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SMPA5159-130V

Introduction

This amplifier SMPA5159-130V is designed with multiple 50V GaN transistors from innegration and isolators used at final and inter-stages, to reach >130W Pulsed CW and >30dB power gain within 5.1-5.9GHz,
To duplicate this design, please buy the transistors listed below in red and get the layout from innegration.

Demo and Transistor

Frequency Band : 5100-5900MHz
 Application : Telecom or multi market
 Configuration : Class AB
 Test signal : Pulsed CW, WCDMA 1 Carrier
 Transistor : **STAV58010P2(Predriver)/STAV58025P2(Driver)/SL5817VS(Final)**
 Date code : 230426
 PCB : 20 Mil Rogers 4350

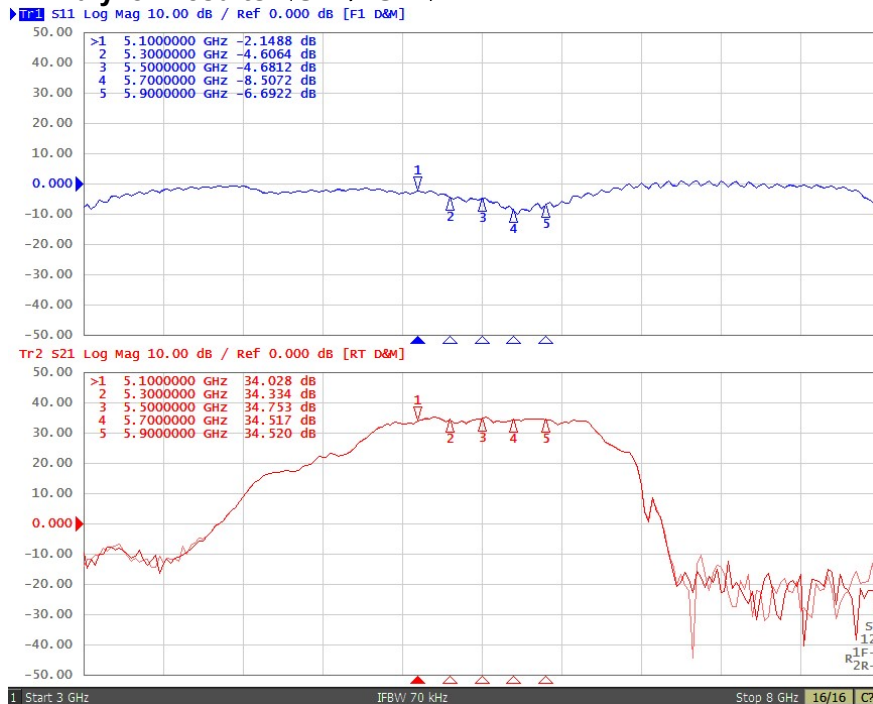
Note:

The amplifier has been characterized under the following conditions:

- Network Analyzer plots for gain and IRL.
- P1dB and P3dB Peak power measurement using the Pulse, 50 us width, 20% duty cycle.
- RF Test Bench 2

Test Results:

1. Network Analyzer Results (S11, S21)



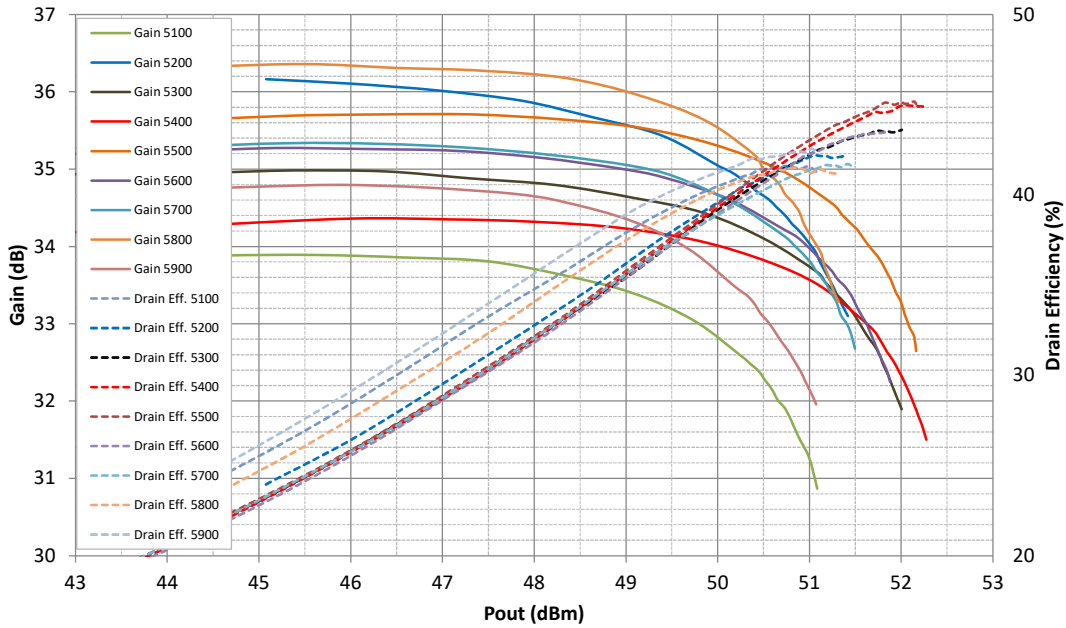
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2. Pulsed CW Test

