Test Report ITEH40001P3 50-1000MHz

2024-9-12

Introduction

This amplifier is designed with Innogration 28V ITEH40001P3 LDMOS

Demo and Transistor

Frequency band : 50-1000MHz
Application : Telecom
Configuration : Class AB
Test Signal : Pulsed CW, WCDMA
Transistor : ITEH40001P3
Date code : N/A
PCB : 20 Mil RO4350B

The amplifier has been characterized under the following conditions:

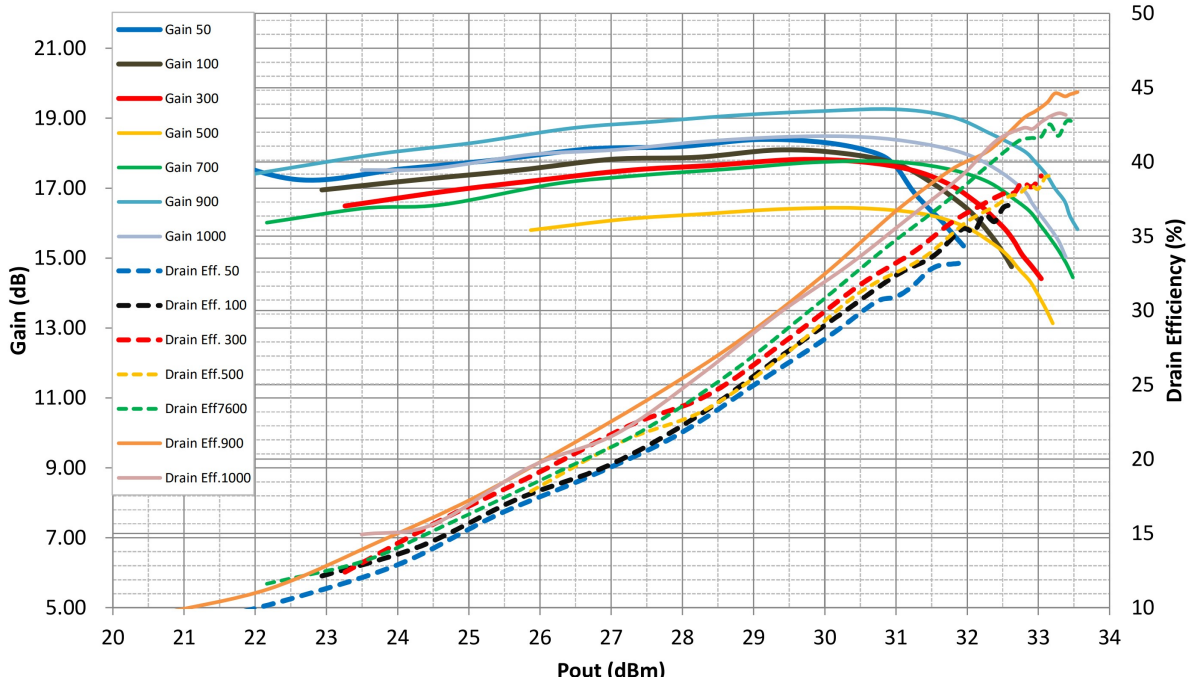
- Network Analyzer plots for gain and IRL.
- P3dB Peak power measurement using the Pulse, 20uS width, 10% cycle.
- RF Test Bench 1

Test Results:

1. RF Performance

i. Pulse test data

V_{DS}= 28V, I_{DQ}=20mA(Vgs=2.88V)



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Freq (MHz)	P1dB (dBm)	P1dB (W)	P1dB Eff %	P3dB (dBm)	P3dB (W)	P3dB Eff %
50	30.22	1.1	28.8	31.85	1.5	33.2
100	31.54	1.4	33.7	32.52	1.8	37.0
200	31.85	1.5	35.7	32.81	1.9	37.8
300	31.95	1.6	36.4	32.88	1.9	38.4
400	32.13	1.6	38.1	32.99	2.0	40.3
500	32.33	1.7	36.9	33.13	2.1	39.0
600	32.43	1.8	37.6	33.24	2.1	40.4
700	32.59	1.8	40.9	33.41	2.2	42.7
800	32.68	1.9	42.0	33.5	2.2	44.7
900	32.6	1.8	42.1	33.43	2.2	44.5
1000	32.45	1.8	41.5	33.28	2.1	43.3

iI. ACPR test data

1C-WCDMA Signal PAR = 10.8dB @ 0.01% Probability on CCDF.

