BLF0910H9LS750P

750W UHF GEN9 HV LDMOS

V1.0 – May 27, 2019

AMPLEON

Application Report

Document information	
Status	v1.0
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Abstract	Measurement results of the narrowband demo of BLF0910H9LS750P optimized for 915 MHz.
Demo Number	AR191086

1. Revision History

Table 1 – Report revisions

Revision	Date	Description	Author
1.0	2019.05.27	Initial document	Daniele Rampazzo

2. Contents

3. List of figures

4. List of tables

5. Narrowband Circuit General description

This report presents the measurement results of the 750W GEN 9 HV LDMOS narrowband demo using BLF0910H9LS750P, in the frequency range from 902 to 928 MHz. The demo is matched to 50 Ω at input and output.

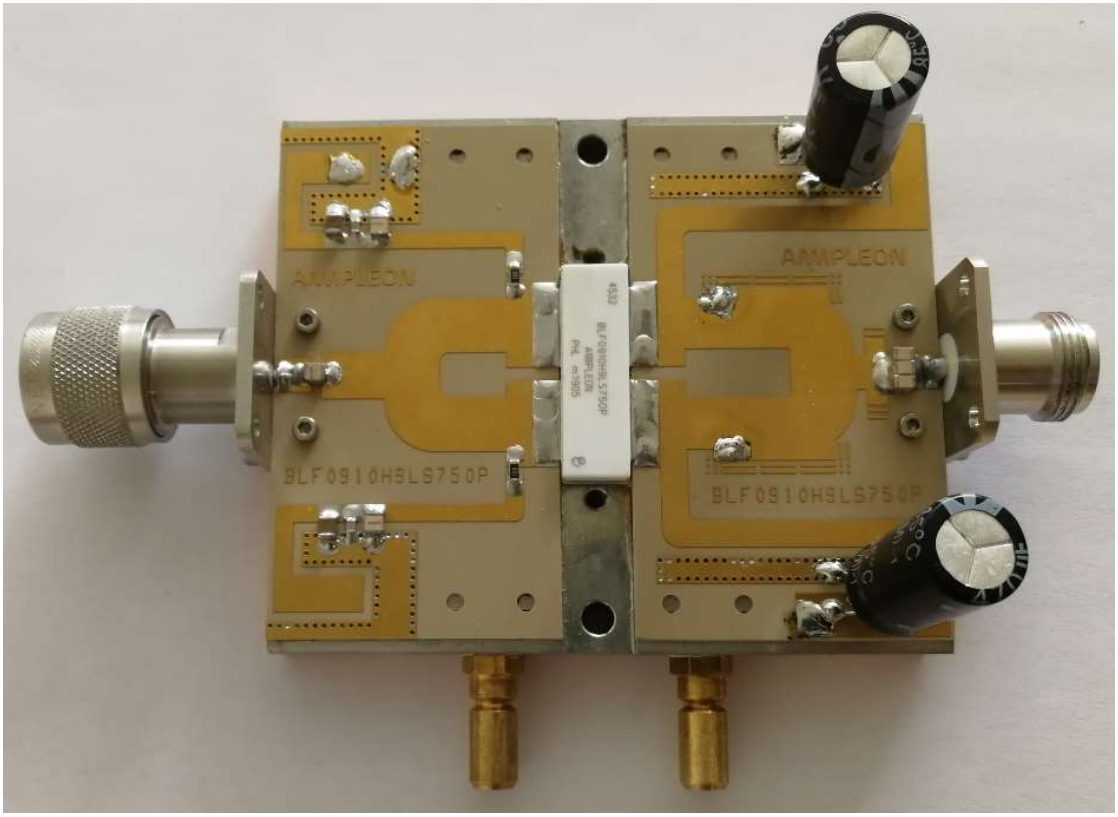

Figure 1 – Demo view of the narrowband circuit for BLF0910H9LS750P

Table 2 – Test circuit information

Parameter	Description	Unit
Input Laminate Type	TC600	
Output Laminate Type	TC600	
Laminate thickness	0.635	mm
Overall dimensions	97 x 76	mm
Cooling type	Indirect water cooling	
Device Package	SOT539B	

6. Narrowband Circuit CW RF characteristics

Table 3 – RF characteristics

Test signal: CW; RF performance at V_{DS}=50V; Total I_{Dq}=100mA; $T_{cooling\ water}$ =25°C

Symbol	Parameter	Conditions	Typical	Unit
f	Frequency		915	MHz
V_{DS}	Drain-source voltage		50	V
V_{GS}	Gate-source voltage	I_{Dq} = 50mA per section	1.9	V
G_p	Power gain	P_{2dBcp} = 756.3W	21.4	dB
η_D	Drain efficiency	P_{2dBcp} = 756.3W	72.7	%

