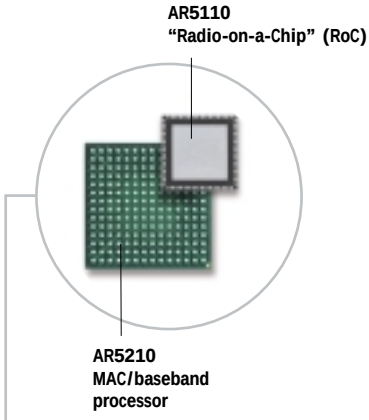
Driving the wireless future™

ATHEROS™ COMMUNICATIONS

AR5000

High-Speed, High-Capacity Wireless LAN Connectivity



- **Highly Integrated IEEE 802.11a 5GHz Wireless LAN Solution**
- **Complete Two-Chip System in Mainstream Digital CMOS**

The Atheros AR5000 Wireless LAN Solution

The Atheros AR5000 solution provides full wireless LAN (WLAN) connectivity based on the IEEE 802.11a 5GHz standard. The highly integrated two-chip set comprises the world's first complete 5GHz "Radio-on-a-Chip" (RoC) and MAC/baseband processor. The AR5000 chipset supports all IEEE 802.11a standard data rates up to 54 Mbps as well as extended rates up to 72 Mbps in Atheros Turbo Mode™. In addition, the broad spectrum allocation at 5GHz allows for more non-overlapping channels and less co-channel interference. The combination of high speeds and additional channels results in increased WLAN system capacity to support many users and a wide variety of high bandwidth applications.

Highlights

- Support for IEEE 802.11a standard
- Uses CMOS technology exclusively, minizing power consumption and cost while maximizing reliability
- Highly integrated 2-chip set
- 5 GHz Radio-on-a-Chip
- 802.11a MAC/baseband processor
- 152/128, 128/104 and 64/40-bit WEP encryption at full line speed without performance degradation, as well as unique per link keys, dynamic key exchange and IEEE 802.1x security
- Quality of Service support
- 72 Mbps Turbo Mode
- DFS/TPC for International operation

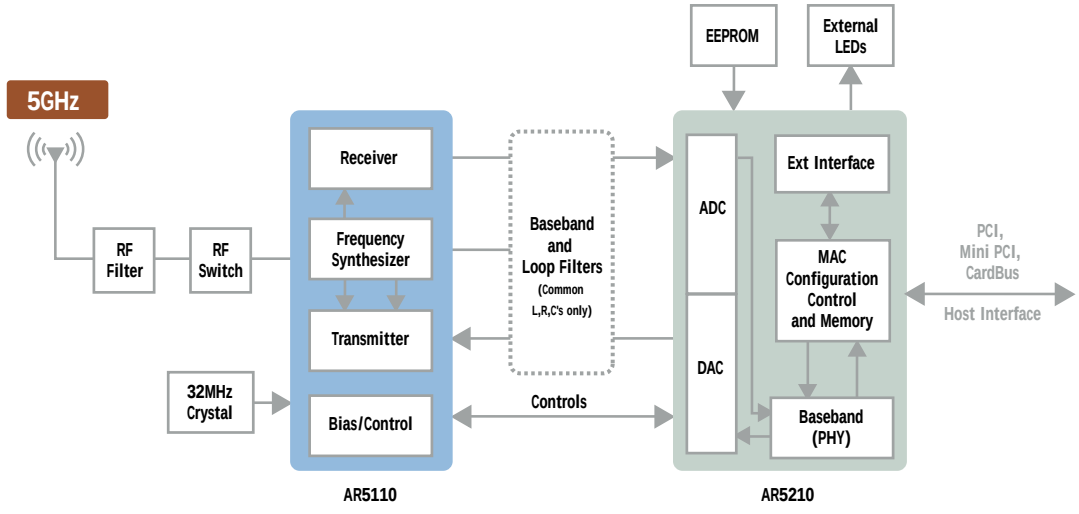
Chip Set Overview

The AR5000 5GHz Wireless LAN Solution comprises two low-power chips, each of which rely exclusively on standard-process CMOS. As a results, the chip set delivers reliable, cost-effective connectivity.

