



DC426A DEMO BOARD QUICK START GUIDE

Description:

The DC426A demo circuit board is intended to demonstrate the capabilities of the LT[®]5511 high signal level upconverting mixer IC for 950MHz infrastructure applications.

The LT5511 mixer IC is designed to meet the high linearity requirements of cable TV infrastructure downstream transmitters and wireless infrastructure transmit systems. The IC includes a differential LO buffer amplifier driving a double-balanced mixer. The LO, RF and IF ports can be easily matched to a broad range of frequencies for different applications. The high performance capability of the LO buffer allows the use of a single-ended source, thus eliminating the need for an LO balun.

The LT5511 mixer delivers +17dBm typical input 3rd order intercept at 950MHz, and +15.5dBm IIP3 at 1900MHz, with IF input signal levels of -5dBm. The input 1dB compression point is typically +6dBm.

The DC426A demo board is optimized to upconvert a 50MHz IF input to 950MHz RF output with the LO injected from the high-side at 1000MHz.

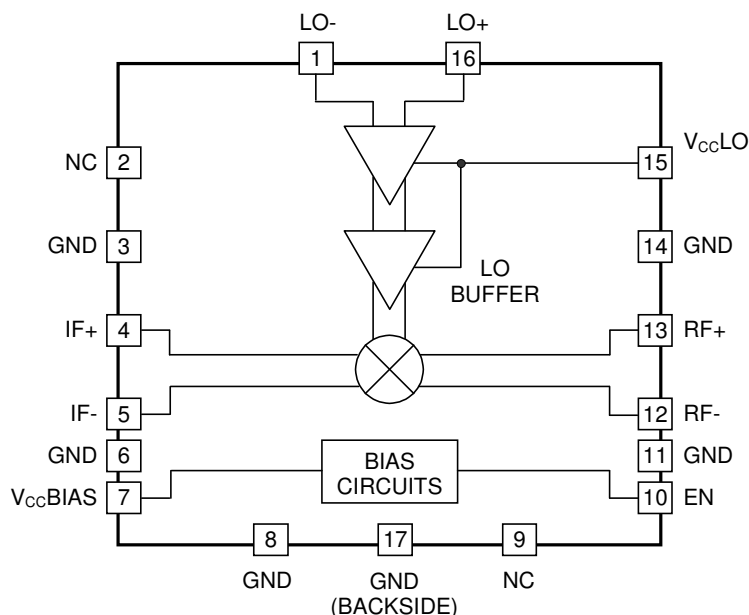


Figure 1. LT5511 IC Block Diagram

LT5511 Upconverting Mixer Single-Tone Measurements for 950 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. Set the dipswitch SW1 (Enable) to 1. Mixer is in ENABLE mode.
4. Set the Signal Generator #1 to provide a 1000MHz, -10dBm, CW signal to the demo board LOin port.
5. Set the Signal Generator #2 to provide a 50MHz, -5dBm, CW signal to the demo board IFin port.
6. Set the Spectrum Analyzer's center frequency to 950MHz. Perform mixer conversion gain, and 1dB compression measurements.
7. Set the Spectrum Analyzer's center frequency to 1000MHz. Perform mixer LO to RF suppression measurement.
8. Set the Spectrum Analyzer's center frequency to 900MHz and 1100MHz. Perform input 2nd order distortion measurement. ($IIP2 = 2 * P1 - P2 - Gc$, where P1 is the power level of the desired output at 950MHz, P2 is the largest 2nd order product at either 900MHz or 1100MHz, and Gc is conversion gain. P1 and P2 are in units of dBm, and Gc is in dB.)

