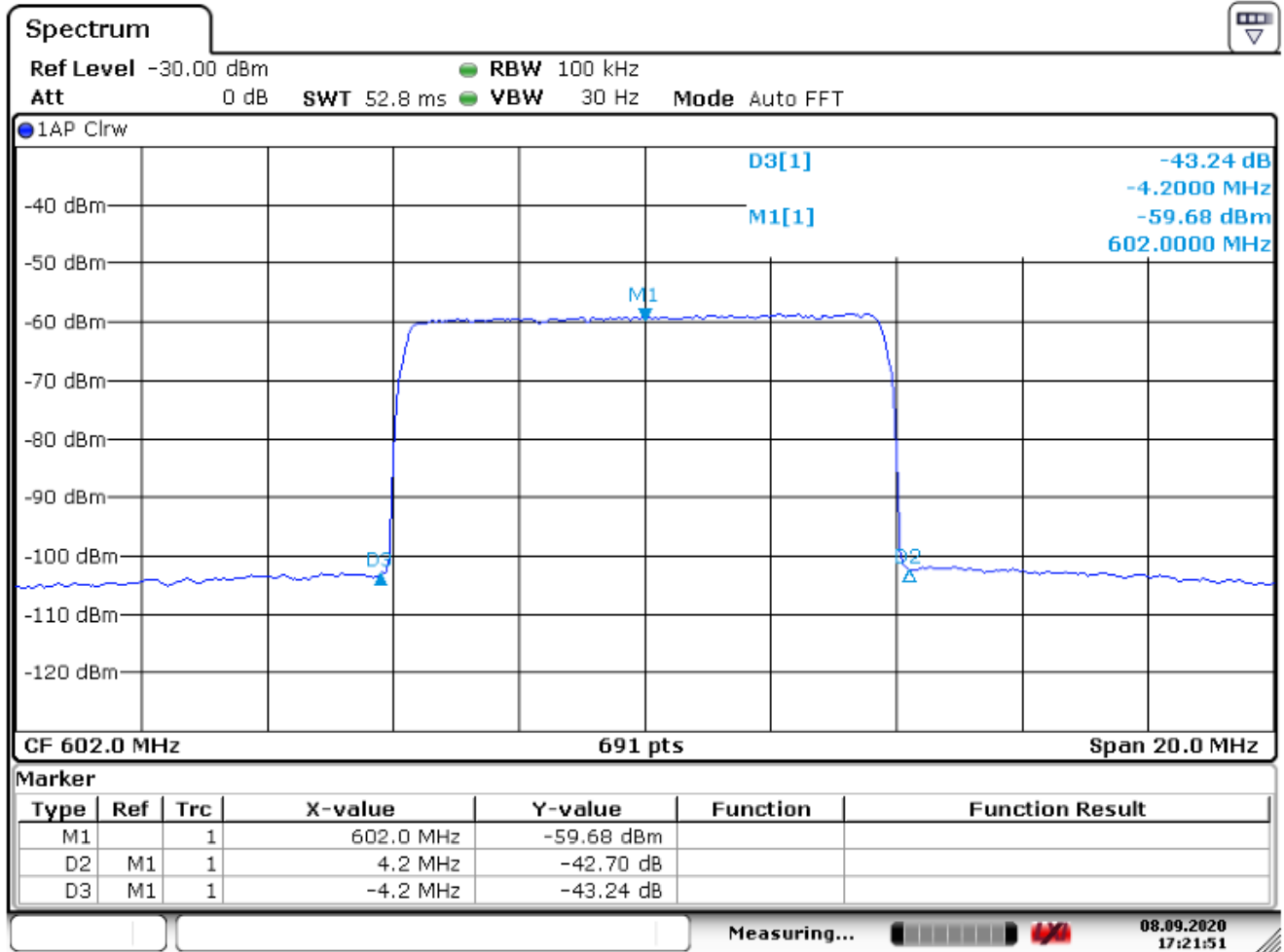


Figure 2 liner test of 10W output

7.1.3 liner test of 20W output (50V 300mA, DVB-T 8MHz bandwidth) :

