



## DC478B DEMO BOARD QUICK START GUIDE

### Description:

The DC478B demo circuit board is intended to demonstrate the capabilities of the LT5512 downconverting mixer IC for 1900MHz wireless infrastructure applications.

The LT<sup>®</sup>5512 (Figure 1) is a broadband high signal level mixer IC optimized for high linearity downconverter applications including wireless and cable infrastructure. The IC includes a differential LO buffer driving a double-balanced mixer. An integrated RF amplifier improves LO-RF isolation and eliminates the need for precision external bias resistors.

The LT5512 is a high-linearity alternative to passive diode mixers. Unlike passive mixers, which have conversion loss and require high LO drive level, the LT5512 delivers conversion gain and requires significantly lower LO drive levels.

The DC478B demo board downconverts 1700MHz-2100MHz RF input to 170MHz IF output. LO injection can be either high-side or low-side, ranging from 1500MHz to 2300MHz.

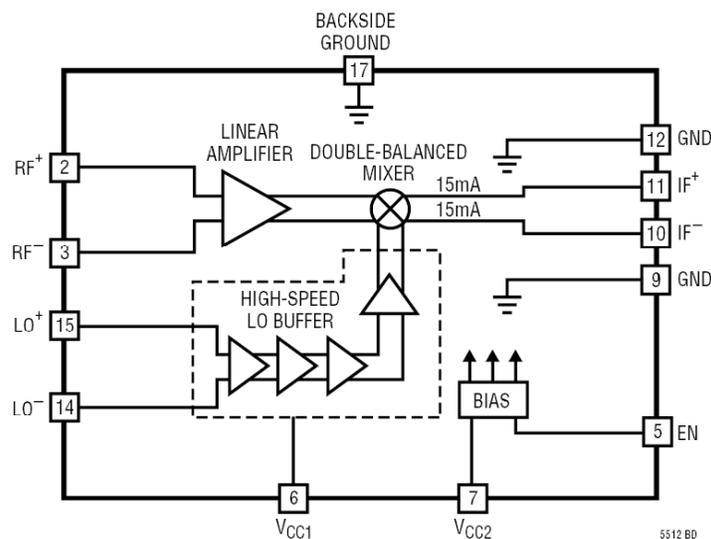


Figure 1. LT5512 IC Block Diagram

## LT5512 Downconverting Mixer Single-Tone Measurements for 1900 MHz Band.

1. Connect all test equipment as shown in Figure 2.
2. Set the Power Supply output voltage to 5V, and set the current limit to 100mA.
3. Connect TP1 (EN) to the 5V power supply. Mixer is in ENABLE mode.
4. Set the Signal Generator #1 to provide a 1730MHz, -10dBm, CW signal to the demo board LOin port.
5. Set the Signal Generator #2 to provide a 1900MHz, -10dBm, CW signal to the demo board RFIn port.
6. Set the Spectrum Analyzer's center frequency to 170MHz. Perform mixer conversion gain, and 1dB compression measurements.
7. Set the Spectrum Analyzer's center frequency to 1730MHz. Perform mixer LO to IF leakage measurement.

