

Technology Overview

WLAN is ubiquitous in notebook and netbook PCs, a standard feature especially in portable PC platforms, meeting user demand for mobile wireless connectivity. Many PCs are shipping with 11n technology, and a large proportion of value-class notebooks and netbooks now feature Atheros' popular 1-stream 11n configuration, Align™ Bluetooth, a popular personal area network technology, is contained in nearly half of netbook PCs shipping today, enabling wireless connectivity with peripherals such as keyboards, mice and headsets. As a result, many portable PC platforms contain both WLAN and Bluetooth capabilities. However, these two wireless technologies are commonly located on separate PCIe cards within the same system, posing size and cost design challenges.

Product Overview

Industry's first 1-stream 11n & Bluetooth design on Half-Mini Card

With the growing demand for both WLAN and Bluetooth in portable PCs, Atheros has developed the industry's first 1-stream 11n plus Bluetooth combo solution on a Half-Mini Card. The AR9002WB-1NGB delivers the 11n performance of Atheros Align's AR9285, the popular single-chip 11n 1-stream PCIe solution featured in notebooks and netbooks of seven of the top 10 PC OEMs (as of Q309). This market-leading 11n solution combines with Atheros' Bluetooth 2.1 + EDR solution optimized for PCs, which is upgradeable to Bluetooth 3.0.

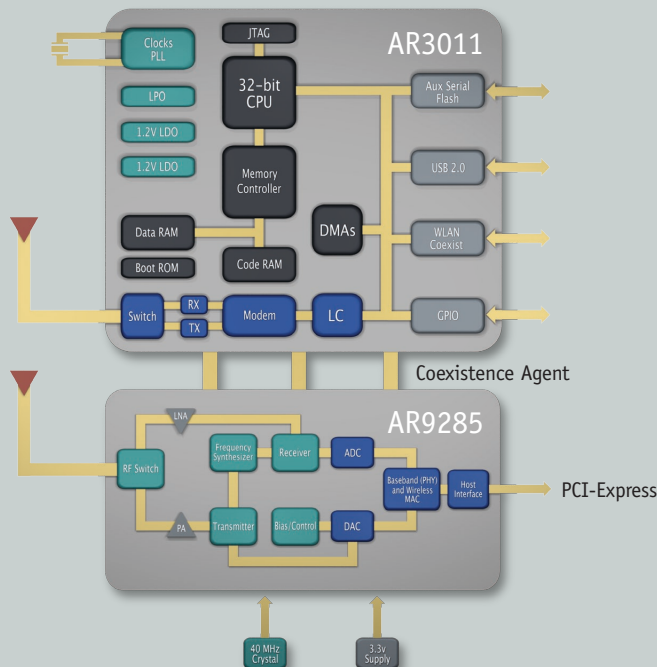
Atheros Universal Wireless Cooperation™

Atheros new WLAN and Bluetooth combo solution goes beyond coexistence to enable cooperation between WLAN, Bluetooth and even 3G technologies co-located on PC platforms. To support this new level of radio coexistence, Atheros has engineered a suite of advanced wireless techniques to deliver Atheros Universal Wireless Cooperation, consisting of channel protection and timesharing mechanisms, custom 3G coexistence optimization, and Atheros' proprietary WLAN/Bluetooth Coexistence Agent™.

Single-board efficiency

By combining WLAN and Bluetooth on a single board, the AR9002WB-1NGB offers a 20% RBOM reduction vs. separate WLAN and Bluetooth boards. The single board design enables sharing of elements such as the PCB and antennas to reduce duplication. The AR9285 integrates the MAC/baseband and radio transceiver, as well as the power amplifier, low noise amplifiers and antenna switch – the entire RF front end.

