January 09, 2002

Demo board DC399A Quick Start Guide.

I. Introduction

The DC399A demo board (Figures 1 & 2) is intended to demonstrate the capabilities of the LT5504 IC. The LT5504 IC operates over a wide supply voltage range, from 5.25V down to 2.7V.

The LT5504 consists of RF/IF limiters, a LO buffer amplifier, a limiting mixer, 3rd-order 450MHz integrated low pass filters, RF/IF detectors and an output interface. The ultra wide dynamic range is achieved by measuring the RF signal using an RF detector and RF limiter, and simultaneously measuring a down-converted IF signal using IF detectors and IF limiters. These signals are summed to generate an accurate linear DC voltage proportional to the input RF power in dB. The output is buffered with a low impedance output driver.

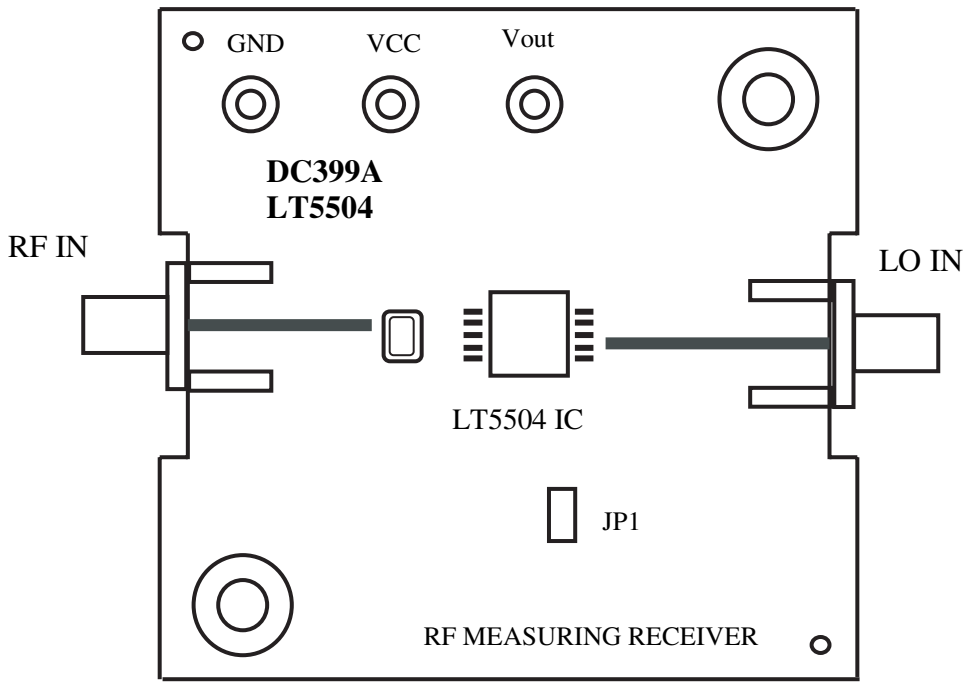

Figure 1. DC399A demo board

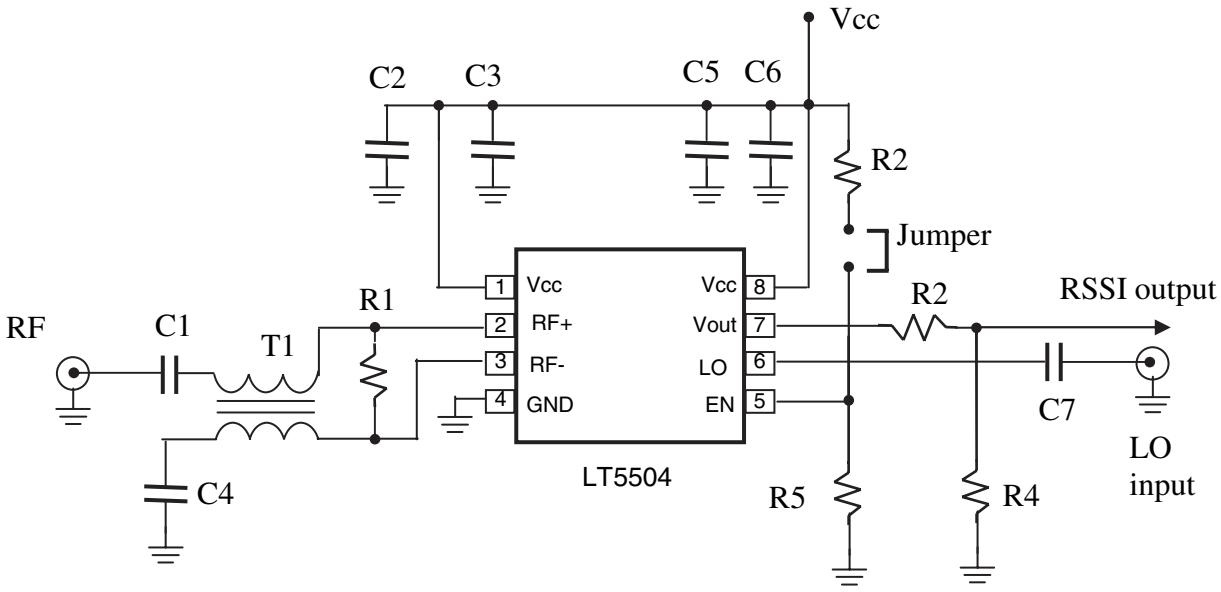

Figure 2. DC399A demo board schematic.

