REP005: Tuned Front End for Dual-Band CDMA for Use with Low-Cost 85MHz IF SAWs

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: To verify the performance of this dual-band triple-mode CDMA front-end IC using a common, digital, 85MHz IF SAW filter and an 85MHz AMPS FM IF SAW filter.

This project entailed custom-tuning to modify the FM/cellular/PCS mixers all to a common 85MHz IF. This was required because of access to low-cost IF SAW filters. A compromise in _-IF performance at the PCS band resulted, because the RF receive-image filter and the duplexer didn't provide sufficient band-edge rejection. Nonetheless, the design proved surprisingly robust because of the high IP2 of the digital PCS mixer.

The MAX2320 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 offers two LNA gain states to meet the required CDMA dynamic range, with a switchover hysteresis margin. There are three mixers: one for the analog cellular path and two for the digital modulation paths at the cellular and PCS bands. The digital path mixers have a common IF output, as they can provide sufficient spurious and image rejection with a single IF. This capability eliminates one IF filter. The MAX2320 has separate cellular-band and PCS-band buffered VCO inputs and outputs, eliminating the need for extra transmit upconverter VCO buffers.

Schematic of the MAX2320 Evaluation Kit (PDF, 52K)
Bill of Materials, Part 1
Bill of Materials, Part 2

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MORE INFORMATION
 MAX2320:   QuickView   -- Full (PDF) Data Sheet (536k)   -- Free Sample