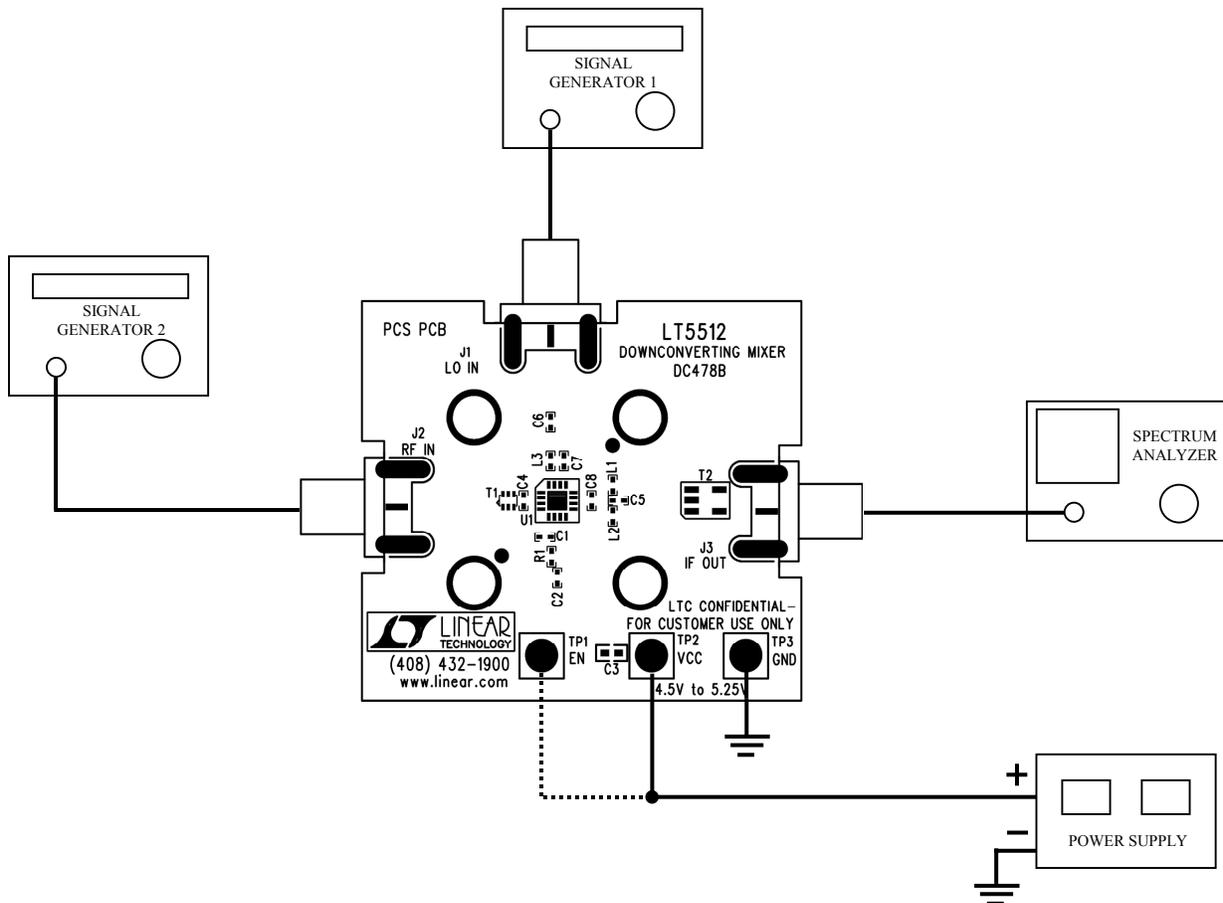


Figure 2. Test Set-Up for Mixer Single-Tone Measurements.

## LT5512 Downconverting Mixer Two-Tone Measurements for 1900 MHz Band.

1. Connect all test equipment as shown in Figure 3.  
Note: 1). A high quality combiner that provides 50-ohm termination on all ports and has good port-to-port isolation should be used.  
2). The two 3dB attenuators on the inputs of the combiner are used to further improve source isolation.
2. Set the Power Supply output voltage to 5V, and set the current limit to 100mA.
3. Connect TP1 (EN) to the 5V power supply. Mixer is in ENABLE mode.
4. Set the Signal Generator #1 to provide a 1730MHz, -10dBm, CW signal to the demo board LOin port.
5. Set the Signal Generator #2 and #3 to provide two -10dBm CW signals to the demo board RFIn port—one at 1899.9MHz, and the other at 1900.1MHz.
6. Set the Spectrum Analyzer's center frequency to 170MHz. Perform input 3<sup>rd</sup> order distortion measurement. (IIP3 =  $P_1 + (P_1 - P_3) / 2 - G_c$ , where  $P_1$  is the lowest power level of the two desired output tones at either 169.9MHz or 170.1MHz,  $P_3$  is the largest 3<sup>rd</sup> order product at either 169.7MHz or 170.3MHz, and  $G_c$  is conversion gain.  $P_1$  and  $P_3$  are in units of dBm, and  $G_c$  is in dB.)