Freq (MHz)	Pout (dBm)	CCDF (dB)	Ppeak (dBm)	Ppeak (W)	ACPR (dBc)	Gain (dB)	Efficiency (%)
50	21.99	9.85	31.84	1.5	-45.90	17.3	12.3
100	21.98	9.67	31.65	1.5	-46.10	17.6	11.7
200	21.99	9.77	31.76	1.5	-46.10	17.9	11.9
300	22.01	9.75	31.77	1.5	-46.25	17.5	12.2
400	22.01	9.89	31.90	1.6	-44.70	17	12.5
500	22.00	9.93	31.93	1.6	-43.80	16.3	12.1
600	22.00	9.95	31.95	1.6	-45.50	16.8	12.1
700	21.99	9.99	31.98	1.6	-45.91	17.6	12.6
800	22.01	10.07	32.08	1.6	-46.06	18.5	13.1
900	22.02	10.00	32.02	1.6	-45.23	19.1	13.2
1000	22.00	9.74	31.74	1.5	-45.12	18.4	12.9

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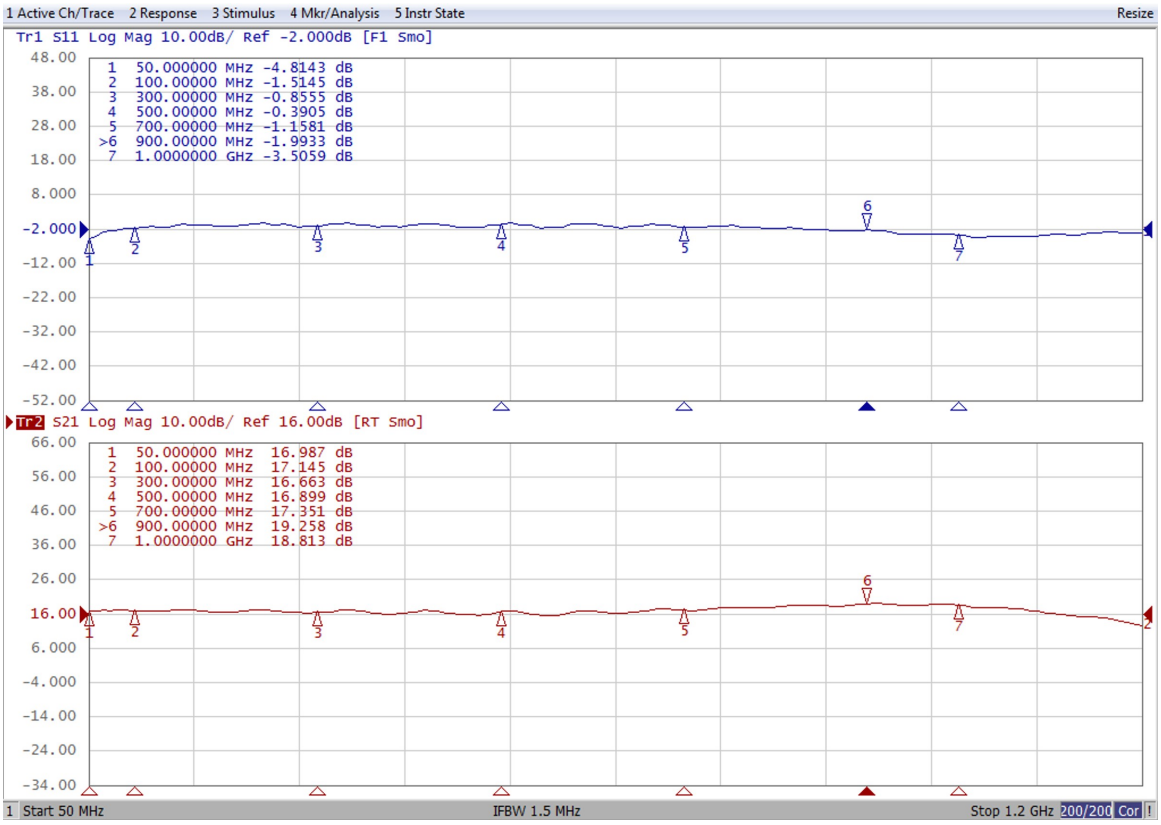
Freq (MHz)	Pout (dBm)	CCDF (dB)	Ppeak (dBm)	Ppeak (W)	ACPR (dBc)	Gain (dB)	Efficiency (%)
50	19.98	10.36	30.34	1.1	-47.50	17.3	9.1
100	19.98	10.25	30.23	1.1	-47.20	17.5	8.7
200	19.98	10.35	30.33	1.1	-46.70	17.7	8.9
300	20.00	10.21	30.21	1.1	-47.10	17.3	9.1
400	19.98	10.38	30.36	1.1	-45.30	16.8	9.3
500	20.00	10.22	30.22	1.1	-43.50	16.1	9.1
600	19.98	10.31	30.29	1.1	-45.21	16.6	9.2
700	20.01	10.26	30.27	1.1	-46.16	17.4	9.5
800	19.99	10.38	30.37	1.1	-46.6	18.3	9.7
900	19.99	10.31	30.30	1.1	-47.0	18.9	9.7
1000	20.00	10.01	30.00	1.0	-47.6	18.2	9.7

