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APPLICATION NOTE 455

REP009: Cellular Power Amplifier Tuned for IS-136 TDMA

Abstract: This design note shows that a linear power amplifier (PA), the MAX2265, performs well for the IS-136 TDMA cellular band. The PA was designed for CDMA/TDMA/PCD cellular phones. An evaluation (EV) board is customized for a small layout.

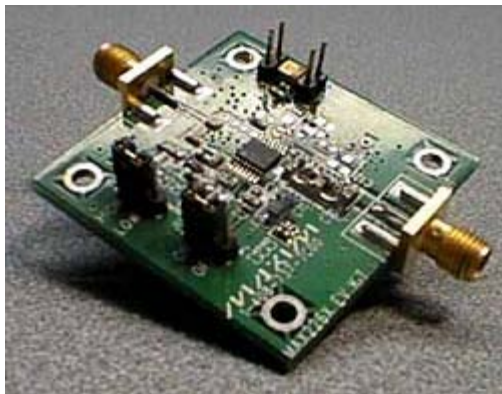
Rapid Engineering Prototypes are real circuits that Maxim application engineers have built and measured in our labs. They can provide a starting point for new RF designs. They are not available as evaluation kits.



Click here for an overview of the wireless components used in a typical radio transceiver.

Additional information:

- [Wireless product line page](#)
- [Data sheet for the MAX2264/MAX2265](#)
- [Applications technical support](#)



Objective: To tune the MAX2265 CDMA cellular PA to meet specific performance criteria in TDMA application, and to develop a small-circuit layout.

This project entailed custom-tuning for IS-136 TDMA in the U.S. cellular band. The requirements were 824MHz - 849MHz band, $P_{OUT} = 29.5\text{dBm}$, 41% efficiency, gain of 29dB, $ACPR = -30\text{dBc} \pm 30\text{kHz}$, and $ALT = -50\text{dBc} \pm 60\text{kHz}$. A small custom circuit layout was also developed, but details are not included in this note for proprietary reasons. Tests and tuning were conducted on the MAX2265 EV board.

The MAX2265 linear RF power amplifier is designed for U.S. cellular-band IS-98-based CDMA, PDC, and IS-136-based TDMA modulation formats. To improve its power-added efficiency (PAE), the MAX2265 offers a continuous-current throttle-back arrangement. In this way, the amplifier linearity (that is, the adjacent-channel power ratio, or ACPR) is held relatively constant, whereas both the output power and the current drain are reduced. Thus, the desired linearity can be maintained, while improving low-output PAE, over a continuously variable output control range.

[Schematic of the MAX2265 evaluation kit \(PDF, 38kB\)](#)

[PCB layout of the MAX2265 evaluation kit](#)

Related Parts

[MAX2265](#) 2.7V, Single-Supply, Cellular-Band Linear Power Amplifiers -- [Free samples](#)

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