II. LT5504 basic tests and measurements.

1. Connect all the test equipment and power supplies as shown on Figure 3.
2. Set power supply to desired supply voltage from 2.7 to 5.25 volts.
3. When jumper (JP1) plugged-in, it provide HIGH logic level which enables the IC. When jumper (JP1) is removed, it provides LOW logic level, which disables the IC. External

ENABLE voltage source or pulse generator can be connected to the lower pin of the jumper (JP1) assembly and ground. The lower pin of the jumper is connected to the EN pin 5 of the IC. NOTE: The on/off threshold voltage is about Vcc/2. When the input voltage is higher than 0.6*Vcc, the circuit is completely turned on. When the input voltage is less than 0.4*Vcc, the circuit is turned off.

4. Set Signal Generator #1 for desired frequency within frequency range of 800 to 3000 MHz. Set Signal Generator #1 Pout for desired output level within range of -80 to +5 dBm (CW signal). Set Signal Generator #2 for frequency below or above the Signal Generator #1 frequency setting by the factor of 50 to 450 MHz, Pout = -10 dBm, CW signal.
   NOTE 1: For RF input frequencies above 2.2 GHz LOW Side LO injection is preferable.
   NOTE 2: Internal IF amplifier frequency range is 50 to 450 MHz.
5. Perform RSSI measurements. Change Signal Generator #1 Pout setting for any other desired output level within range of -80 to +5 dBm and repeat the RSSI measurement.
6. Using Step 4 initial settings set Signal Generator #1 for ASK modulated signal (up to 5 MHz).
7. Measure recovered ASK signal at RSSI output.

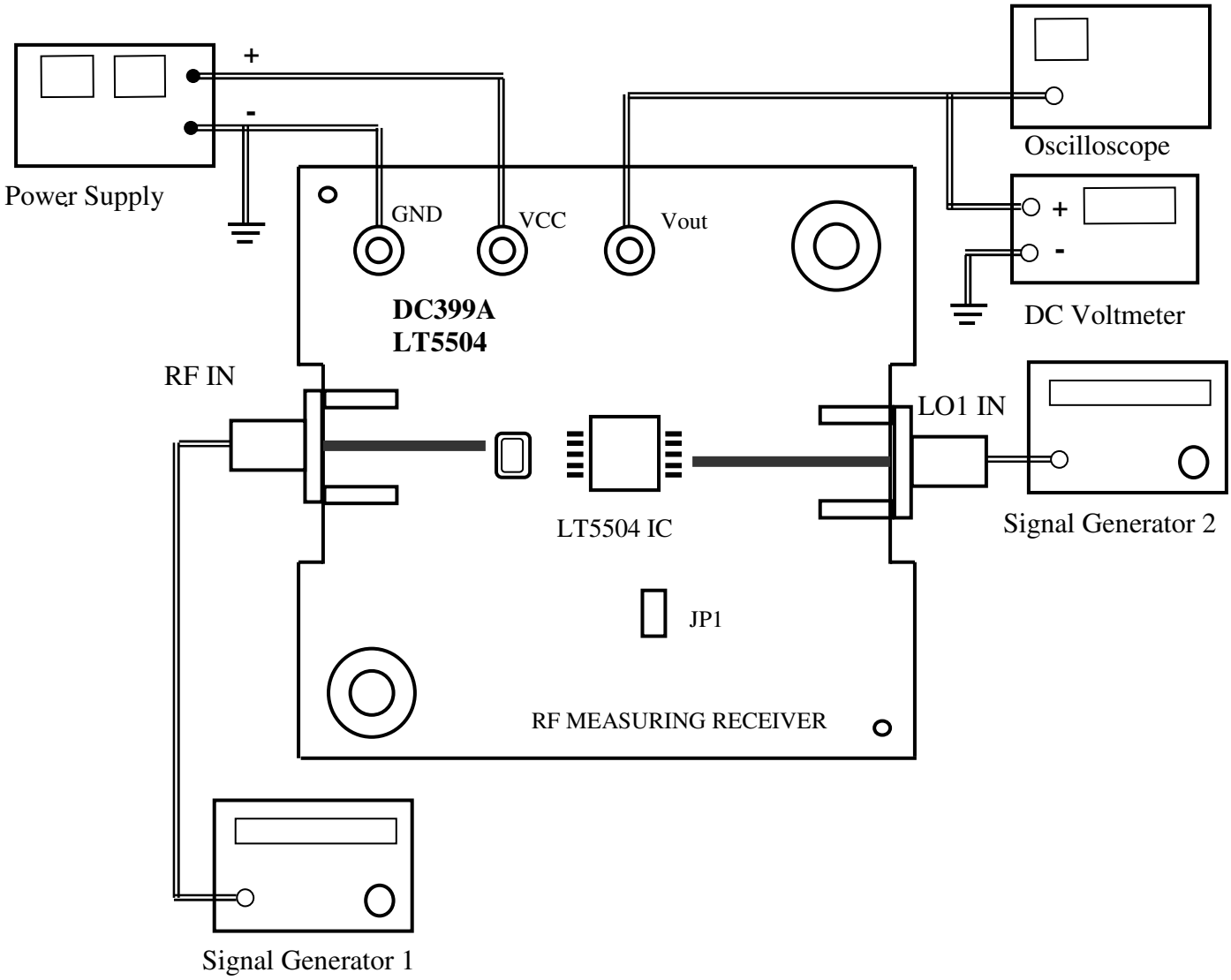

Figure 3. Test set up for LT5504 RSSI measurements.