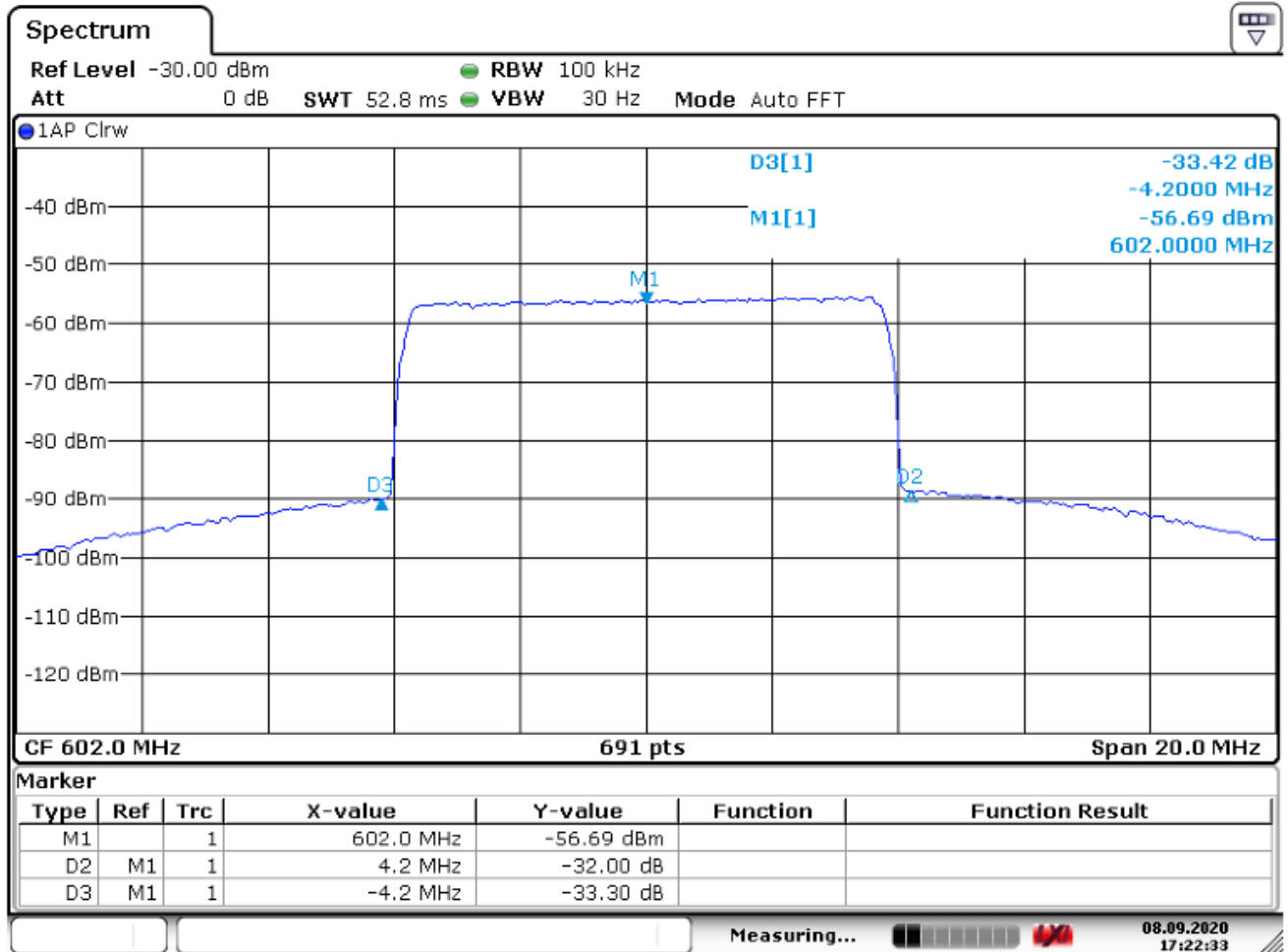


Figure 3 liner test of 20W output

Efficiency with DVB-T test:

from 470-700MHz efficiency at 20W output is 30%.

