CEL California Eastern Laboratories

Evaluation Board Document

µPG2253T6S-EVAL-A

Evaluation Board

- Circuit Description
- Typical Performance Data
- Circuit Schematic and Assembly Drawing

Circuit Description

The uPG2253T6S-EVAL-A evaluation circuit board provides a quick and convenient means of evaluating the performance of NEC's RF front end IC uPG2253T6S. The circuit board is RoHS compliant.

The uPG2253T6S does not require any matching component at RF ports. A serial inductor of 1.8nH and 3.3nH are used at Vd1 and Vd3 lines respectively. The inductor values have some minor impact on the RF performance. The values chosen for this evalboard should provide a good starting point. Some small adjustment might be needed on an application board to achieve optimal performance.

The PCB is FR4 four layer board. The top and bottom dielectric layers are 8mils thick. The total board thickness is 62mils. The dielectric constant of FR4 is 4.3.

Typical Performance

Tx Path:

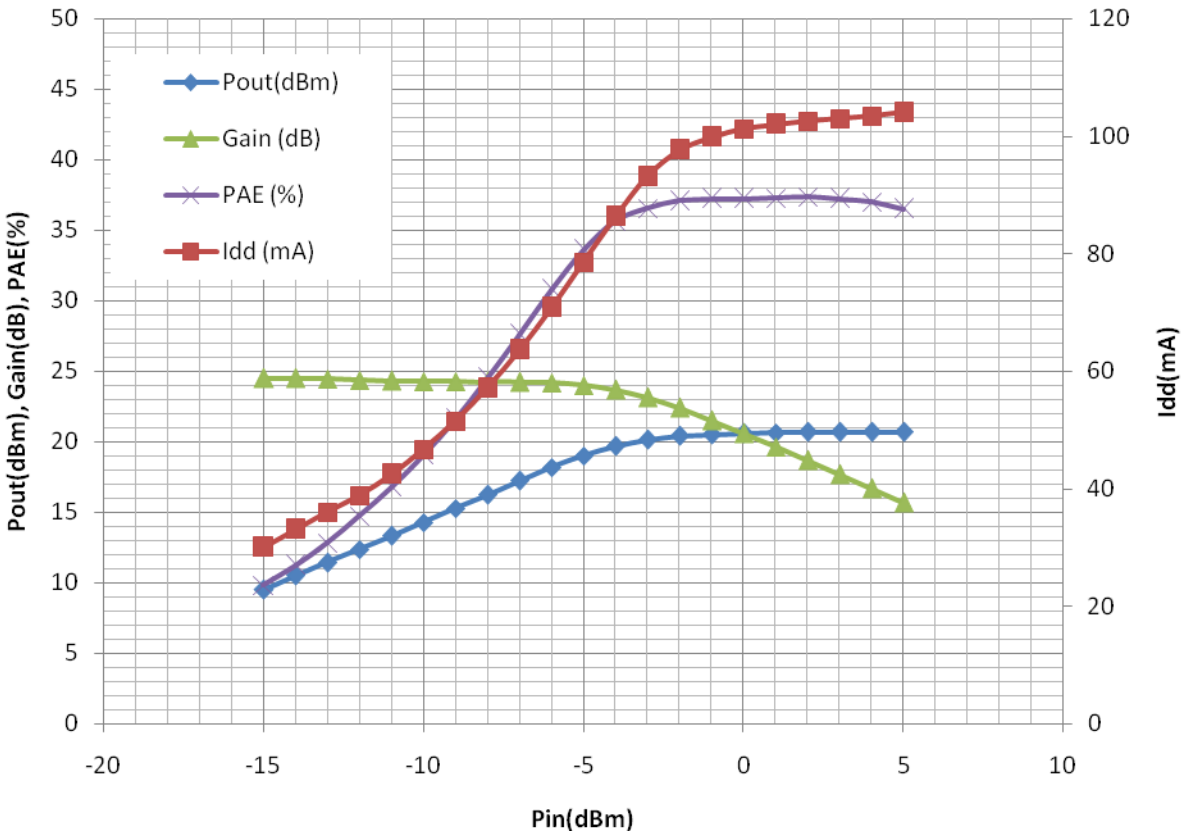
A plot of Pout, Gain, Current and PAE as a function of Pin and small signal (Pin=-30dBm) S-parameters are shown on the next two pages.

