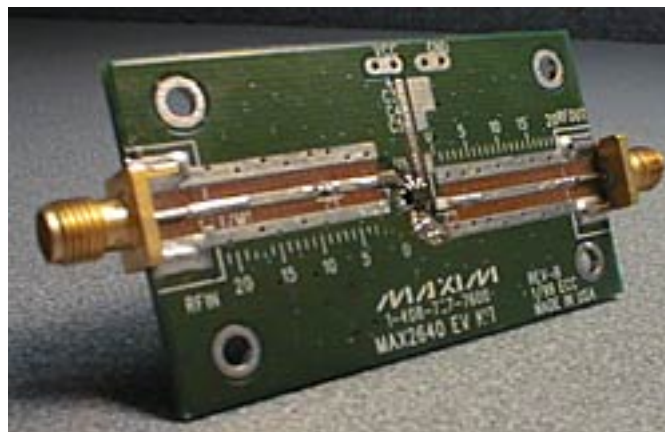# REP025: Custom-Tuned LNA at 345MHz for Wireless Security System

The MAX2640 operates typically from 400MHz to 2500MHz. With the additional matching circuitry, it was made operational at 345MHz with a gain of almost 17dB and a noise figure (NF) of 1.4dB. ADS was used to simulate the design, and a network analyzer confirmed the performance. Measured S-parameters are provided, along with a schematic and bill of materials.

Rapid engineering prototypes are real circuits that Maxim application engineers have built and measured in our labs. They can provide a starting point for new RF designs.

Additional Information: Wireless Product Line Page
Quick View Data Sheet for the MAX2640
Applications Technical Support

Objective: To tune the MAX2640 for operation at 345MHz for wireless security-system

transmission.

The MAX2640 operates typically from 400MHz to 2500MHz, but with the addition of Lnew and Cnew it was made operational at 345MHz with a gain of almost 17dB and a noise figure (NF) of 1.4dB. Lnew (approximately 43nH) was added to the circuit board by cutting the input trace right above the original ZM1 solder, required to match the LNA input, along with an input shunt capacitor Cnew of 18pF. The matching line ZM1 was moved as well. An analog design system (ADS) was used to simulate and a network analyzer was used to correlate the new match response.

The MAX2640 is a low-cost ultra-low-noise amplifier designed for application in the cellular, PCS, GPS, and 2.4GHz ISM frequency band. It operates from a +2.7V to +5.5V supply, consuming only 3.5mA of current while providing a low noise figure, high gain, high input, and a third-order intercept point (IP3). The MAX2640 offers a typical performance of 15.1dB gain, an input IP3 of -10dBM, and a noise figure of 0.9dB at 900MHz.

Schematic of MAX2640 Tuned for 345MHz Performance
Bill of Materials of Tuned MAX2640
S-Parameter Measurements Plot1, S-Parameter Measurements Plot2
ADS Simulation Schematic
ADS Simulation Data

CA15Q201, June 2001

More Information

MAX2640: QuickView -- Full (PDF) Data Sheet -- Free Samples