7.1.4 input return loss

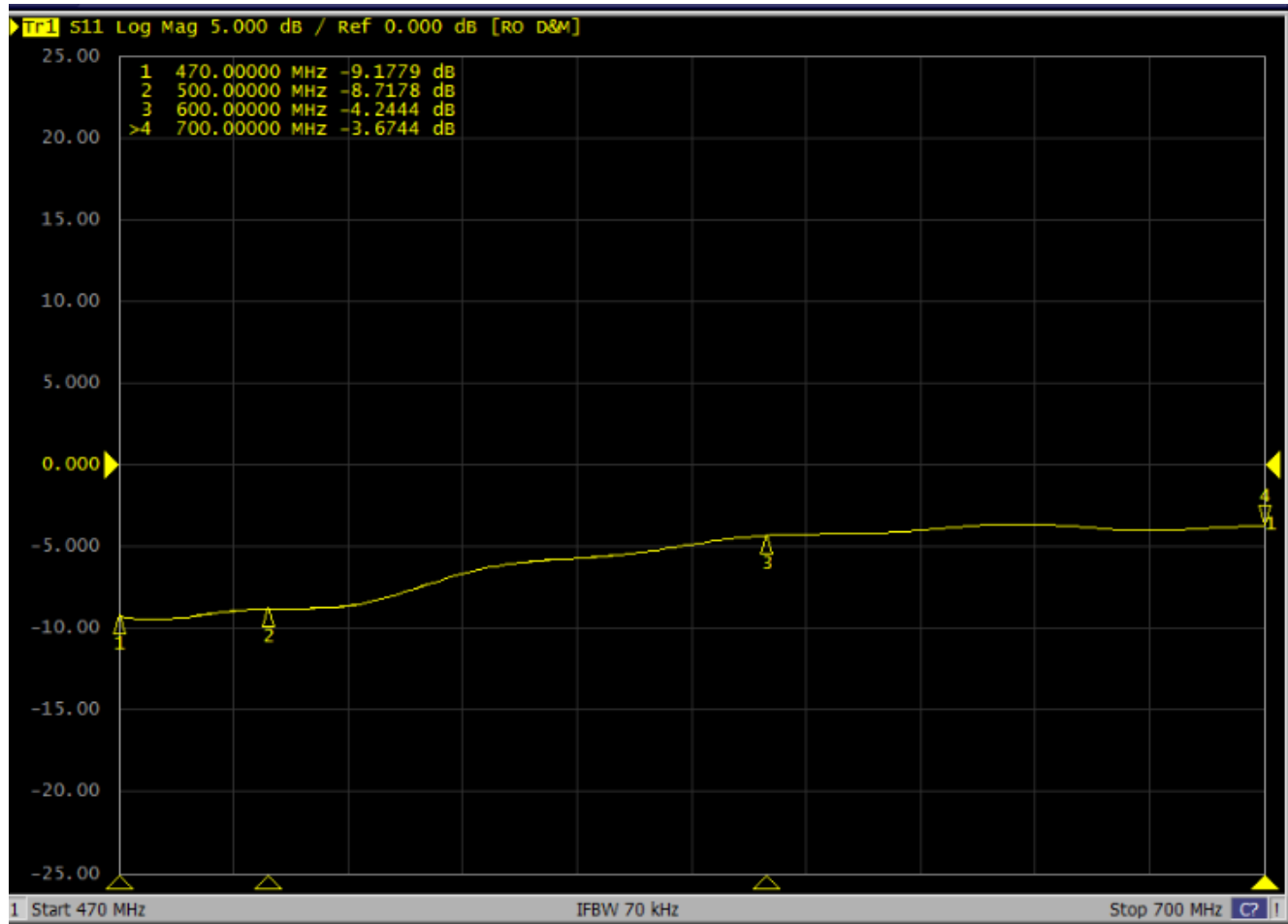
