AR191150

BLP0408H9S30, 470 to 860Mhz

v1.0 — 4 October 2019

AMPLEON

Application Report

Document information	
Status	Company Public
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Abstract	Measurement results of a Class AB broadband amplifier design with BLP0408H9S30 for 470 to 860Mhz

1. Revision History

Table 1: Report revisions

Revision	Date	Description	Author
1.0	2019-10-04	final version	Harrie Rahangmetan

2. Contents

3. List of figures

4. List of tables

5. General description

This report presents the measurement results of the Class AB broadband amplifier demo AR191150. The device BLP0408H9S30 used is 6 W_{avg} DVB-T in a TO270 straight lead package. The presented demo is tuned for the frequency band 470 to 860Mhz.

6. Biasing and practical aspects

The efficiency presented is based on the current of the drain feed only.
I.e. the biasing currents for the gate circuitry have not been included.
The biasing is as follows:

V_{DD} = 50V
V_{GS} = Start with 1.8V and increase until there will be an I_{DQ}=60mA

7. Performance Summary

Table 2: Performance summary, in band 470-700Mhz

Parameter	Condition-1	Condition-2	Unit	Pulsed CW	DVB-T
Power		Idq_=1x 0.06A	W		6
Gain		Idq_=1x 0.06A	dB		>18.3
Efficiency		Idq_=1x 0.06A	%		>25
P_{3dB}	100µs/10%	Idq_=1x 0.06A	W	>35	-
PAR output signal	CCDF0.01%	Idq_=1x 0.06A	dB		> 8.3
Shoulder distance[1]		Idq_=1x 0.06A	dBc		< -33

Note 1: Input PAR DVB-T signal 9.5dB @ CCDF0.01%

8. Performance Details

The amplifier was measured with a DVB-T 8K signal (8Mhz signal bandwidth) and with a pulsed CW signal. Shoulder distance is measured at 4.3Mhz from center frequency.

