AR9002U
(AR9280+AR7010)
2.4/5 GHz 2-stream dual-band
802.11n WLAN solution for USB

Solution Highlights
• 802.11n-compliant wireless LAN solution, consisting of integrated MAC/BaseBand, 2.4/5 GHz radios and an 802.11 WLAN accelerator
• Providing embedded 802.11n WLAN access point and client functionality for broadband and consumer electronic platforms
• Enables PHY rate of up to 300 Mbps
• Based on Atheros’ fourth-generation 802.11n technology
• Compliant with IEEE 802.11a, 802.11b, 802.11g, 802.11d, 802.11e, 802.11h, 802.11i, and 802.11n
• Lead-free RoHS compliant

Atheros XSPAN® Technology
Atheros offers the industry’s most innovative and complete portfolio of 802.11n wireless LAN chip solutions. This generation of Atheros’ XSPAN 802.11n technology builds upon the company’s XSPAN leadership – with enhanced performance, higher integration, smaller form factors and lower overall cost – to meet the needs of the rapidly growing 802.11n market. Like all Athers’ 11n solutions, fourth-generation solutions are compliant to the IEEE 802.11n specification.

Atheros fourth-generation XSPAN chips feature:
• Leading Integration that delivers end-product cost and form factors to drive broad market adoption of 802.11n products;
• Single- and Dual-Band, and Multiple MIMO Configurations that enable OEMs to balance product price/performance for specific applications and market segment requirements;
• Rich Media & Peripheral Interfaces that anticipate the requirements for advanced media networking applications and allow end-product feature differentiation;
• Easy Network Setup with the industry’s simple network configuration software that supports both the PIN and push-button setup methods.

Product Overview
The Atheros AR9002U UB94 is based on the AR9280 IEEE 802.11a/b/g/n MAC/baseband/radio and the AR7010 WLAN accelerator.

The AR9280 is a highly integrated single-chip solution for 2.4 and 5 GHz 802.11n wireless local area networks (WLANs) that enables high performance 2x2 MIMO configurations for wireless applications demanding robust link quality, maximum throughput and range. The AR9280 integrates a multi-protocol MAC, baseband processor, analog to digital and digital to analog (ADC/DAC) converters, 2x2 MIMO radio transceiver, and PCI Express interface in an all-CMOS device for low power and small form factor applications.

The AR7010 is a highly flexible and cost effective accelerator that provides an embedded 802.11n WLAN access point and client functionality for broadband and consumer electronic platforms. It integrates an embedded CPU with on-chip memory to offload major computation-intensive 802.11 functions, such as encapsulation/decapsulation, aggregation, rate control and beacon management from the host CPU. It will also allow focus on dedicated tasks, increasing the overall system performance with the lowest RBOM impact. It is an ideal solution for platforms where the host CPU has limited processing bandwidth.

When used in a single design, the AR9002U chip-set enables a low-cost, compact solution with USB interface.
### UB94 Reference Design Highlights
- Support for both USB dongle and USB module form factors
- Compliant with USB 2.0 standard
- Support CD-WLANess installation
- Line rate WLAN to LAN performance
- Interoperability with 802.11a, 802.11b, 802.11g and 802.11n compliant products
- Driver support for Windows 7, Vista, XP and Linux operating systems
- Worldwide regulatory compliance

### AR9280 Radio
- All-CMOS MIMO solution interoperable with IEEE 802.11a/b/g/n WLANs
- 2x2 MIMO technology improves effective throughput and range over existing 802.11a/b/g products
- 2.4/5 GHz WLAN MAC/BB processing

### AR7010 802.11n WLAN Accelerator
- Embedded CPU to offload the host processor from computation-intensive 802.11 functions
- A USB 2.0 interface or single-lane PCI Express 1.1 endpoint interface for communication to the host
- A single-lane PCI Express 1.1 root complex interface that can interface to the AR928x single-chip 802.11n MAC/BB/Radio

### AR9002U (AR9280+AR7010) Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency Band</td>
<td>2.4 and 5 GHz</td>
</tr>
<tr>
<td>Network Standard</td>
<td>802.11a, 802.11b, 802.11g, 802.11d, 802.11e, 802.11h, 802.11i, and 802.11n</td>
</tr>
<tr>
<td>Modulation Technology</td>
<td>OFDM with BPSK, QPSK, 16 QAM, 64 QAM; DBPSK, DQPSK, CCK</td>
</tr>
<tr>
<td>FEC Coding</td>
<td>1/2, 2/3, 3/4, 5/6</td>
</tr>
<tr>
<td>Hardware Encryption</td>
<td>AES, TKIP, WEP</td>
</tr>
<tr>
<td>Quality of Service</td>
<td>802.11e</td>
</tr>
<tr>
<td>Communications Interface</td>
<td>USB 2.0</td>
</tr>
<tr>
<td>Peripheral Interface</td>
<td>GPIOs, LEDs</td>
</tr>
<tr>
<td>Memory Interface</td>
<td>EEPROM, Flash</td>
</tr>
<tr>
<td>Supported Data Rates</td>
<td></td>
</tr>
<tr>
<td>IEEE 802.11a</td>
<td>6 - 54 Mbps</td>
</tr>
<tr>
<td>IEEE 802.11b</td>
<td>1 - 11 Mbps</td>
</tr>
<tr>
<td>IEEE 802.11g</td>
<td>6 - 54 Mbps</td>
</tr>
<tr>
<td>IEEE 802.11n</td>
<td>6.5 - 300 Mbps</td>
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</tbody>
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