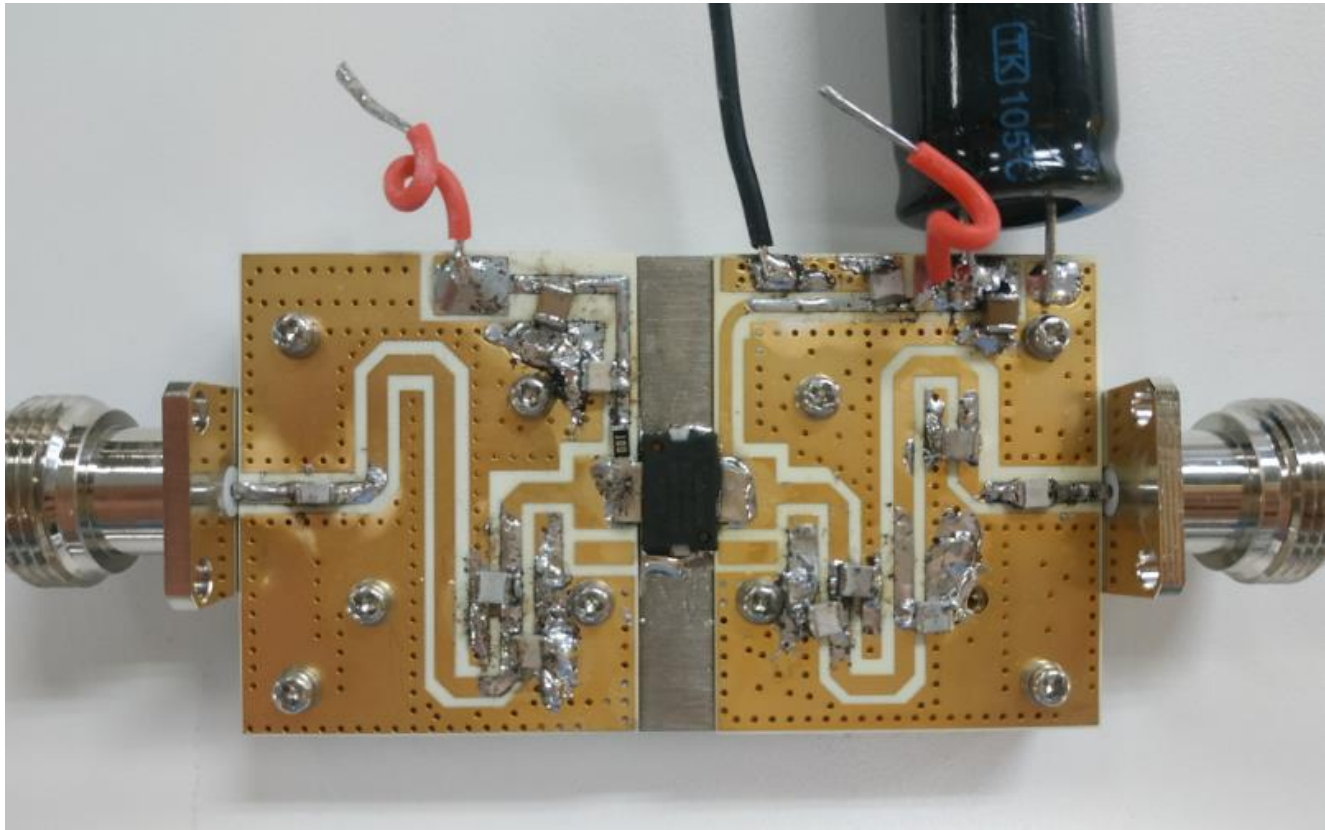


