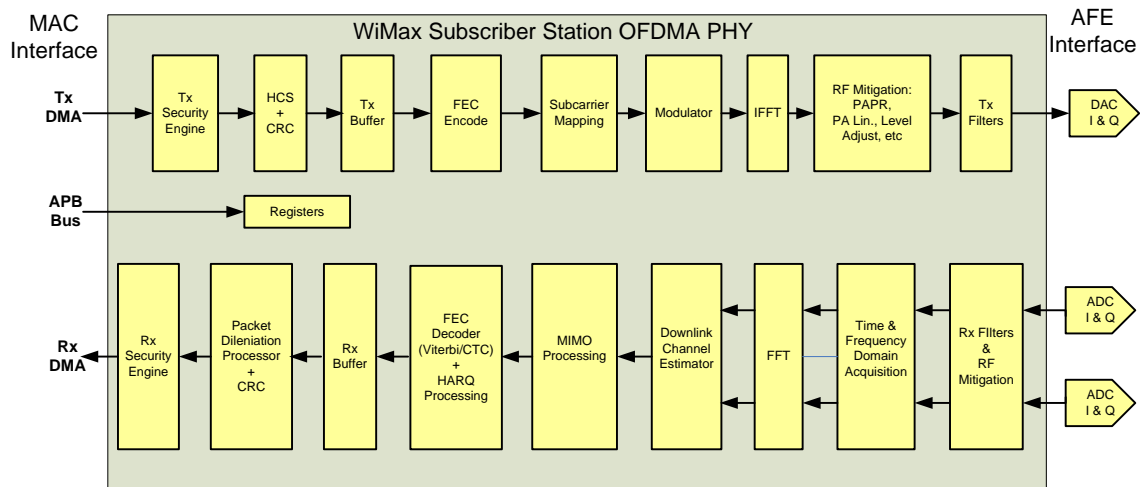


Product Brief

Mobile WiMax Subscriber Station OFDMA Modem



IP Core Name

Name:	R3WMAX-MOBILE-SS-RTL
Description:	Mobile WiMax Subscriber Station OFDMA Modem

Deliverables

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

Features

- Complete Mobile WiMax Subscriber Station OFDMA modem
- Full 802.1e-2009 and WiMax Wave 2 compliance
- Support for all WiMAX Forum™ specified channel bandwidths and data rates
- Silicon verified
- Upgradeable to 802.16m
- Two-Antenna STC/MIMO support including support for Matrix A/B
- Optimized for both ASIC and low-cost FPGA implementations

RAD3 Communications Inc.
 3553 – 31 Street NW, Suite 253
 Calgary, AB, Canada
 T2L 2K7

web: www.rad3comm.com
 email: sales@rad3comm.com

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Overview

The Mobile WiMax Subscriber Station Modem is an 802.16e-2009 compliant OFDMA modem. It is designed to be WiMAX Forum™ compliant and meets all requirements for the WiMAX WAVE2 system profile. The core is designed to easily interface to an external microprocessor which can be used to control the PHY.

Functionality includes:

- FFT Size: 512/1024
- Channel Bandwidths: 3.5 MHz, 4.375 MHz, 5 MHz, 7 MHz, 8.75 MHz and 10 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
- Integrated PDU Cipher Engine supports the following:
 - 128-bit AES Encryption/Decryption Hardware Acceleration
 - AES-CCM (for both encryption/decryption) and AES-CTR (for MBS decryption only)
- Security Association: TEK (for AES-CCM) and MTK (for MBS CTR mode decryption)
- Integrated PA Linearization, PAPR and RF impairments mitigation
- Upgradeable to 802.16m & 20 MHz channel bandwidth

The design is targeted for use in ASICs and FPGAs and utilizes RAD3' industry proven signal processing cores to provide an extremely area-efficient 802.16e-2009 physical layer solution.

The FPGA optimized modem can be targeted to low cost FPGA product families such as Xilinx Spartan devices and will support the maximum data rates required.

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