8.1 DVB-T measurement of AR191150

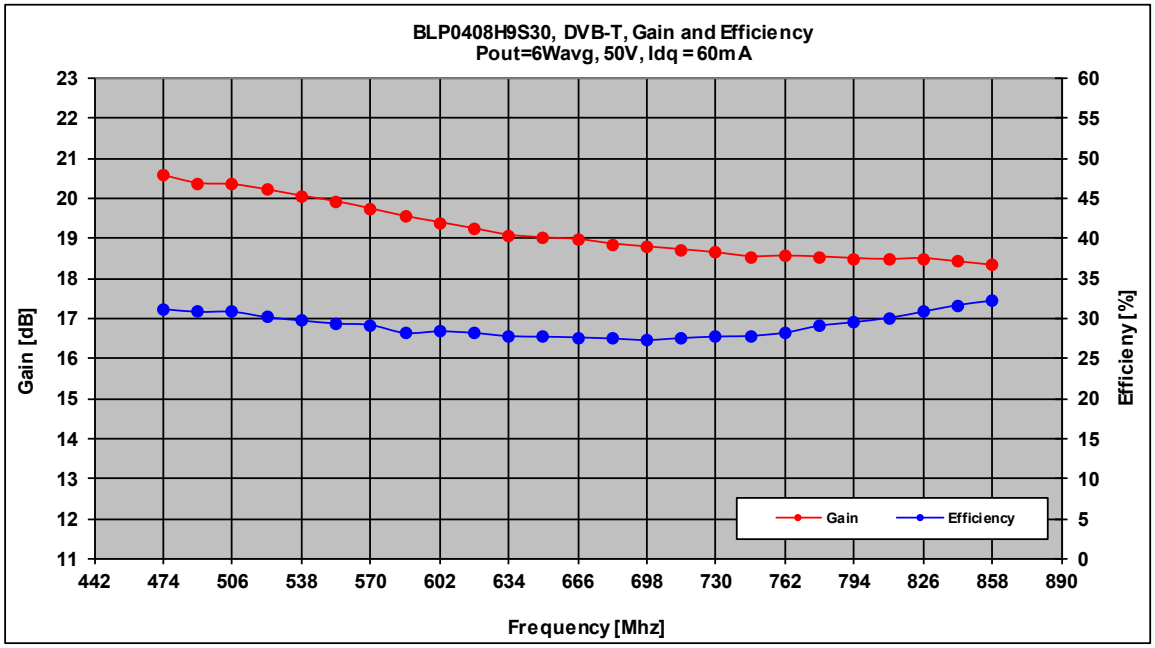

Figure 1 DVB-T, Gain and Efficiency vs Frequency @ 6Wavg

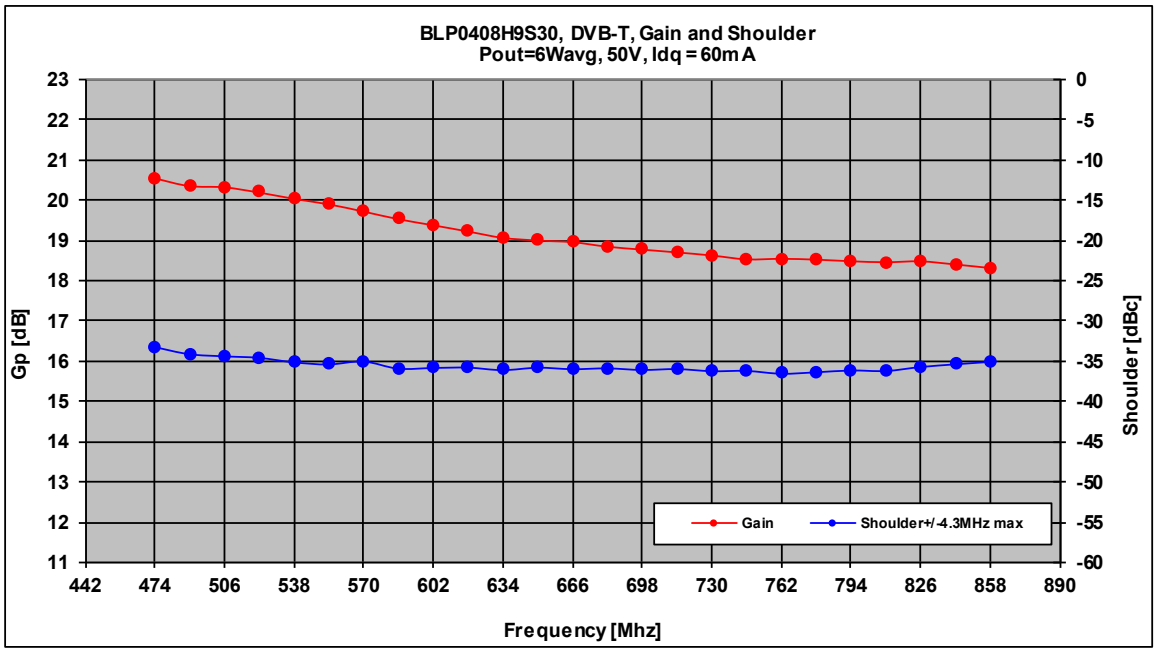

