

MAX2338 LNAs and Downconverters Optimized for GSM Front-End (REP027)

The MAX2338 front-end IC is tuned to support GSM and DCS operation at 942MHz and 1842MHz. A photograph of the board is provided, along with a performance matrix, bill of materials, and schematic. 270MHz is chosen as the IF for both bands.

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 MAX2338](#)
[Applications Technical Support](#)



Objective: Tune MAX2338 LNAs and downconverters for GSM and DCS application. (This part was designed for CDMA).

The MAX2338 was tuned to meet linearity and gain in GSM and DCS band (centered at 942 and 1842MHz) with a common IF of 270 MHz, using the balanced output CDMA downconverter. The LO's were centered at 1212 and 2112 MHz respectively. And, using the FM mode unbalanced output downconverter, an experimental low-IF was utilized, with 1090MHz LO and 148MHz IF for GSM band. The object for each path was to achieve 15dB LNA gain at +5dBm IIP3, and 13dB mixer gain at +5 dBm and 8dB NF. The GSM LNA NF was targeted for 1.2 dB.

The result was that the LNA and CDMA downconverter gain and linearity requirements were met, but the FM downconverter only provided 8 dB gain. The LNA NF achieved was 1.4 dB in both bands. 'Max' and 'min' data were estimated based on the spread found in the MAX2338 data sheet.

The MAX2338 receiver RF front-end IC is designed for dual-band CDMA cellular phones and can also be used in dual-band TDMA, GSM or EDGE cellular phones. The MAX2338 includes a low-noise amplifier (LNA) with an adjustable high input third order intercept point (IIP3) to minimize intermodulation and cross-modulation. For cellular band operation, a low-gain LNA is available for higher cascaded IIP3 at lower current. The CDMA downconverters are designed for high linearity, low-noise and differential IF outputs. The FM downconverter is designed for lower current and single-ended output.

[Test Conditions](#) (PDF, 15K)
[Performance Matrix](#) (PDF, 25K)
[Bill Of Materials](#) (PDF, 39K)
[Schematic for the MAX2338 Tuned for GSM and DCS](#) (PDF, 65K)
[GSM Band LNA and Downconverter IIP3 Measurement Set-up](#)
[GSM Band LNA and Downconverter Noise Figure Measurement Set-up](#)
[DCS Band LNA and Downconverter IIP3 Measurement Set-up](#)
[DCS Band LNA and Downconverter Noise Figure Measurement Set-up](#)

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MORE INFORMATION

MAX2338: [QuickView](#)

-- [Full \(PDF\) Data Sheet \(224k\)](#)

-- [Free Sample](#)