7. Narrowband Circuit CW Performance Details

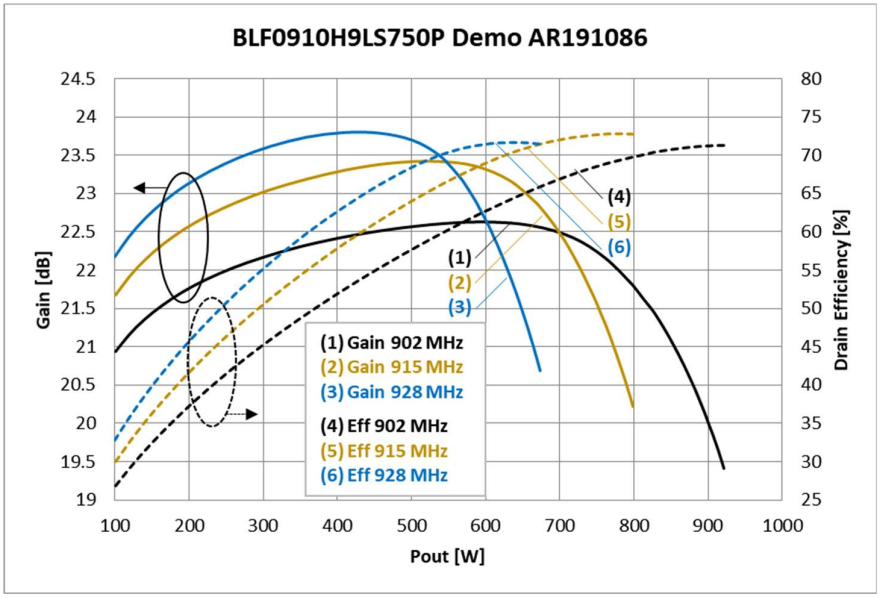

Figure 2 – BLF0910H9LS750P narrowband demo board performance

Table 4 – RF Performance overview

Freq [MHz]	Gmax [dB]	Pout@ Gmax [W]	P1dB [W]	P2dB [W]	P3dB [W]	Effmax [%]	Pout@ Effmax [W]	Eff P1dB [%]	Eff P2dB [%]	Eff P3dB [%]
902	22.6	594.5	812.4	873.7	914.3	71.3	921.1	70.1	71.1	71.3
915	23.4	533.3	704.3	756.3	792.9	72.8	777.7	72.1	72.7	72.8
928	23.8	407.2	591.9	637.2	667	71.6	639.5	71.3	71.6	71.4

8. Narrowband Circuit User Guide

8.1 Biasing

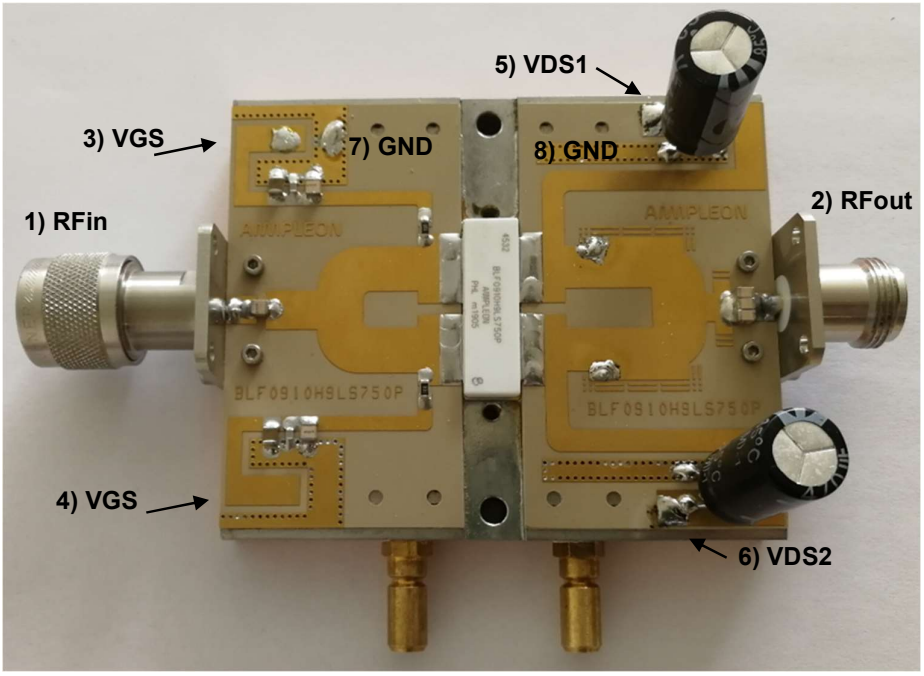

Figure 3 – BLF0910H9LS750P narrowband demo board pin configuration

Table 5 – Pin description

Symbol	Pin	Description
RF_{IN}	1	RF input
RF_{OUT}	2	RF output
V_{GS}	3	Gate-source voltage
V_{GS}	4	Gate-source voltage
V_{DS1}	5	Drain-source voltage
V_{DS2}	6	Drain-source voltage
GND	7, 8	Negative supply terminal for V_{GS} and V_{DS} respectively

