Wireless Solutions

Libertas™
Wireless LAN 802.11g(b) Access Point,
Wireless Gateway Chipset
88W8000G and 88W8510

Libertas™

PRODUCT OVERVIEW

The Marvell® Libertas™ 88W8000G and 88W8510 chipset comprises the world's most integrated CMOS 802.11g(b) access point/gateway solutions. The 88W8000G RF transceiver integrates a low noise amplifier, a voltage-controlled oscillator and a frequency synthesizer, as well as other necessary RF and analog functions onto one chip. The 88W8510 device is a single chip that combines the functions of the Direct Sequence Spread Spectrum (DSSS) and Orthogonal Frequency Division Multiplexing (OFDM) baseband processor, Medium Access Control (MAC) processor, embedded ARM CPU, on-chip memory, advanced encryption, Quality of Service (QoS), external SDRAM/FLASH memory controller, and one Fast Ethernet MAC and PHY. The high level of integration reduces the overall Bill of Materials (BOM) cost for an access point/gateway by eliminating the need for an external CPU and Fast Ethernet port for wired infrastructure connectivity. Together, the 88W8000G and 88W8510 chipset supports IEEE 802.11g data rates of 6, 9, 12, 18, 24, 36, 48, and 54 Mbps as well as 802.11b rates of 1, 2, 5.5, and 11 Mbps. There is also support for proprietary data rates of 22 Mbps and 72 Mbps. The 88W8000G and the 88W8510 chipset provides an optimal solution for access points as well as wireless home gateway applications.
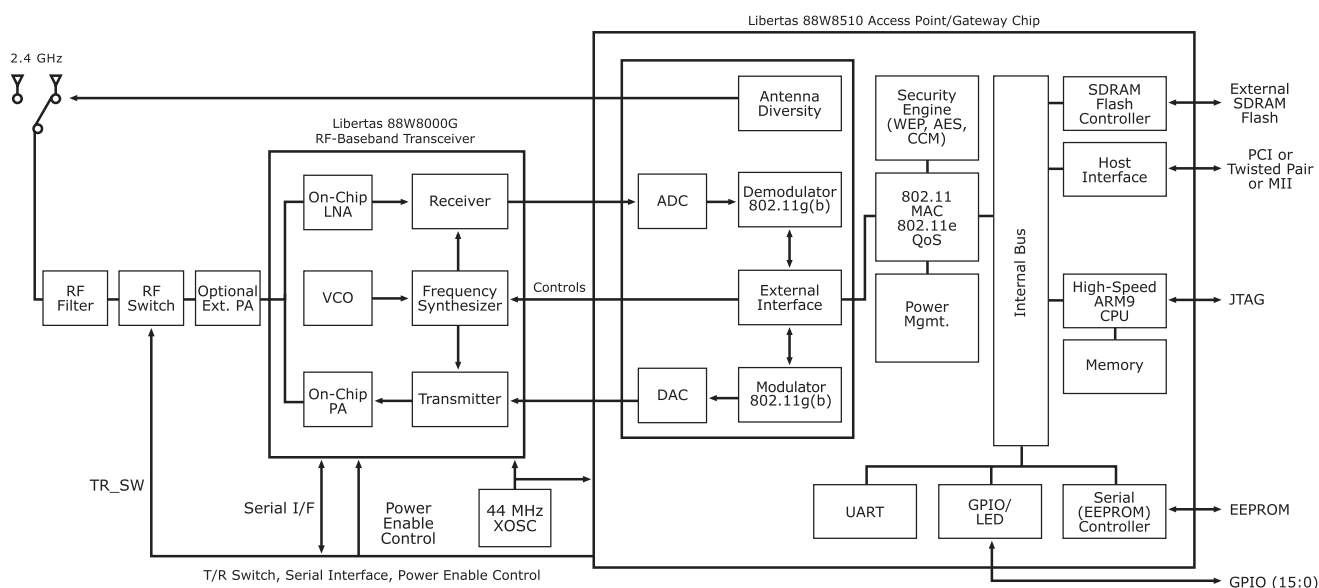

Fig 1. Libertas WLAN 802.11g(b) Access Point/Gateway Chipset (88W8000G and 88W8510) Block Diagram