Figure 2 DVB-T, Gain and Shoulder vs Frequency @ 6Wavg

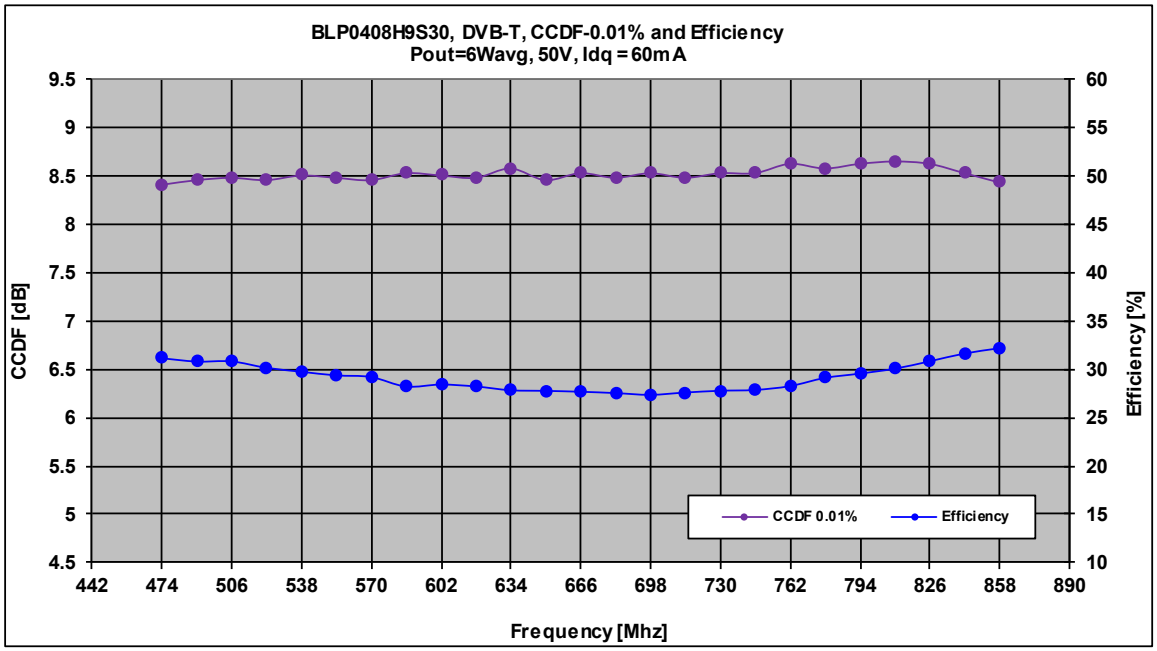

Figure 3 DVB-T, CCDF and Efficiency vs Frequency @ 6Wavg

8.2 Pulsed CW power of AR191150

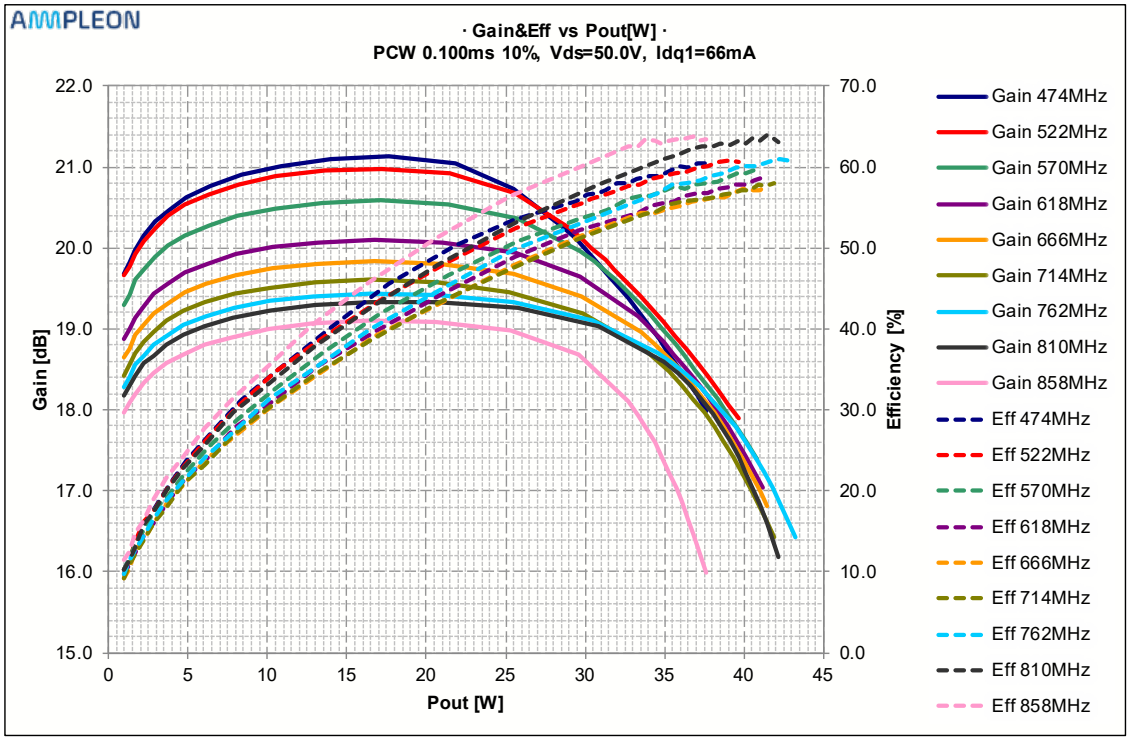