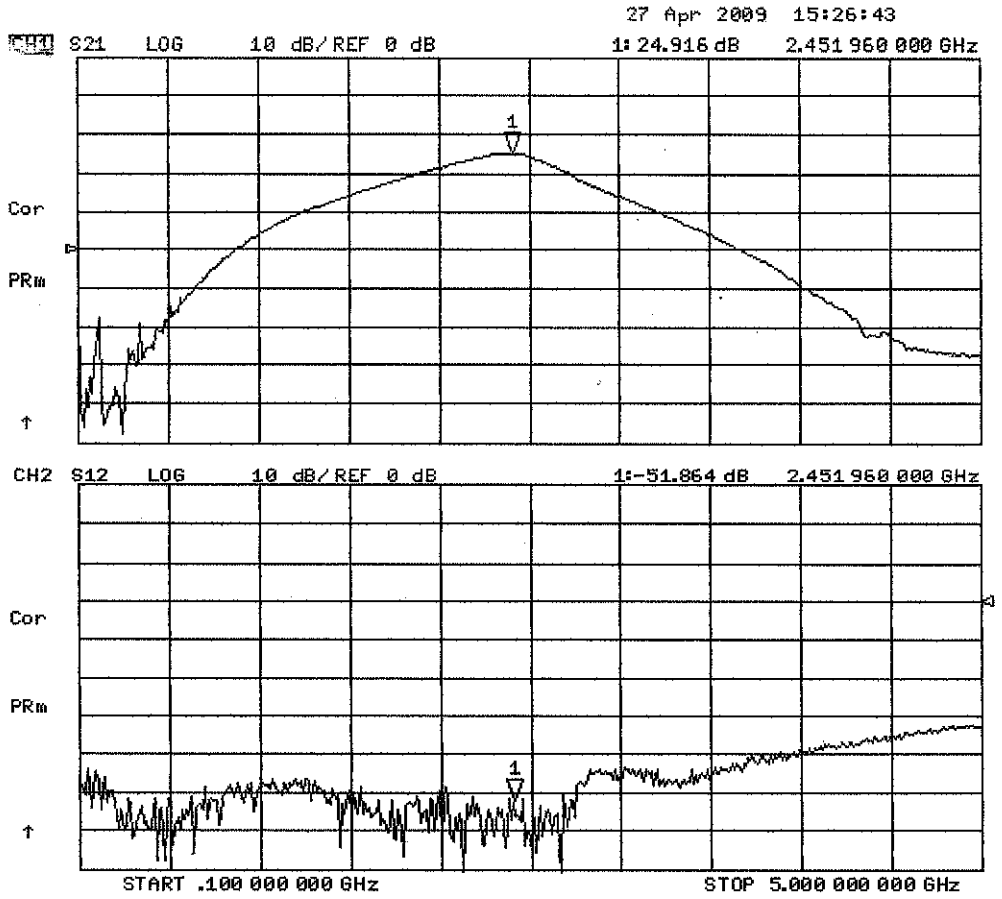
Rx Path:

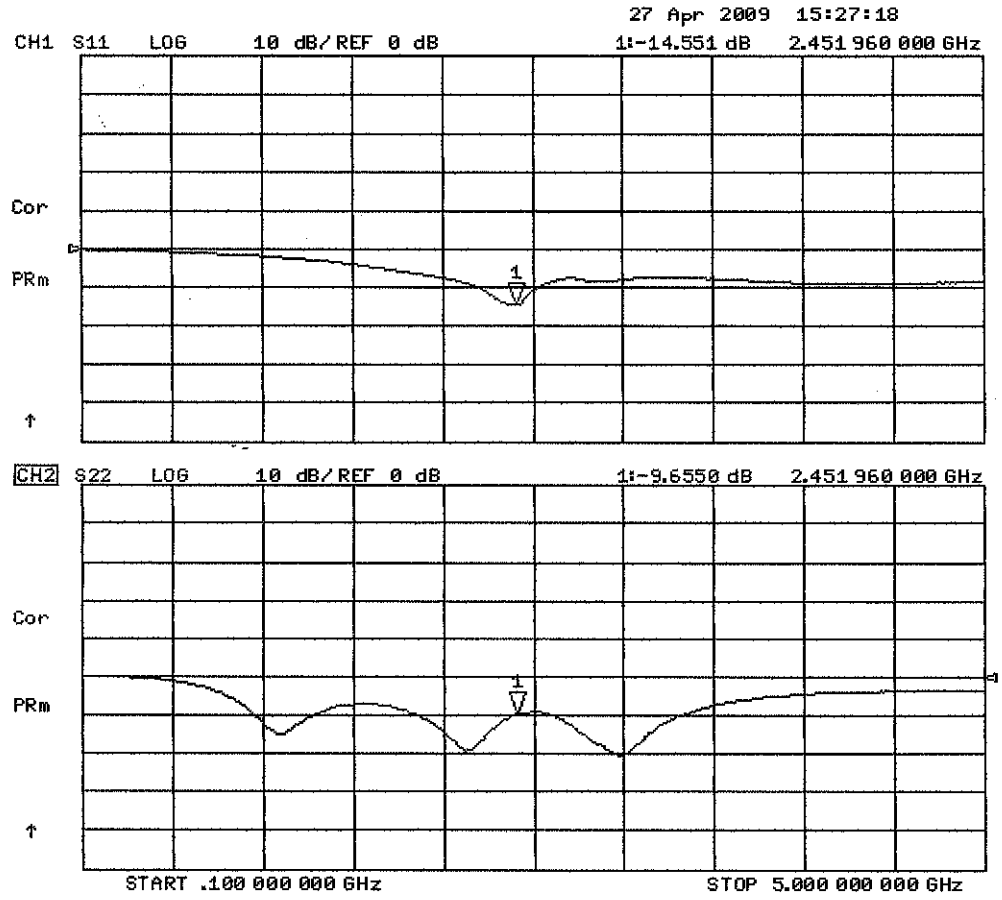
Typical measured insertion loss is 1.5dB (without subtraction of board loss). The board loss at 2.4GHz is about 0.3dB.