$V_{ds} = 50V, V_{gs1} = -2.94V(15mA), V_{gs2} = -3.0V(30mA), V_{gs3} = -3.07V(200mA)$

Pulse Peak Power					
Freq(MHz)	P-1(dBm)	P-1Gain(dB)	P-3(dBm)	Psat(dBm)	EFF (%)
5100	50.26	32.6	51.08	51.48	41.2
5200	50.02	35.0	51.42	51.63	42.2
5300	51.09	33.7	52.01	52.25	43.6
5400	51.62	33.0	52.31	52.48	44.8
5500	51.26	34.5	52.16	52.45	45.0
5600	50.73	34.2	51.88	52.04	43.5
5700	50.74	34.1	51.61	51.92	41.3
5800	50.41	35.2	51.32	51.60	41.2
5900	50.20	33.5	51.15	51.56	42.1



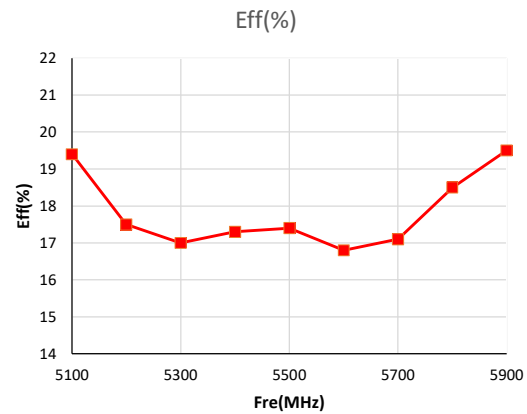
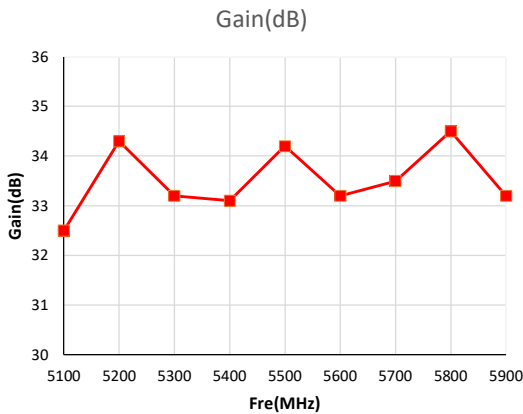
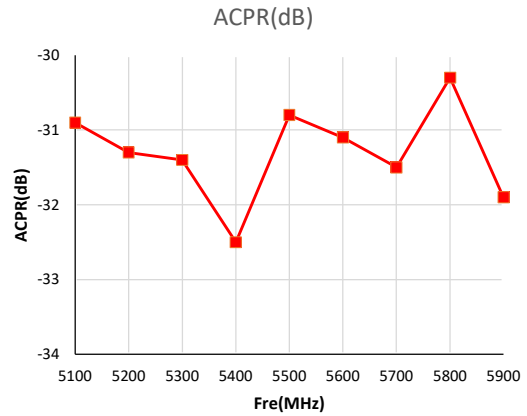
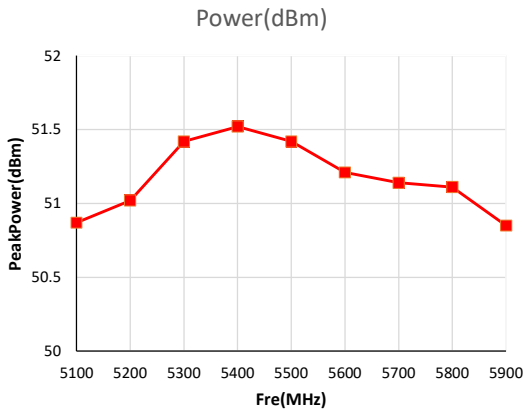
Gain&Eff vs. Output Power

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3. Back off Modulation signal Test: 1 Carrier WCDMA

$V_{ds}=50V, V_{gs1}=-2.94V(15mA), V_{gs2}=-3.0V(30mA), V_{gs3}=-3.07V(200mA)$				
$P_{out}=41.5dBm$				
Freq(MHz)	$P_{peak}(dBm)$	ACPR(dBc)	Gain(dB)	Eff(%)
5100	50.87	-30.9	32.5	19.4
5200	51.02	-31.3	34.3	17.5
5300	51.42	-31.4	33.2	17.0
5400	51.52	-32.5	33.1	17.3
5500	51.42	-30.8	34.2	17.4
5600	51.21	-31.1	33.2	16.8
5700	51.14	-31.5	33.5	17.1
5800	51.11	-30.3	34.5	18.5
5900	50.85	-31.9	33.2	19.5



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4. Demo Picture
BOM and layout upon request