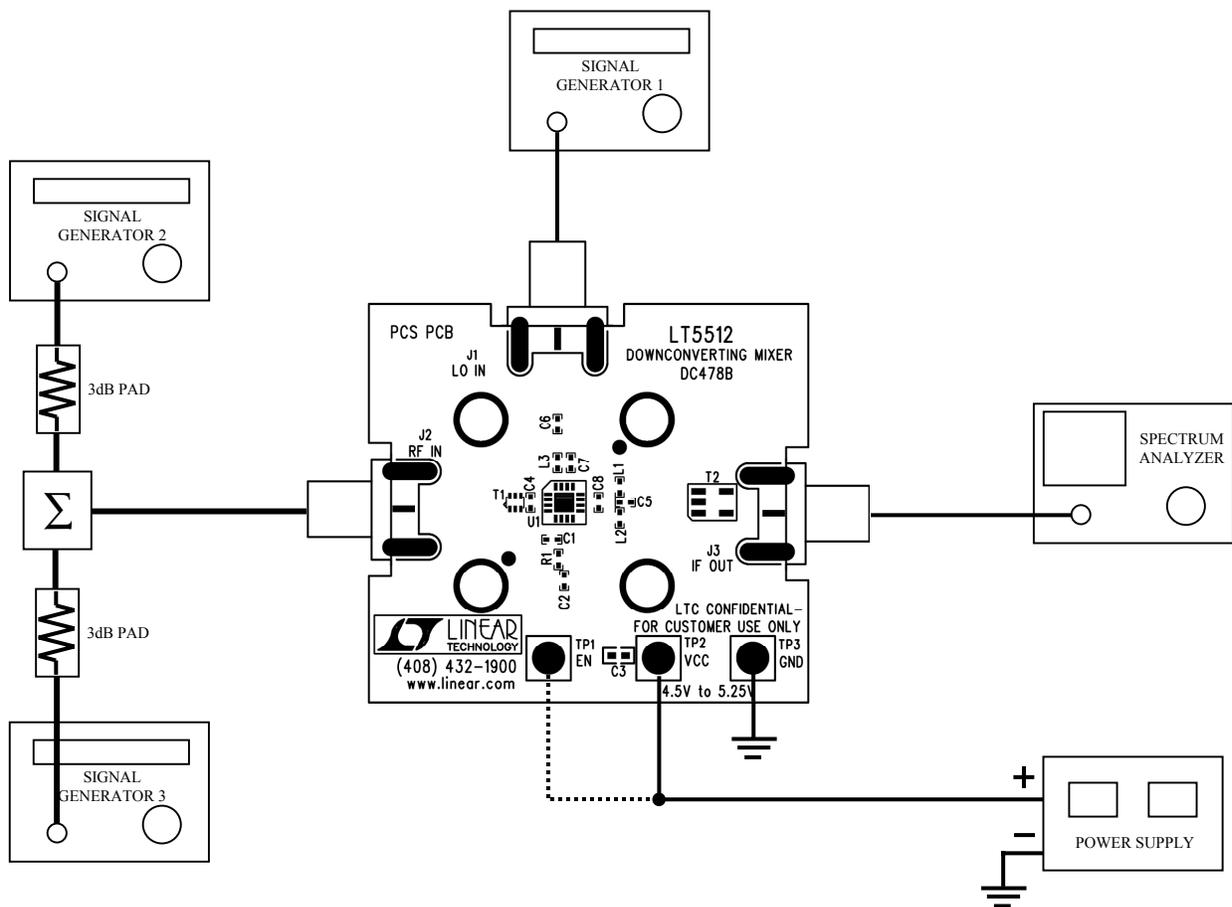


Figure 3. Test Set-Up for Mixer Two-Tone Measurements.