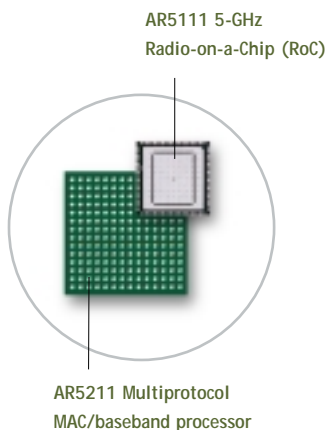


AR5001A

AR5001A Second-Generation 802.11a WLAN Solution

Enhancing the security, performance, range and robustness of 802.11a wireless networking, the Atheros AR5001A Second-Generation 802.11a Solution enables strong alternatives to conventional wire-line LANs. Building upon the inherently high quality of 802.11a operation in the interference-free 5-GHz band, the Second-Generation 802.11a Solution opens the way for wide-scale deployment of wireless networks.



Highlights

- Support for IEEE 802.11a
- Uses CMOS technology exclusively minimizing power consumption and cost while maximizing reliability
- Highly integrated 2-chip set
- 5-GHz Radio-on-a-Chip
- Multiprotocol MAC/baseband processor
- Full line-speed support for the Advanced Encryption Standard without performance degradation. Legacy support for TKIP and WEP
- Quality of Service support (QoS)
- 108-Mbps Turbo Mode
- Dynamic Frequency Selection/Transmit Power Control (DFS/TPC) for international operation
- Extended 802.11a tuning range: 5.150 - 5.850 GHz
- Support for draft IEEE 802.11e, f, h, and i standards
- Enhanced performance, transmission range and reliability

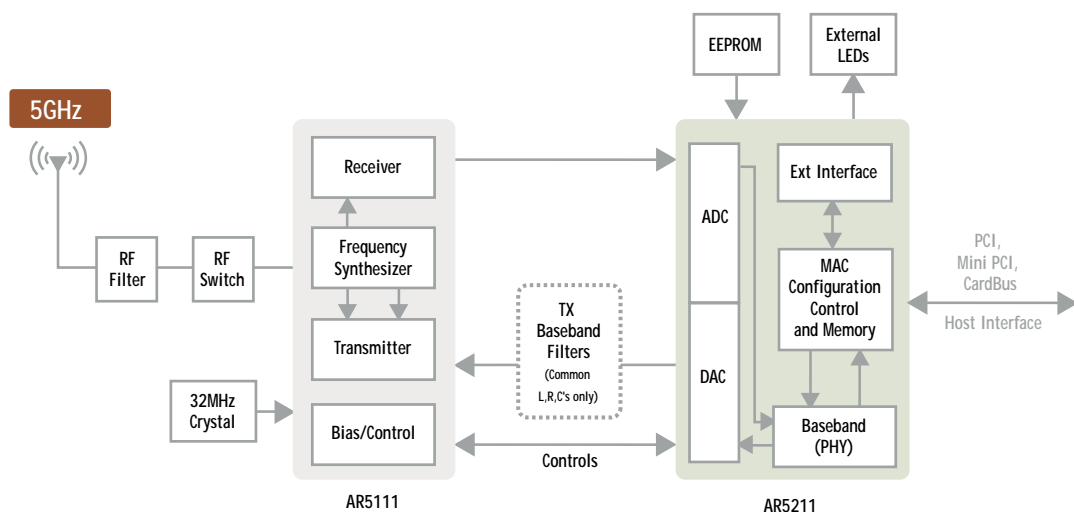
Chipset overview

The AR5001A Second-Generation 802.11a Solution comprises two low-power chips, each of which rely exclusively on standard-process CMOS. As a result, the chip set delivers reliable, cost-effective connectivity.

The chipset includes:

AR5211 Multiprotocol MAC/baseband processor

- Full Featured 802.11a MAC/Baseband with AES, DFS/TPC and QoS support
- Smart Select™ technology automatically chooses the data rate, error-correction mode, radio channel, power-management method, and security technology best suited to any situation
- PCI 2.2 and PC Card 7.1 host interfaces with DMA support
- Integrated analog-to-digital and digital-to-analog converters
- Serial EEPROM, LEDs, GPIOs peripheral interfaces
- Low-power operational and sleep modes



AR5111 5-GHz Radio-on-a-Chip (RoC)

- Dynamic IF Dual Conversion architecture provides super-heterodyne performance at Zero IF prices
- Support for IEEE 802.11a standard
- Integrated second-generation power amplifier (PA) and low-noise amplifier (LNA)
- External PA and/or LNA can be used for special applications
- Enhancements to the transmit and receive chains
- Eliminates all IF filters and most RF filters; no external voltage-controlled oscillators (VCOs) or surface acoustic wave (SAW) filters needed

Applications

- CardBus PC cards
- PCI and Mini PCI boards
- SOHO/residential gateways
- Set-top box and advanced TV products that share video and data throughout the home
- Consumer electronic devices for videos, audio and telephony
- Embedded devices such as POS terminals and bar code scanners
- Telematic applications such as vehicular data and fleet management

Second-generation 802.11a

Atheros second-generation 802.11a technology includes the second-generation implementation of the Orthogonal Frequency Division Multiplexing (OFDM) modulation scheme with 15 advances in OFDM radio design. As the modulation scheme for both 802.11a and the draft 802.11g standards, OFDM is key to high-performance wireless networking.

OFDM mitigates multipath intersymbol interference 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.

AR5001A Features Include

- ▶ Full hardware support for Advanced Encryption Standard (AES) security—at full line-speed with no performance degradation. Support for Temporal Key Integrity Protocol (TKIP) and WEP.
- ▶ Quality of Service (QoS) for real time video, audio voice
- ▶ Dynamic Frequency Selection (DFS) and Transmit Power Control (TPC) for international use
- ▶ Up to 108-Mbps Atheros Turbo Mode™ in addition to standard rates of 6, 9, 12, 18, 24, 48 and 54-Mbps.
- ▶ Smart Select™ optimization of data rate, error-correction mode, radio channel, power-management, and security
- ▶ Superior link robustness through proprietary channel estimation and error correction, as well as low noise, high linearity, RF front end and analog baseband circuits.
- ▶ Extended 5.150 to 5.850-GHz tuning range

AR5001A Chipset Specifications

Frequency Band	5.150 - 5.850 GHz	
Network Standard	802.11a	
Network Architectures	Ad hoc, Infrastructure	
Modulation Technology	OFDM	
Modulation Techniques	BPSK, QPSK, 16 QAM, 64 QAM	
FEC Coding Rates	1/2, 2/3, 3/4	
Security		
Encryption	AES, TKIP, WEP	
Authentication	802.1x	
Quality of Service	802.11e draft	
Media Access Technique	CSMA/CA	
Peripheral Interface	EEPROM, GPIOs, LEDs	
Host Interface	PCI, Mini PCI, CardBus	
Supported Data Rates		
IEEE 802.11a Standard Mode	6 - 54 Mbps	
Atheros Turbo Mode	12 - 108 Mbps	
Chip Specifications	AR5111	AR5211
Operating Voltage	2.5V +/- 5%	2.5V +/- 10%
	3.3V +/- 10%	3.3V +/- 10%
Package Dimensions	9mm x 9mm	15mm x 15mm
Packaging	64 LPCC	196 PBGA



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