Figure 4 Pulsed CW (100us, 10%), Gain and Efficiency vs Pout

9. Hardware

9.1 Board Image

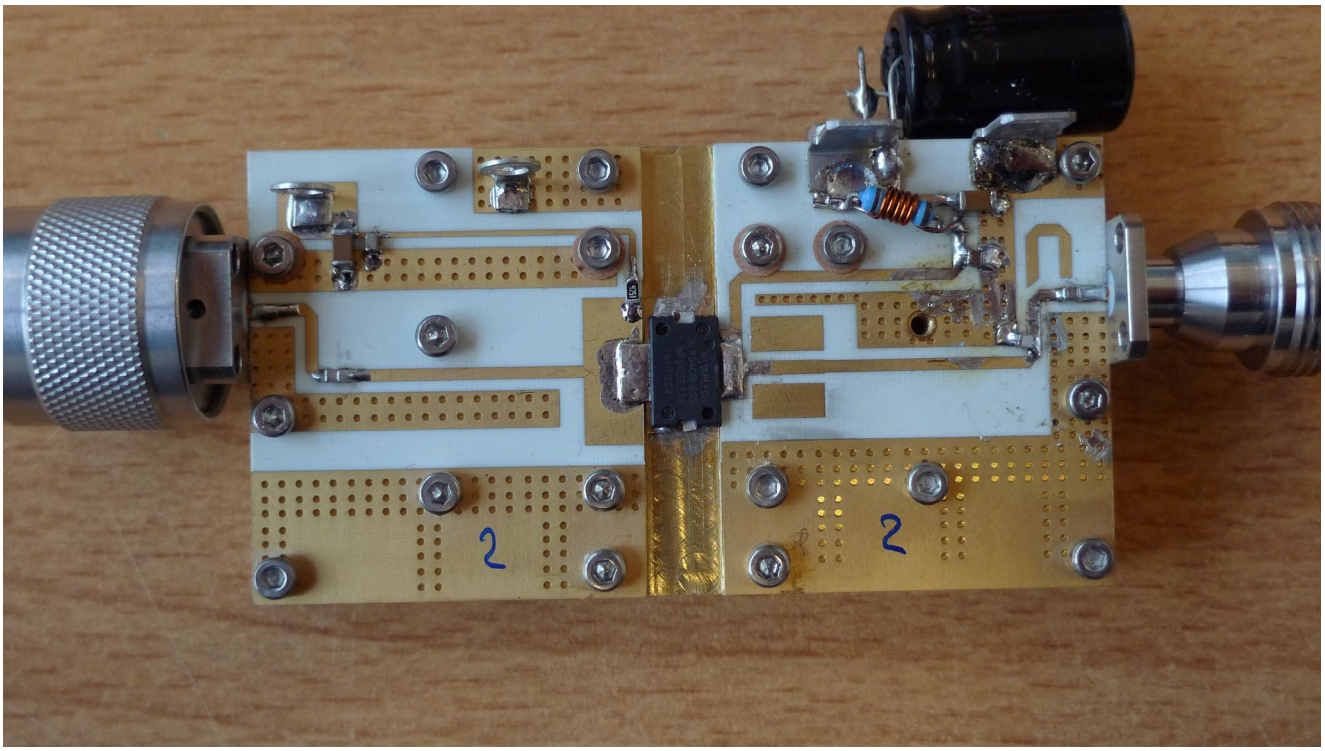

Figure 5 Picture of AR191150, top view