AR9002WB-1NGB Architecture



AR9002WB-1NGB

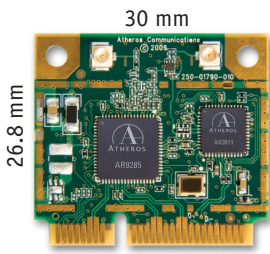
Industry's First 1-stream 11n PCIe and Bluetooth Combo Solution



AR9285 and AR3011 combine the throughput of 1-stream 11n with the ease and simplicity of Bluetooth

Solution Highlights

- Combines AR9285 single chip 1-stream 11n and AR3011 single chip Bluetooth solutions on a single card
- Atheros Universal Wireless Cooperation™ support for maximum performance
- Simultaneous WLAN and BT operation
- Seamless end user experience from standalone solutions
- Compact WLAN and BT solution for small PC designs
- Optimal low cost RBOM
- Supports up to 150 Mbps for WLAN portion
- Software upgradable to Bluetooth 3.0
- Optional 3G coexistence and filtering
- BQB and Wi-Fi Alliance certified



WB195

AR9002WB-1NGB Reference Design

- PCI Express Half-Mini Card 1.1 specification compliant
- PCI Express 1.1 for WLAN, USB 2.0 for Bluetooth
- Worldwide regulatory compliant (country list available on request)
- Single worldwide SKU
- Driver support on Windows XP and Win7, as well as Linux

AR9285

Single-Chip 802.11n-Compatible PCI Express CMOS MAC/Baseband/Radio

- Highly compact, small footprint package
- Fourth generation solution with integrated power amplifier and low noise amplifier for best total solution cost
- PCI Express Based Specification 1.1 compliant
- Low power sleep modes supported

AR3011

Single-Chip Bluetooth® 2.1 + EDR upgradable to Bluetooth 3.0

- Designed for PC applications
- Integrated Radio and Baseband on a single chip
- 2.4 GHz Class 2 Bluetooth Radio
- Supports both EDR of 2 Mbps ($\pi/4$ -DQPSK) and 3 Mbps (8-DPSK)
- -87 dBm radio sensitivity
- +4 dBm maximum output power
- Eliminates the need for Balun and matching network

Atheros Communications is a leading developer of semiconductor system solutions for wireless and wired network communications products. Atheros combines its wireless and networking systems expertise with high-performance radio frequency (RF), mixed signal and digital semiconductor design skills to provide highly integrated chipsets that are manufactured on low-cost, standard complementary metal-oxide semiconductor (CMOS) processes. Atheros technology is used by a broad base of leading customers, including personal computer, networking equipment and consumer device manufacturers.

AR9002WB-1NGB

AR9285 Specification

Frequency Band	2.4 GHz
Network Standard	802.11b, 802.11g, 802.11n
Modulation Modes	OFDM with BPSK, QPSK, 16 QAM, 64 QAM; DBPSK, DQPSK, CCK
FEC Coding Rate	1/2, 2/3, 3/4, 5/6
Hardware Security	AES, TKIP, WEP
Quality of Service	802.11e
Media Access Technique	CSMA/CA
Communication Interface	PCI Express
Peripheral Interface	GPIOs, LEDs
Supported Data Rates	
IEEE 802.11b	1 to 11 Mbps
IEEE 802.11g	6 to 54 Mbps
IEEE 1-stream 802.11n	6.5 to 150 Mbps
Operating Voltage	1.2V +/-5%, 3.3V +/-10%
Package Dimensions	8 mm x 8 mm
Package	68-pin LPCC

AR3011 Specifications

Frequency Band	2.4000 - 2.4835 GHz
Bluetooth Standard	BT 3.0+HS/BT2.1+EDR
Modulation technology	G-FSK, $\pi/4$ -DQPSK, 8-DPSK
Communication Interface	USB 2.0
Peripheral Interface	GPIOs
Auxiliary Memory Interface	Serial Flash
Package Dimensions	6 mm x 6 mm QFN
Power Supply	Two integrated 1.2v regulators

For more information on the AR9002WB-1NGB or other solutions from Atheros contact your local representative:

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