Pout, Gain, PAE and Idd vs. Pin

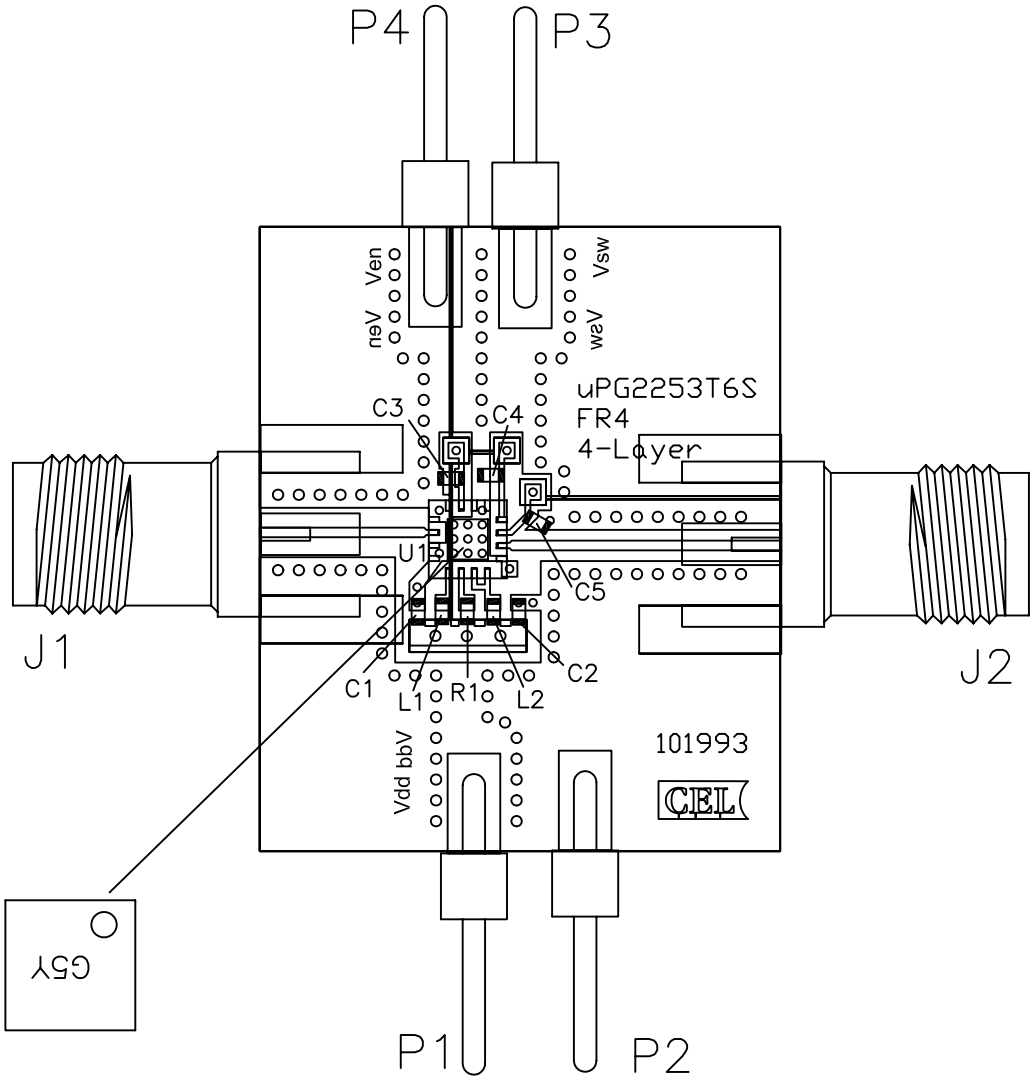
Test conditions: frequency=2.45GHz, Vdd=Ven=3V, Vsw=0V

