

APPLICATION NOTE 445

REP010: Dual-band IS-136 FE IC at 183MHz IF

Abstract: This reference design (RD) is for a dual-band CDMA front-end in an IS-136 TDMA receiver with all 183MHz IFs. The RD uses the MAX2338, a low-noise amplifier (LNA) with mixer that is useful for TDMA, GSM, EDGE, and WCDMA applications.

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Objective: To apply and measure this dual-band triple-mode CDMA front-end IC in an IS-136 TDMA receiver with all 183MHz IFs.

The [MAX2338](#) was made to readily facilitate a single IF for both PCS- and cellular-band receive paths. Its mixer's IP2 performance and other related parameters offer sufficient margin for meeting 1/2 IF and other interferers in a CDMA handset. In this application, the MAX2338 was tested for and successfully applied to a TDMA handset front-end design. The common 183.6MHz IFs allow for minimizing the RF VCO and therefore the lowest parts' count and the simplest frequency plan.

The MAX2338 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. The MAX2338 furnishes a divide-by-2 function in the PCS-band LO input path, providing for a single VCO at the PCS band. The buffered LO outputs permit direct driving of the transmit-path upconverter without an external LO buffer. The MAX2338 differs from its predecessors (the [MAX2320](#) and the [MAX2323](#)) in its lower noise figure and its higher IIP3 for both LNAs and mixers. Also, it comes in a small package (28-QFN).

[Schematic of the MAX2338 evaluation kit \(PDF, 57kB\)](#)

[Bill of materials, part 1](#)

[Bill of materials, part 2](#)

[Measured performance of the MAX2338](#)

[PCS mixer gain and IIP3 measurement setup](#)

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[FM mixer gain and IIP3 measurement setup](#)

[PCS LNA IIP3 measurement setup](#)

[Cellular LNA IIP3 measurement setup](#)

[Cellular LNA noise-figure measurement setup](#)

[PCS LNA noise-figure measurement setup](#)

[Cellular mixer noise-figure measurement setup](#)

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Related Parts

[MAX2338 Triple/Dual-Mode CDMA LNA/Mixers](#) -- [Free Samples](#)

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