

Evolution™ WiMAX DM256 ASIC IEEE 802.16-2004 OFDM PHY

Product Description

The Evolution™ DM256 integrated circuit implements the IEEE 802.16-2004 WirelessMAN-OFDM™ PHY layer protocol and is designed to be the main component of an Orthogonal Frequency Division Multiplexing (OFDM) modem for Broadband Wireless Access. The PHY has two complementary functions: one is to process data for transmission where the output is a Baseband I/Q signal or a programmable IF signal (real or complex). The process is reversed for the second function of receiving data where the input is a Baseband I/Q signal or a programmable IF signal (real or complex). For data reception, the PHY implements proprietary synchronization and channel equalization methods for OFDM. Synchronization also includes frequency synchronization as well as timing synchronization.



Highlights

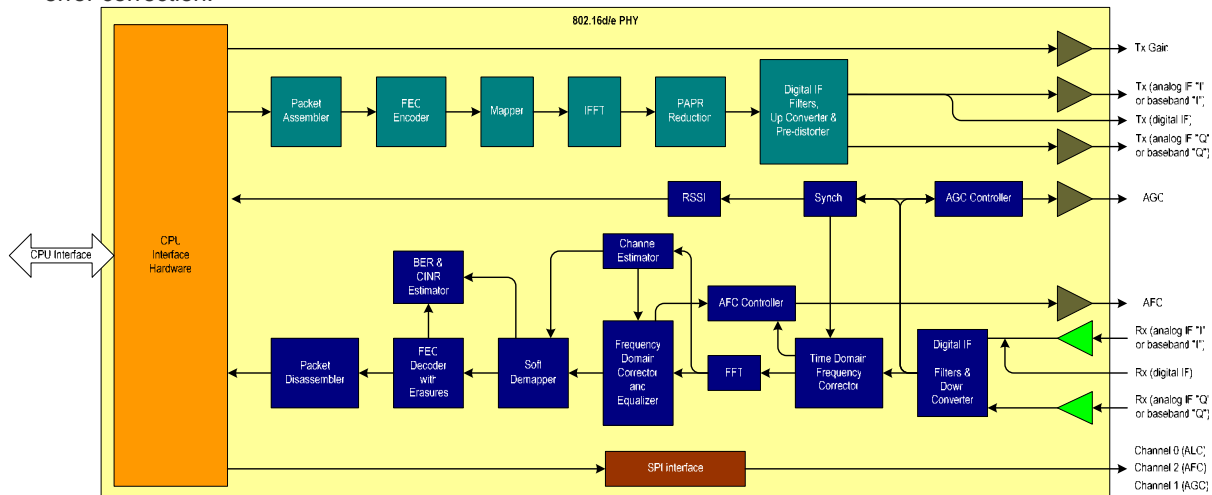
- Forward compatibility with IEEE 802.16e PHY for mobile applications.
- Industry Leading 5 bits/sec/Hertz spectral efficiency.
- Meets all six SUI Non Line of Sight (NLOS) channel models.
- Supports TDD, HFDD and FDD.
- IEEE 802.16-2004 compliant PHY Integrated Circuit using Wavesat patented algorithms.

Features

- 208 pin PQFP and 208 BGA
- Digital IF, analog IF (real values or complex) or analog Baseband I/Q interface.
- Programmable Bandwidths.
- Programmable IF Frequency.
- Built-in PRBS generator for system testing.
- Dynamic Signal scaling and PAPR reduction maximize the signal power.
- Soft demapping and erasures for improved error correction.

Benefits

- Integrated analog front end for simplified board design.
- AGC, AFC and Tx Gain control outputs for simple interfacing to RF circuitry.
- Low cost.
- Low power consumption.
- Same chip can be used for Base Station as well as CPE.



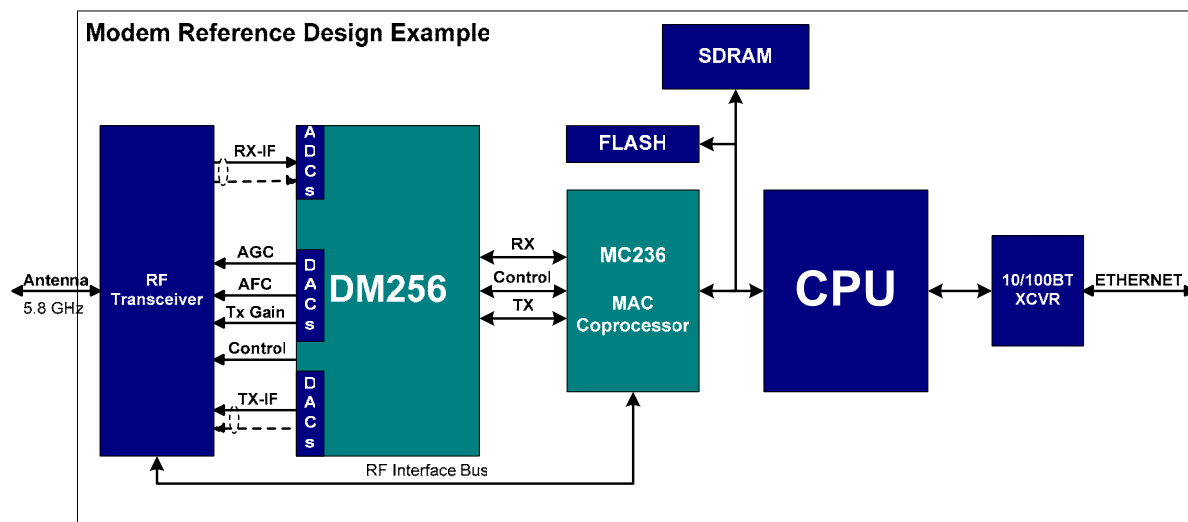
DM256 Block diagram



Specifications*

Modulation	OFDM (BPSK, QPSK, 16-QAM, 64-QAM)
Bandwidth	1.75 MHz, 3.5MHz, 7 MHz, 10 MHz
Cyclic Prefix	1/4, 1/8, 1/16, 1/32
Error Control Coding	Concatenated Reed-Solomon Viterbi
SNR for BER 10 ⁻¹⁰	25 dB (64-QAM)
Power Input	3.3V and 1.8V
IF Options	Baseband or Real or Complex IF
IF Frequency	Programmable from (½BW) to (20 MHz – ½BW)
DAC	10 bits
Differential Nonlinearity	TYP: +/- 0.5 LSB
ADC	10 bits
Differential Nonlinearity	TYP: +/- 0.5 LSB

*Subject to change



Ordering Information

Product	Part Number PQFP Packaging	Part Number BGA Packaging
DM256 ASIC	WS-DM256-C Commercial Temperature	WS-DM256-BC Commercial Temp.
	WS-DM256-I Industrial Temperature	WS-DM256-BI Industrial Temp.

Evolution™ WiMAX DM256 Family of Products also includes
 3.5 GHz Reference Kit
 5.8 GHz Reference kit
 MC236 Mac Coprocessor
 Consult separate product brief for detailed info