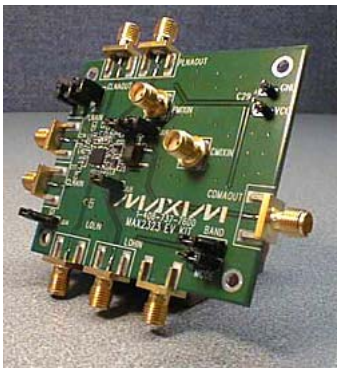
Application Note 339: Dec 07, 2000

REP012: Cellular LNA Achieves +20dBm IIP3 in Low-Gain High-Linearity Mode

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. They are not available as Evaluation Kits.

Additional Information: Wireless Product Line Page
Quick View Data Sheet for the MAX2323/MAX2325
Applications Technical Support



Objective: For this dual-band triple-mode front-end IC, to experimentally tune for the best-possible cellular LNA linearity available in CDMA low-gain high-linearity mode.

The project requirement was to custom-tune to obtain cellular LNA low-gain high-linearity performance of +20dBm IIP3, as well as to match the analog and the digital (cellular/PCS) mixer output ports both to 85.38MHz IFs. Note that this was a one-time experimental "limits-of-performance" design, which is difficult to achieve routinely. The LNA bias resistor was adjusted carefully along with the IF output matching circuit. The LNA input match was varied as well, but care was taken not to upset the mid-gain and high-gain noise figures. The LNA output match was not varied. It demonstrates the extremely versatile application designs that can be developed using these SiGe FE ICs.

The MAX2323 low-noise amplifier (LNA) plus mixer is designed for dual-band CDMA cellular-phone handsets, but it can also be used in dual-band TDMA, GSM, EDGE, or WCDMA applications. It differs from its predecessor (the MAX2320) by adding a third "mid-gain" state for the cellular-band LNA that improves switchover hysteresis margin. It also comes in a smaller package (28-QFN) and offers increased third-order input intercept.

Schematic of the MAX2323 Evaluation Kit (PDF, 60K)
Bill of Materials, Part 1
Bill of Materials, Part 2
Bill of Materials, Part 3
Cellular LNA/Mixer IIP3 Measurement Setup
Cellular LNA/Mixer Noise-Figure Measurement Setup
PCS LNA/Mixer IIP3 Measurement Setup
PCS LNA/Mixer Noise-Figure Measurement Setup

REPCA18Q400, November 2000

MORE INFORMATION

MAX2323: QuickView -- Full (PDF) Data Sheet (176k) -- Free Sample