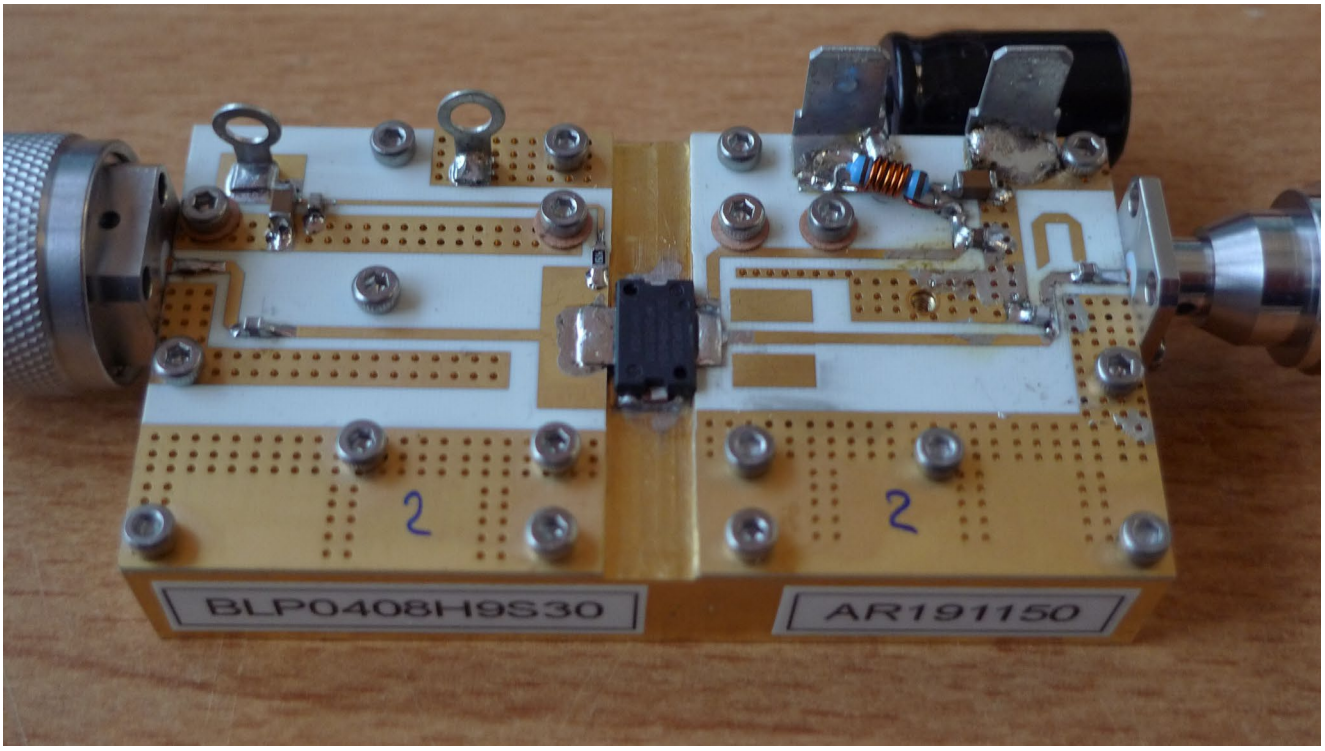

Figure 6 Picture of AR191150, side view

9.2 Copper Layout

Layout including dimensions.

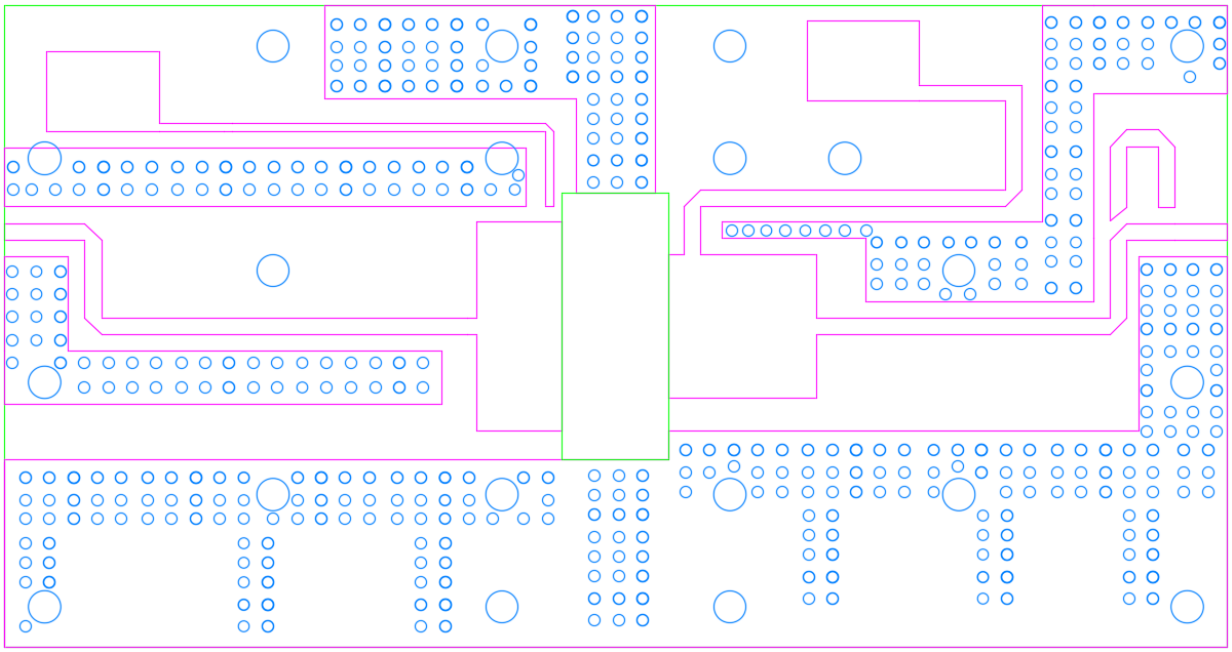

Figure 7 Layout drawing .

