# WiMAX RF MxFE Transceiver

# AD9352-5

## FEATURES

**RF transceiver with integrated ADCs and DACs**
**Frequency: 4.9 GHz to 6.0 GHz**
**3.5 MHz < BW < 20 MHz**
**Superior receiver sensitivity with an NF of 4.5 dB**
**Highly linear and spectrally pure transmitter**
**Tx EVM: −36 dB**
**Tx noise floor: <−134dBm/Hz**
**Autonomous automatic gain control (AGC)**
**Automatic frequency correction: <0.012 ppm**
**Integrated fractional-N synthesizer**
**28 Hz local oscillator (LO) step size**
**Integrated phase noise: <0.8°rms**

## APPLICATIONS

**CPE**
**BWA/WiMAX infrastructure**
**Wireless backhaul**
**Radar detect**

## FUNCTIONAL BLOCK DIAGRAM

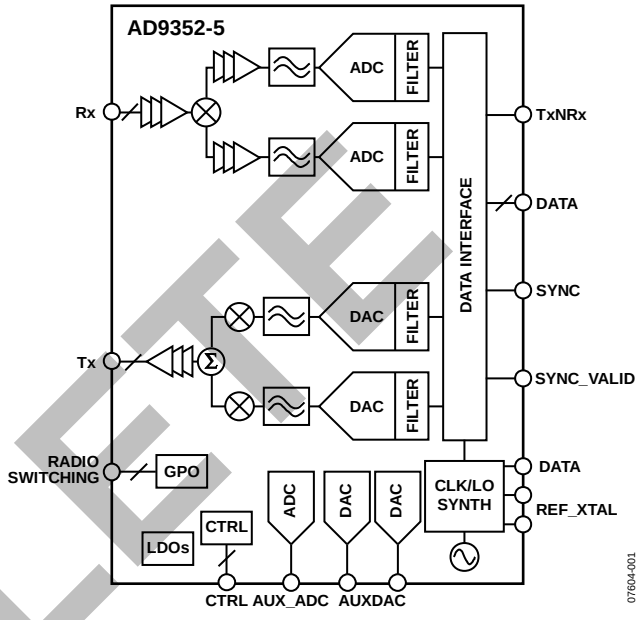



*Figure 1.*

OBSOLETE

## GENERAL DESCRIPTION

The AD9352-5 is a fully integrated transceiver for IEEE 802.16 WiMAX wireless network systems. The RF MxFE® combines the RF front end with mixed-signal baseband enabling and easy-to-use digital interface to the baseband ASIC or FPGA. The AD9352-5 operates in the 4.9 GHz to 6.0 GHz range covering most of the licensed and unlicensed bands. Channel bandwidths of 3.5 MHz, 4.375 MHz, 5 MHz, 7 MHz, 8.75 MHz, 10 MHz, 14 MHz, 17.5 MHz, and 20 MHz are supported.

The direct-conversion receiver has state-of-the-art noise figure and linearity and requires no external components except a balun. The complete RF subsystem integrates an autonomous AGC loop and dc offset corrections, thus eliminating the need for high speed interaction with the baseband processor. The received signal strength indicator (RSSI) has over 80 dB of dynamic range with 0.5 dB resolution and is accessible via the serial interface.

The received signal is digitized with a high dynamic range 12-bit ADC. Decimation and channel filters produce a 10-bit output signal at the appropriate sample rate determined by the bandwidth mode. The transmit path takes 10-bit input data and interpolates it before converting it to the analog domain and upconverting it to the carrier frequency.

The highly linear transmit path has excellent spectral purity with sideband noise less than −134 dBm/Hz at 22 MHz offset and offers an EVM of −33 dB at 0 dBm output power.

The reference frequency is produced by an internal crystal oscillator with digital programmable frequency with 0.012 ppm resolution, thus reducing the total bill of materials of the device.

An internal auxiliary ADC and two auxiliary DACs are available for system monitoring and control. Three general-purpose I/Os are also included and can be register programmed or automatically sequenced by a user-defined state machine. Mode control is available via a 4-wire serial port and four real-time I/O control pins.

The AD9352-5 is powered from a single 3.3 V supply and contains on-chip LDOs for each function to eliminate external regulators. The AD9352-5 is packaged in a 9 mm × 9 mm, 64-lead LFCSP.

*For more information on the AD9352-5, contact Analog Devices, Inc. at: wimaxtransceivers@analog.com.*

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## NOTES

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