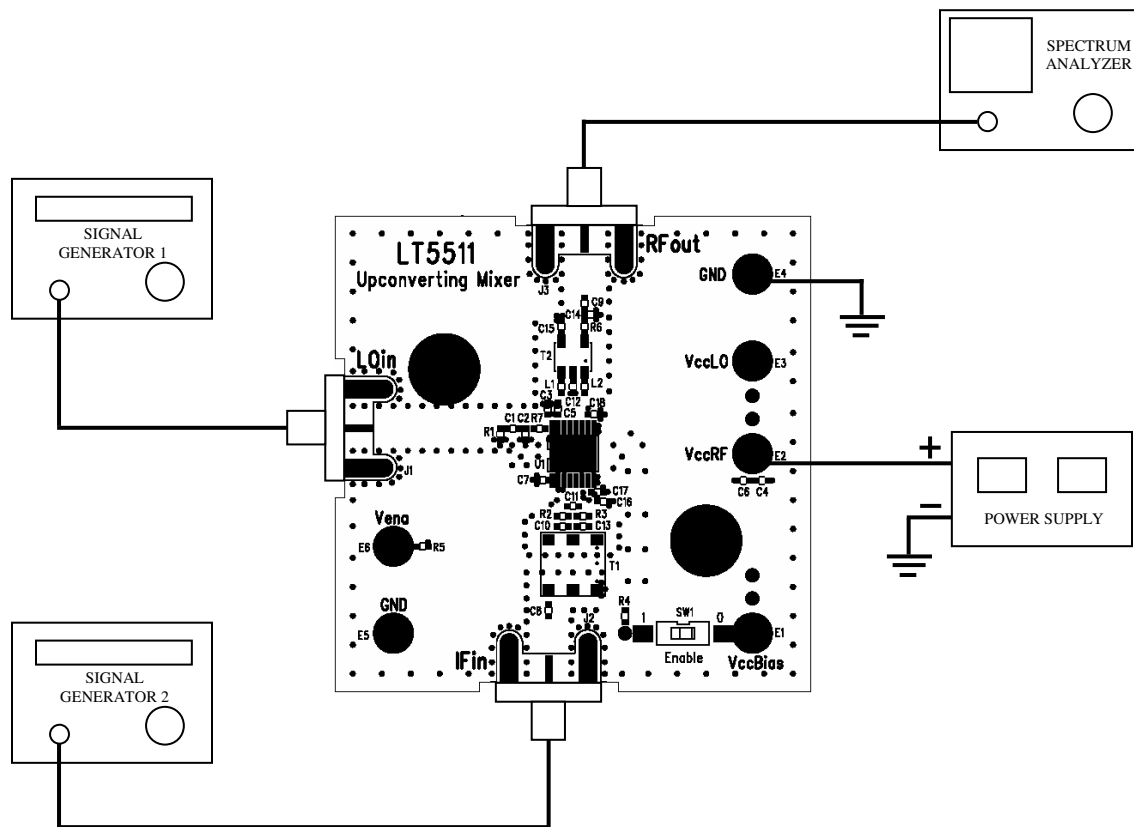


Figure 2. Test Set-Up for Mixer Single-Tone Measurements

LT5511 Upconverting Mixer Two-Tone Measurements for 950 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. Set the dipswitch SW1 (Enable) to 1. Mixer is in ENABLE mode.
4. Set the Signal Generator #1 to provide a 1000MHz, -10dBm, CW signal to the demo board LOin port.
5. Set the Signal Generator #2 and #3 to provide two -5dBm CW signals to the demo board IFin port—one at 50MHz, and the other at 51MHz.
6. Set the Spectrum Analyzer's center frequency to 949.5MHz. Perform input 3rd order distortion measurement. ($IIP3 = P1 + (P1 - P3) / 2 - Gc$, where P1 is the lowest power level of the two desired output tones at either 949MHz or 950MHz, P3 is the largest 3rd order product at either 948MHz or 951MHz, and Gc is conversion gain. P1 and P3 are in units of dBm, and Gc is in dB.)

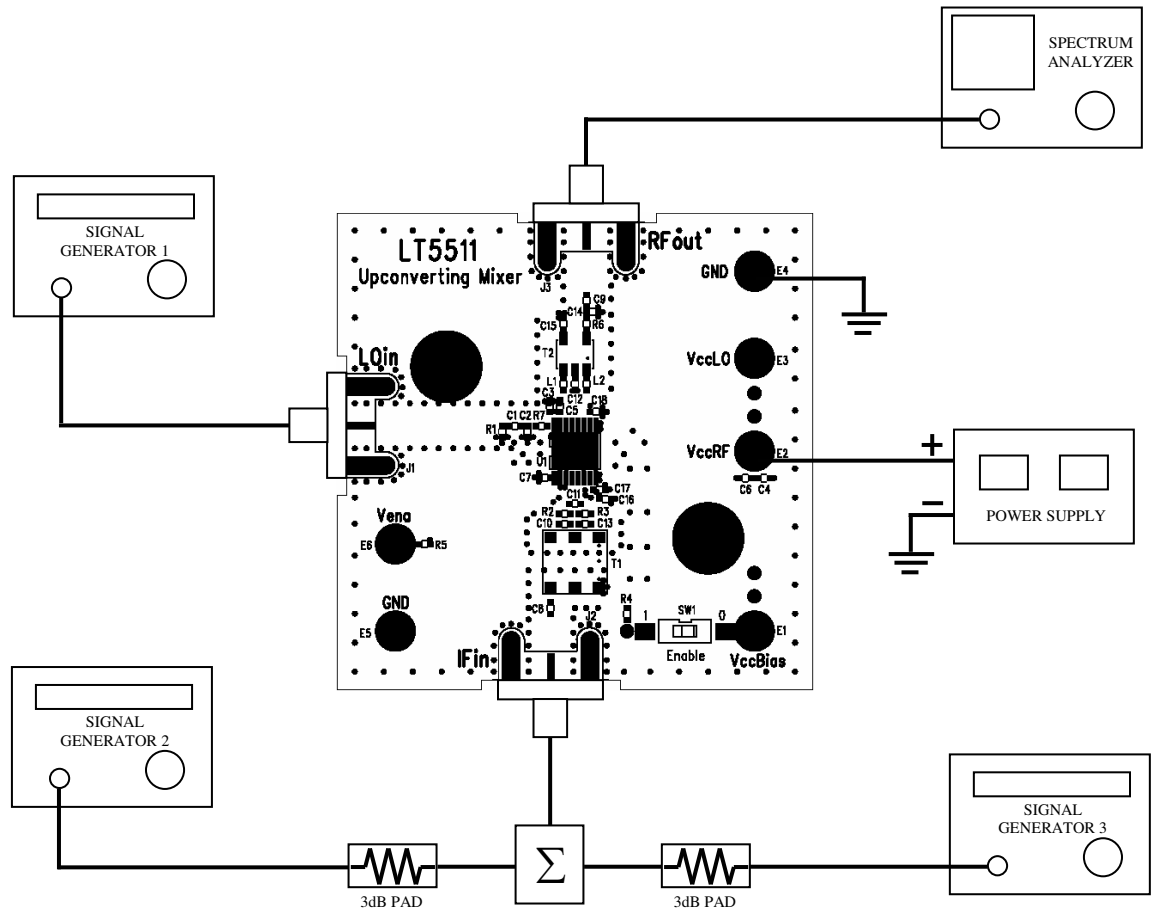


Figure 3. Test Set-Up for Mixer Two-Tone Measurements