

## REP001: AMPS FM Mixer Trades Off IIP3 for Gain

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  
MAX2320/MAX2321/MAX2322/MAX2324/MAX2326/MAX2327](#)  
[Applications Technical Support](#)



*Objective: For the RF mixer in the FM (AMPS) signal path, to optimize the trade-off between best linearity versus highest gain by custom-tuning the output matching circuit.*

The MAX2320 evaluation board was used to characterize the MAX2324, as the MAX2320 contains a superset of the features and will give virtually identical cellular band performance. Note that this IC offers both a digital (CDMA or TDMA) path mixer and an FM (AMPS) path mixer whose outputs are open collector. Varying their load line changes both the gain and the IIP3 performance (inversely proportional). In this application, the output match to the FM mixer was optimized for IIP3.

The MAX2324 low-noise amplifier (LNA) plus mixer is designed for cellular band CDMA cell-phone handsets, but it can also be used in TDMA, GSM, or EDGE applications. It offers two LNA gain states to meet the required CDMA dynamic range, with a switchover hysteresis margin. There are two mixers: one for analog IF output and the other for digital-modulation IF output. The MAX2324 has buffered VCO inputs and outputs, eliminating the need for extra transmit upconverter VCO buffers.

[Schematic of MAX2324 Evaluation Kit](#) (PDF, 55K)

[Bill of Materials, Part 1](#)

[Bill of Materials, Part 2](#)

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### **More Information**

MAX2324: [QuickView](#) -- [Full \(PDF\) Data Sheet](#) -- [Free Samples](#)