9.3 Component Mapping

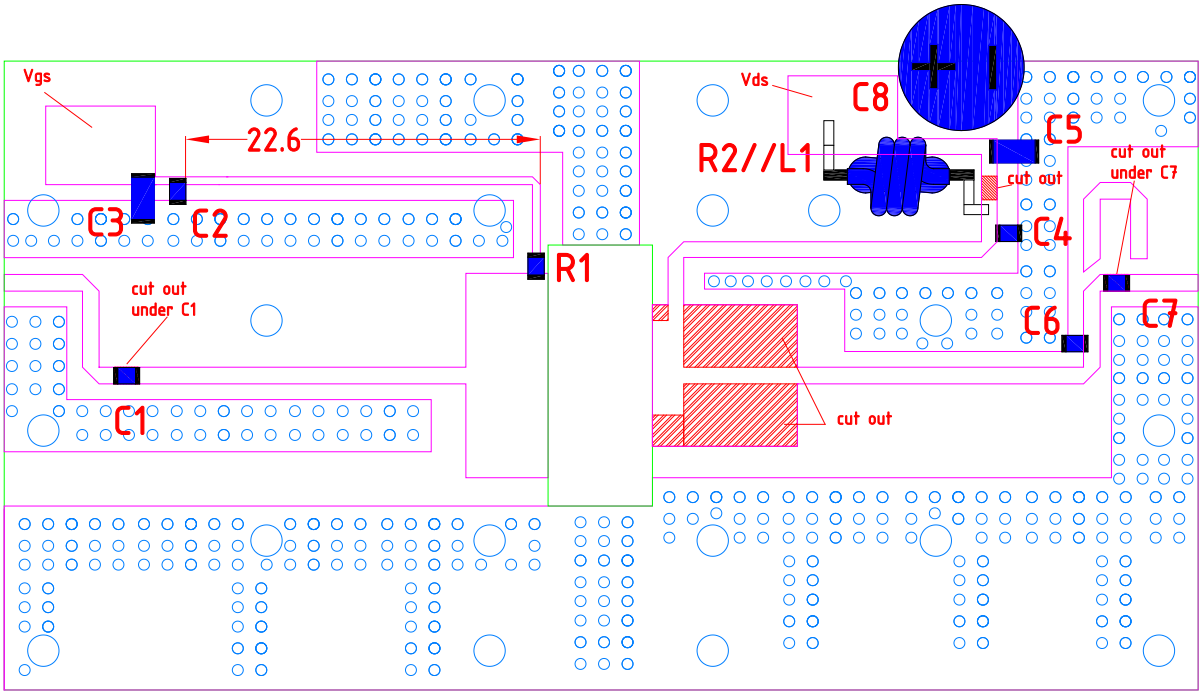

Figure 8 Component drawing .

9.4 Bill of materials

Table 3: Bill of Materials

Description	Value	Case	Supplier	Remark
C1, C2, C4, C7	100pF	ATC800A	ATC	
C3, C5	4.7uF / 100V		Murata	GRM31CC72A475KE11L
C6	3.9pF	ATC800A	ATC	
C8	470uF / 63V		Panasonic	Electrolytic Capacitor
R1	4.7 kΩ	0805	SMD	
R2	10 Ohm 0.3W			
L1	5 turns 0.5 mm copper			
PCB Material: Rogers 4350B, thickness 0.508 mm (20 mil) or equivalent, Ɛr = 3.48, Cu = 35 micron				

9.5 Board material

Table 4: Board specifications

Parameter	Value	thickness	metallisation
Manufacturer	Rogers		
Pcb	RO4350B	20mil	35µ Cu, ground layer full Cu

Figure 9 PCB definition .

9.6 Device markings

Table 5: Device specifics

Parameter	Value
Manufacturer	Ampleon
Device	BLP0408H9S30
Marking	WP905E221, rHN1922
Comments	

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