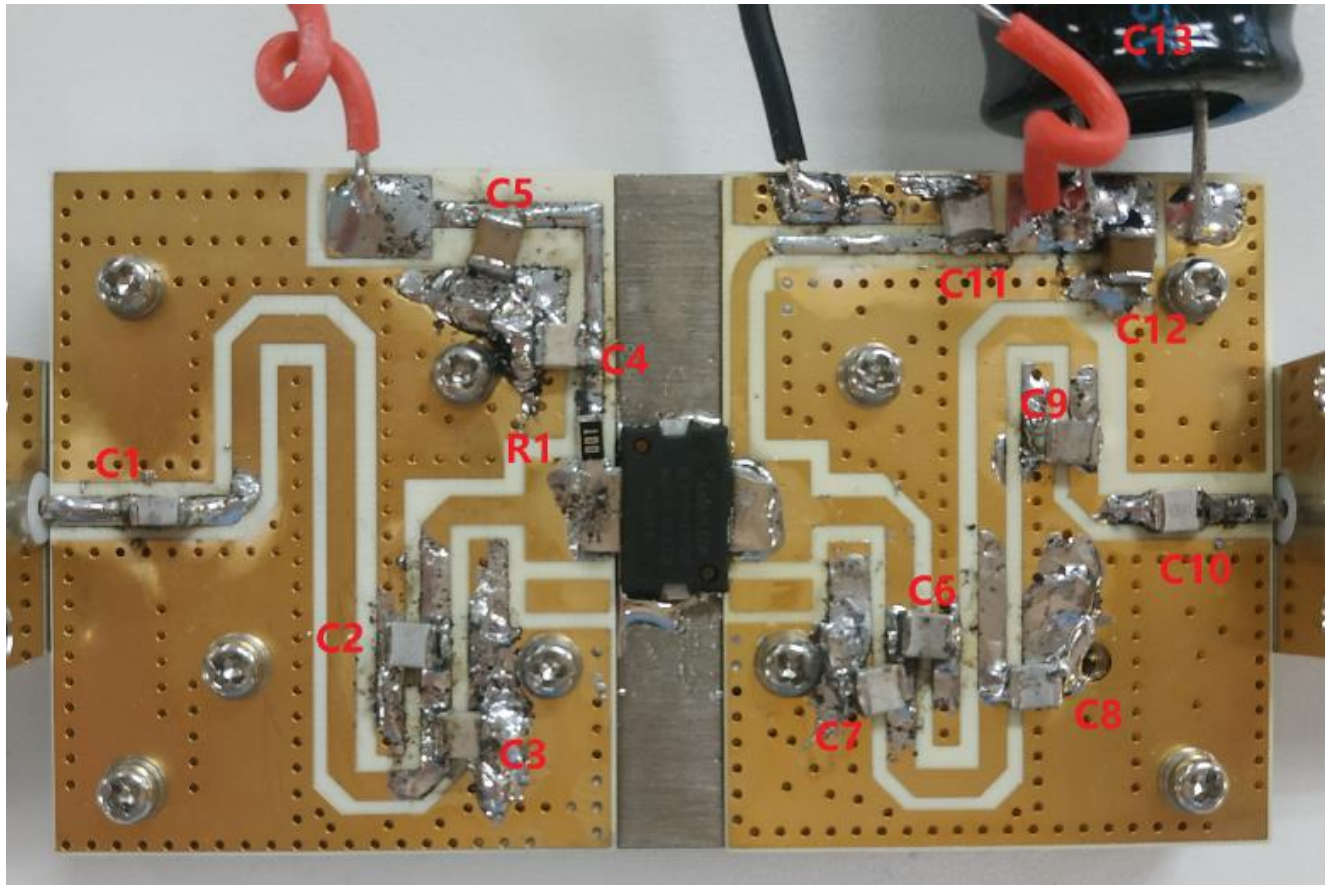
Figure 4 input return loss

8. Hardware

8.1 Board Image



8.2 Copper Layout and components mapping(layout, BOM is attached in the PDF report)



8.3 Bill of materials

Table 3: *Bill of Materials*

Quantity	Description	Part Number	Manufacturer
R1	10 ohm Resistor	1206	
C5,C12	10uF	GRM32DF51H106ZA01L	Murata
C4,C10,C11	100P	800B	ATC
C1	6.2P	800B	ATC
C2	15P	800B	ATC
C3	6.8P	800B	ATC
C6	12P	800B	ATC
C7	1.5P	800B	ATC
C8	3.3P	800B	ATC
C9	1.8P	800B	ATC
C13	470 uF 63V Electrolytic Capacitor	MCRH63V477M13X26-RH	MULTICOMP
PCB	RO4350B 30mil		Rogers

8.4 Board material

Table 4: *Board specifications*

Parameter	Value
Manufacturer	Rogers
Type	RO4350B
Thickness	30mil, 0.762mm
Layers	2, top/bottom. Bottom all copper

8.5 Device markings

Table 5: *Device specifics*

Parameter	Value
Manufacturer	Ampleon
Device	BLP15H9S100

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