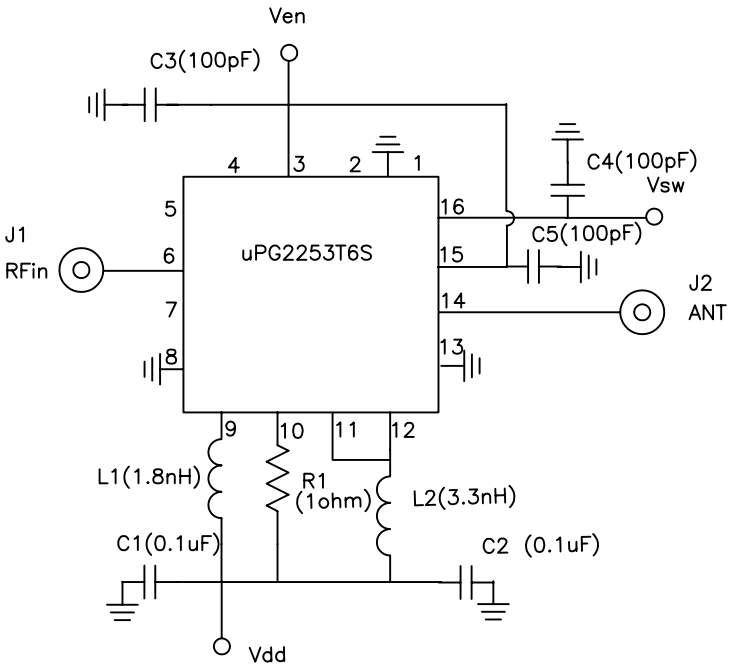



27 Apr 2009 15:26:43
CH1 S21 LOG 10 dB/ REF 0 dB
1: 24.916 dB 2.451 960 000 GHz
Cor
PRm
CH2 S12 LOG 10 dB/ REF 0 dB
1:-51.864 dB 2.451 960 000 GHz
Cor
PRm
START .100 000 000 GHz
STOP 5.000 000 000 GHz


27 Apr 2009 15:27:18
CH1 S11 LOG 10 dB/ REF 0 dB
1:-14.551 dB 2.451 960 000 GHz
Cor
PRm
CH2 S22 LOG 10 dB/ REF 0 dB
1:-9.6550 dB 2.451 960 000 GHz
Cor
PRm
START .100 000 000 GHz
STOP 5.000 000 000 GHz

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED





Pin connectors soldered on the back side

QTY	PART NUMBER OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL/SPECIFICATION	ITEM NO.
1	RK73B1ETTP1R0J	R1	0402 1.0 OHMS RES KOA	9
3	GRM1555C1H101JZ01B	C3, C4, C5	0402 100pF CAP +/-5% MURATA	8
2	GRM155R71A104KA01D	C1, C2	0402 0.1uF CAP MURATA	7
1	LQG15HS3N3S02	L2	0402 3.3nH IND +/-0.3nH MURATA	6
1	LQG15HS1N8S02	L1	0402 1.8nH IND +/-0.3nH MURATA	5
2	142-0711-821	J1,J2	SMA FEMALE CONNECTOR E.F.JOHNSON	4
4	2340-6111 TG	P1-P4	PIN HEADER 3M	3
1	UPG2253T6S	U1	IC NEC	2
1	CL101993	PCB	COMPONENT LAYOUT DRAWING	1

PARTS LIST

APPROVALS		
Drawing by: MD	4/23/09	
Designed by: # name #	# date #	
Checked by:		
Project Engineer:		
Quality Control:		

CEL CALIFORNIA EASTERN LABS
4590 PATRICK HENRY DR. SANTA CLARA CA. 95054

TITLE:
ASSEMBLY DRAWING
uPG2253T6S-EVAL-A

SIZE	FSCM NO.	DWG NO.	REV
C		AD101993	.

SCALE SCALE RELEASE DATE RELDATE SHEET SHNO OF NOSH