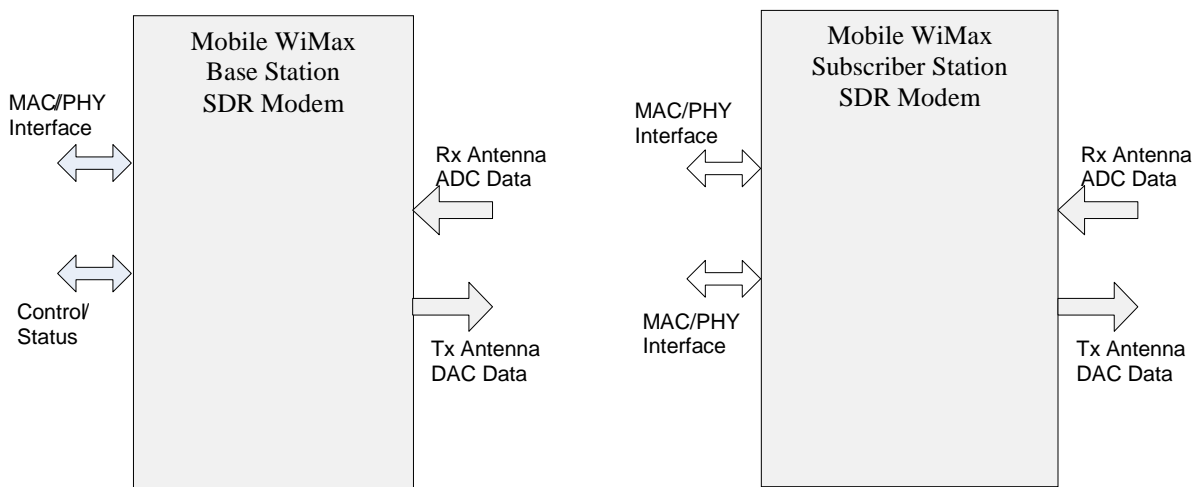


# Product Brief

**Mobile WiMax  
Software Defined Radio  
OFDMA Modem**



RAD3 Mobile WiMax SDR OFDMA Modem Reference Design



## IP Core Name

<b>Name:</b>	<b>R3WIMAX-MOBILE-SDR</b>
<b>Description:</b>	Mobile WiMax Software Defined Radio OFDMA Modem

- Supporting QPSK to QAM-64
- Extensively verified through product implementations and extensive lab testing.
- Support for all Wimax specified channel bandwidths and data rates
- Modular code allows efficient partitioning across multiple processors

## Features

- Complete WiMax Wave 2 compliant Software Defined Radio OFDMA base station and subscriber station modem
- Portable ANSI C reference design allows selection of Array Processor or DSP targets
- 2x2 MIMO operation support

## Deliverables

- C source code
- Comprehensive verification test bench and vectors
- Integration documentation and support

# RAD3 IP Cores Series: Mobile WiMax SDR OFDMA Modem

- Windows based demonstration platform

## Overview

The RAD3 Mobile Wimax Base Station and Subscriber Station SDR Modem provides a flexible WiMax Wave 2 compliant solution for programmable processor targets. The modem is implemented in ANSI compliant C code and is designed to be easily targeted to a variety of processor or multi-processor platforms. A reference demonstration platform is available running under Windows.

Functionality includes:

- FFT Size: 512/1024/2048
  - Channel Bandwidths: 3.5 MHz, 4.375 MHz, 5 MHz, 7 MHz, 8.75 MHz, 10 MHz & 20 MHz
  - Duplex Modes: TDD and H-FDD
  - AMC: QPSK, 16-QAM and 64-QAM (with CTC 5/6)
  - Frame Length: 5 ms for TDD & 2.5ms for H-FDD
  - Sub-channelization: PUSC, FUSC and AMC2x3 DL Support
- Channel Coding: Convolutional Code (CC) & Convolutional Turbo Code (CTC)
  - Category 4 HARQ with HARQ aggregation
    - Chase Combining and Incremental Redundancy (IR)
  - Two-Antenna STC/MIMO Support:
    - Matrix A MIMO downlink with Alamouti decoding.
    - Matrix B MIMO downlink with ML (sphere) decoding
  - Dedicated pilot zone support
  - Base Station functionality includes Ranging, Sounding and Fast Feedback operations

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