The chipset includes:

AR5210 MAC/baseband processor

- 802.11a MAC and baseband processing
- No external Flash or RAM memory needed
- PCI 2.2 and PC Card 7.1 host interfaces
- Serial EEPROM, LEDs, GPIOs peripheral interfaces
- Anaolg-to-digital and digital-to-analog converters
- Low power sleep mode



AR5110 Radio-on-a-Chip (RoC)

- Support for 802.11a standard
- Integrated power amplifier (PA) and low noise amplifier (LNA)
- External PA and LNA can be used for special applications
- Eliminates the need for external voltage-controlled oscillators (VCOs) or surface acoustic wave (SAW) filters

Applications

- PCI, Mini PCI and CardBus clients for desktops and laptops
- Large and small enterprise access points
- Access points for 'hot-spots' or public-area LANs in locations such as airports and hotels
- Home residential gateways to support devices such as set-top boxes and game consoles
- Consumer electronic devices for videos, audio and telephony
- High-speed wireless bridging between buildings
- Embedded devices such as POS terminals and bar code scanners
- Telematic applications such as vehicular data and fleet management

802.11a Technology

At the heart of the AR5000 5GHz Wireless LAN Solution is Atheros 802.11a technology. This technology includes implementation of Orthogonal Frequency Division Multiplexing (OFDM) modulation scheme, which is key to high-performance wireless networking.

OFDM mitigates multipath intersymbol interferance at high data rates by simultaneously transmitting multiple subcarriers on orthogonal frequency channels. Each subcarrier is modulated at a low symbol rate. Because this approach is tolerant of many common channel impairments, OFDM improves range and reliability, making it the ideal choice for supporting multiple high-bandwidth tasks in real time.

AR5000 Key Features

- **Supports all 802.11a data rates of 6,9,12,18,24,36,48 and 54Mbps**
- **Offers extended speeds up to 72Mbps in Atheros Turbo Mode™**
- **Implements OFDM modulation for better multipath tolerance**
- **Supports BPSK,QPSK,16 QAM, and 64 QAM OFDM modulation schemes**
- **Has a low power design for longer battery life**
- **Provides 152/128, 128/104 and 64/40-bit WEP encryption at full line speed without performance degradation, as well as unique per link keys, dynamic key exchange and IEEE 802.1x Security**
- **Allows for upgrades to new standards and technologies for QoS, Security and DFS/TPC**
- **Supports Windows XP, 2000, ME,98 and NT4; WHQL tested**

AR5000 Chipset Specifications

Frequency Band	5.150-5.350 GHz	
Network Standard	IEEE 802.11a	
Network Architectures	Ad Hoc, Infrastructure	
Modulation Technology	Orthogonal Frequency Division Multiplexing	
Modulation Techniques	BPSK, QPSK, 16 QAM, 64 QAM	
FEC Coding Rates	1/2, 2/3, 3/4	
Encryption Key Lengths	40,104,128 bit	
Initialization Vector Length	24 bit	
Media Access Technique	CSMA/CA	
Host Interfaces	PCI, Mini PCI, CardBus	
Supported Data Rates		
IEEE 802.11a Standard Mode	6, 9, 12, 18, 24, 36, 48, 54 Mbps	
Atheros Turbo Mode™	12, 18, 24, 36, 48, 72 Mbps	
Operational Temperature Range	0-70°	
Operational Humidity Range	0-95% non-condensing	
Chip Specifications	**AR5110**	**AR5210**
Operating Voltage	2.5V +/- 5%	2.5V +/- 10%
	3.3V +/- 10%	3.3V +/- 10%
Package Dimensions	9mm x 9mm	15mm x 15mm
Packaging	64-pin leadless	196-pin BGA
	plastic chip carrier	plastic package

ATHEROS™ COMMUNICATIONS

Atheros Communications, Inc.
529 Almanor Avenue
Sunnyvale, CA 94085-3512

Call: 408-773-5200
Fax: 408-773-9940
Email: sales@atheros.com

Atheros Communications, KK
4th floor, Sanko-Biko Building
1-2-6, Uchi-kanda, Chiyoda ward
Tokyo 101-0047, Japan

Call: 03.5282.4111
Fax: 03.5282.4116
Email: sales_asia@atheros.com

Atheros Communications, Inc.
P.O. Box No. 333
Fo Tan Post Office
N.T., Hong Kong

Call: 852.82061131
Fax: 852.82061301
Email: sales_asia@atheros.com

www.atheros.com

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