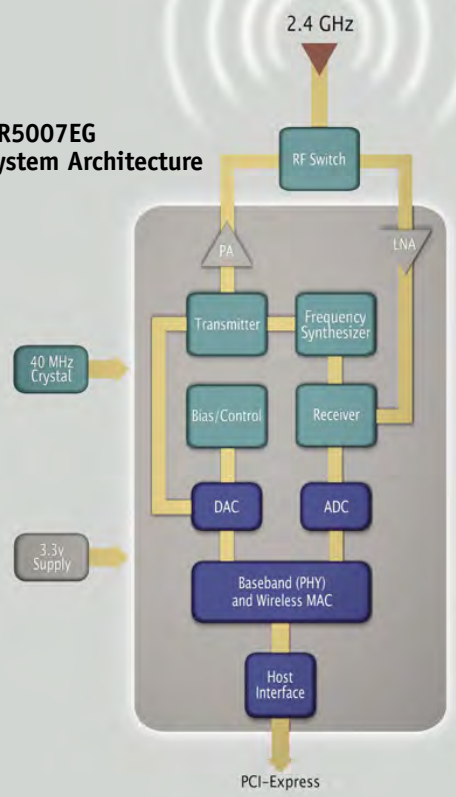
AR5007EG Technology Overview

Introducing the Atheros AR5007EG, our second generation single-chip IEEE 802.11b/g WLAN solution with support for PCI Express. AR5007EG integrates a complete WLAN solution-media access controller (MAC), baseband processor, and a high-performance 2.4-GHz radio in a low-cost digital CMOS design.

With the highest level of integration, the AR5007EG enables the entire WLAN solution to fit on a single-sided Mini Card or ExpressCard design, creating the ideal choice for embedded and aftermarket WLAN solutions for personal computers. This design exploits the highly integrated ability of the PCI Express bus architecture to support high-performance computing with up to 2.5-gigabit-per-second transmit and receive rates – a 150 percent improvement over the existing PCI architecture.

AR5007EG System Architecture



AR2425

ATHEROS®
COMMUNICATIONS

AR5007EG

Single-chip IEEE 802.11b/g WLAN solution with support for PCI Express™

AR2425
Integrates an entire 802.11b/g solution in a low cost CMOS design

AR5007EG Solution Highlights

- Uses digital CMOS technology exclusively, minimizing power consumption and cost while maximizing reliability
- Highly integrated single chip PCI Express CMOS solution with MAC/baseband processor and 2.4 GHz radio
- Compliant with IEEE 802.11b, 802.11g, 802.11d and 802.11i standards
- Supports draft 802.11e Quality of Service (QoS) standard
- Hardware encryption for security provides Advanced Encryption Standard (AES), Temporal Key Integrity Protocol (TKIP) and Wired Equivalent Privacy (WEP) without performance degradation
- Extended tuning range (2.300-2.500 GHz) enables worldwide use

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TransCore LP
Exhibit 1015

AR2425 Single-Chip 802.11b/g PCI Express CMOS MAC/Baseband/Radio

- PCI Express Base specification 1.0a compliant
- Operates from 2.300 to 2.500 GHz
- Dynamic Frequency Selection/Transmit Power Control (DFS/TPC) support
- Industrial temperature version (-40 to 85˚C) option available
- Advanced wideband receiver with best path sequencer for better range and multipath resistance than conventional equalizer-based designs
- Eliminates all IF filters and most RF filters; no external voltage-controlled oscillators (VCOs) or surface acoustic wave (SAW) filters needed
- Rx filter supports blocking specifications for half & quarter rate channels
- No external FLASH or RAM memory needed
- Serial EEPROM, LEDs, GPIOs peripheral interfaces
- Low power sleep modes

AR5007EG Specifications

Chipset	AR2425
Frequency Band	2.4 GHz
Network Standard	802.11b, 802.11g
Modulation Modes	OFDM with BPSK, QPSK, 16 QAM, 64 QAM; DBPSK, DQPSK, CCK
FEC Coding Rate	1/2, 2/3, 3/4
Hardware Security	AES, TKIP, WEP
Quality of Service	802.11e (draft)
Media Access Technique	CSMA/CA
Host Interface	PCI Express
Peripheral Interface	GPIOs, LEDs
Supported Data Rates	
IEEE 802.11b	1 to 11 Mbps
IEEE 802.11g	6 to 54 Mbps
Operating Voltage	1.8V +/-5% 3.3V +/-10%
Package Dimensions	13mm x 13mm
Package	64-pin LPCC

Reference Design Highlights

- PCI Express Mini Card 1.0 specification compliant single sided board design delivers lowest RBOM cost
- Worldwide regulatory compliant (country list available on request)
- Single worldwide SKU
- Integrated WPA supplicant supports Windows® drivers for Windows Vista,™ Windows XP, Windows 2000
- A single driver and firmware code base supports previous generation Atheros chipsets, providing backward compatibility with legacy designs
- Client utility supports configuration profiles, current link status, statistics and diagnostics

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