88W8000G FEATURES

- Integration of RF to analog baseband transmit and receive functionalities
- Flexibility in using internal or external power amplifier
- Provision for external as well as integrated power loop control
- High receiver sensitivity
- Programmable frequency synthesizers with integrated VCOs and I/Q generation
- Small 9mm x 9mm, 64-pin QFN package

BENEFITS

- Reduces BOM cost, simplifies board layout and provides smaller form factor
- Allows users to provide an integrated or high-performance solution
- Stabilizes power amplifier output at user designated values across temperature, voltage supply and semiconductor variations
- Improves detection of weak signals and increases range
- Provide for longer range in terms of adaptive gain adjustments for best signal reception
- Reduced footprint allowing for compact designs

MARVELL®

88W8510 FEATURES

- Embedded ARM processor for flexible MAC architecture

- High multi-path delay spread tolerance

- Within-packet antenna diversity

- Custom DSP design

- Hardware security engine for WEP and 802.11i AES/CCM encryption

- Support for 802.11e QoS

- User selectable MII or PCI external interface

- Integrated 10/100 Mbps Fast Ethernet MAC and PHY with Virtual Cable Tester™ (VCT) technology

- Supports 802.1x secure port protocol and WPA for advance security authentication

- 17mm x 17mm, 256-pin TFBGA package

BENEFITS

- Ensures Libertas 802.11g(b) solution is forward compatible to the IEEE 802.11g standard

- Longer range and better link robustness (reduces drop-outs)

- Longer range and better transmit and receive performance characteristic

- Superior performance and integration of complex functions in a low power design

- Allows the most secure wireless connections without degradation to wireless throughput performance

- Ensures reliable and simultaneous transmissions of data, voice and video

- For external connection to multi-port switches and external system bus

- Reduces BOM cost and provides a method to diagnose cabling and connection faults

- Adds further authentication mechanism for improved security in corporate environments

- Pin compatible to the Marvell Libertas 802.11b access point and gateway chips. Allows easy transition from the Libertas 802.11b to 802.11g(b) products.

APPLICATIONS

The Marvell Libertas 88W8000G and 88W8510 chipset supports 802.11g(b) wireless to Ethernet bridge, access point and wireless gateway applications. Access point and wireless to Ethernet bridge applications are greatly simplified with the on-chip CPU and integrated 10/100 Fast Ethernet PHY and MAC. In addition, the MII interface from the 88W8510 device can be used to support an external Marvell 5-port switch for a wireless and wired gateway application.
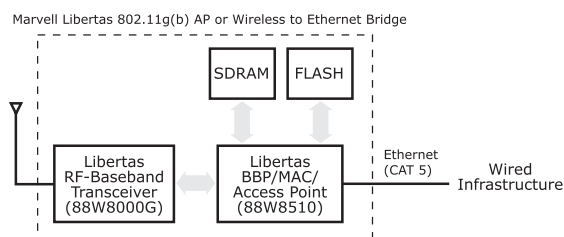
Fig 2. Libertas WLAN 802.11g(b) Access Point Chipset (88W8000G and 88W8510) Applications Diagram
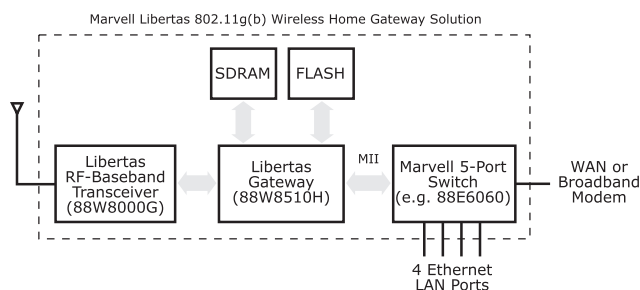
Fig 3. Libertas WLAN 802.11g(b) Gateway Chipset (88W8000G, 88W8510H, 88E6060) Home Gateway Applications Diagram

THE MARVELL ADVANTAGE: The Libertas 802.11g(b) wireless LAN access point/gateway chipset also comes with complete reference designs which include such items as board layout designs, firmware, software, manufacturing diagnostic tools, documentation, and other items to assist customers with product evaluation and production. Marvell's worldwide field applications engineers collaborate closely with end customers to develop and deliver new competitive products to market on time. Marvell utilizes recognized world-leading semiconductor foundry and packaging services to reliably deliver high-volume and low cost total solutions.

For more information, visit our website at www.marvell.com.

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