Remark: Use an electrolytic capacitor, 470µF/63V or 1000µF/63V, external to the application circuit but close to supply pin 5 ,8 for usage in Pulsed mode.

8.2 Bill of Materials

Table 6 – Bill of Materials

Part	Description	Part number	Value/Remark
C1, C2, C3, C8, C9, C10, C11, C12	Multilayer ceramic chip capacitor	ATC100B	47pF
C4, C5, C13, C14	Multilayer ceramic chip capacitor	MCMT21N02F101CT	1000pF / 100V
C6, C7	Multilayer ceramic chip capacitor	ATC100B	1uF / 50V
C15, C16	Electrolytic Capacitor		470uF/63V
R1, R2	Chip resistor	R1206	10R
T1	LDMOS transistor	BLF0910H9LS750P	Ampleon
Input PCB	TC600		25 mil thickness
Output PCB	TC600		25 mil thickness

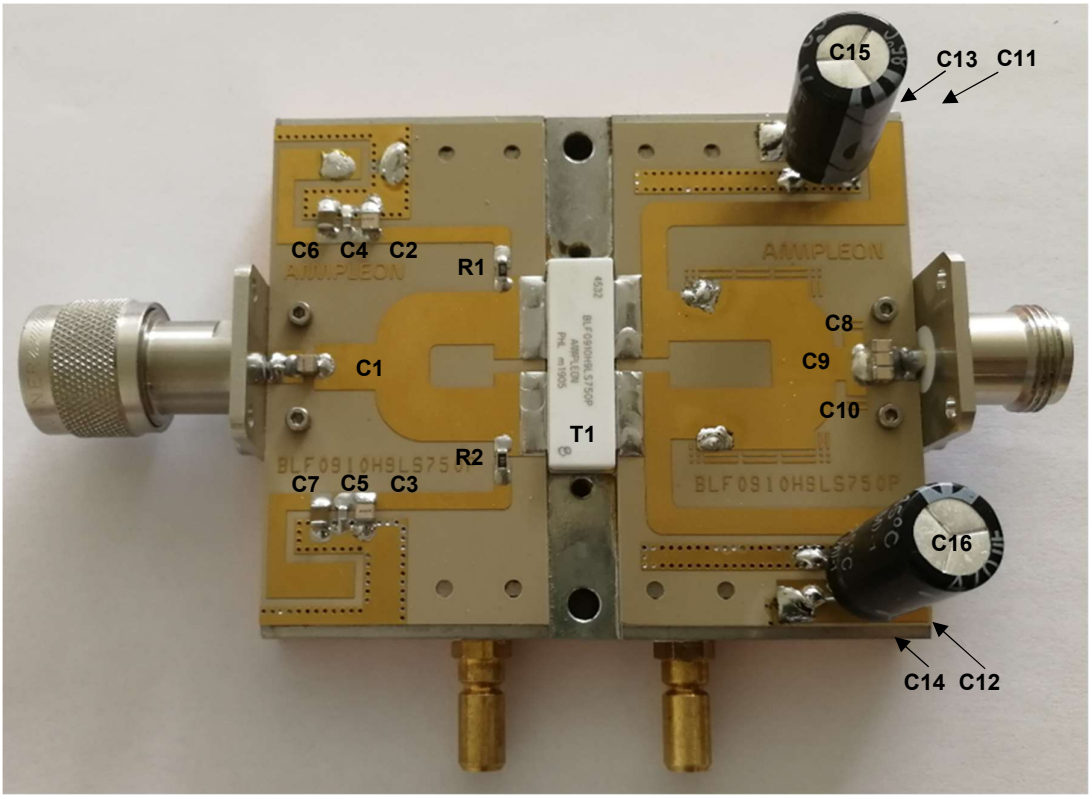

Figure 4 – BLF0910H9LS750P narrowband demo board component description

8.3 Temperature behavior

For operation of this demo board water cooling should be applied.
Water cooling should be kept below 60 degC.

8.4 Device markings

Table 7 – Module specifics

Parameter	Value
Manufacturer	Ampleon
Device	BLF0910H9LS750P
Comments	Engineering sample

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