2. S-Parameter test data



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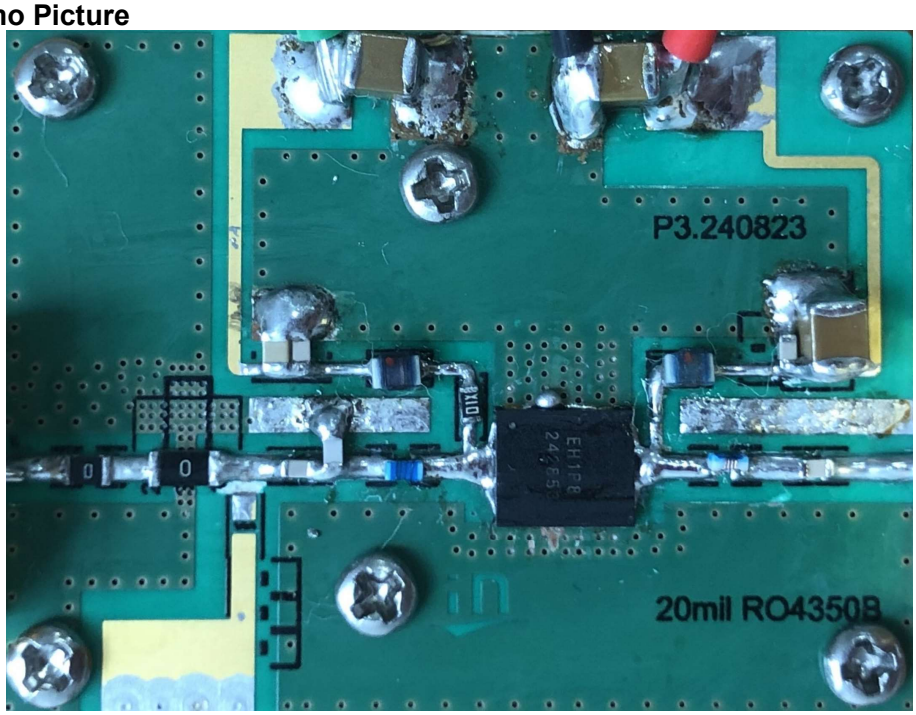
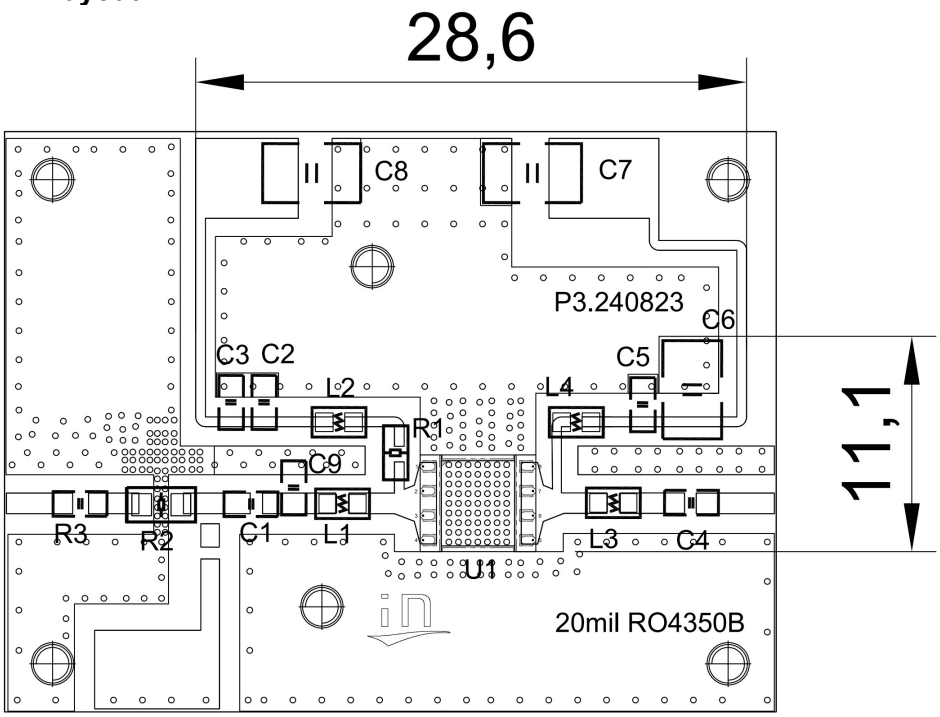
3. Demo Picture



4. PCB Layout and BOM

(i) PCB Layout



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(ii) BOM of Test Circuit

Reference	Footprint	Value	Quantity
C1, C2, C4, C5	0603	100pF/250V	4
C9	0603	3.0pF/250V	1
C3	0805	10nF/50V	1
L2, L4	0805	470nH	2
L1	0603	8.2nH	1
L3	0603	9.1nH	1
C6, C7, C8	1210	10uF/100V	3
R1	0603	10R	1
R2	0805	0R	1
R3	0603	0R	1
U1	6*5mm	ITEH40001P3	1

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