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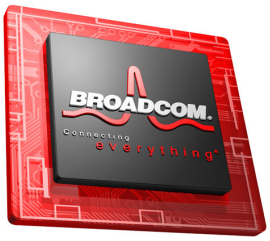
Connecting everything®

BCM94311 PRODUCT Brief



AIRFORCE 54G® 802.11A/B/G PCI EXPRESS® CLIENT REFERENCE DESIGN

FEATURES

- IEEE 802.11a/g CMOS MAC/Baseband client solution with BroadRange™ for PCI Express® conections. Flexible design provides an 802.11b/g or 802.11a/g solution when paired with an appropriate radio.
- Supports Wireless Form Factor (WFF) PCI Express cards for desktop PCs, Wireless on Motherboard (WOMBO) notebook modules, and embedded Wi-Fi® applications for 54g® to PCI Express connections.
- High-speed serial bus supports x1 lane running at 2.5 Gbps in each direction for improved Quality of Service (QoS), Error Detection, Power Management, Hot Plug/Hot Swap capability, and simplified board layout.
- Includes BroadRange signal processing for industry-leading receive sensitivity and extended range.
- Highly integrated chipset provides low cost, low power, and small footprint for integration in a broad range of devices.
- WHQL-certified drivers for Windows® XP, Windows® Me, Windows® 2000, Windows® 98SE, and Windows® 98 operating systems, portable to Linux® and Windows® CE.
- USB 1.1 host for expanded Bluetooth® connectivity and coexistence.
- 4-KB one-time programmable (OTP) memory for customer-defined parameters.
- Industry-standard UART and JTAG interfaces to manage other serial devices for in-system testing.
- On-chip 1.8V/2.5V regulators reduce component cost and power dissipation and simplify PCB design.

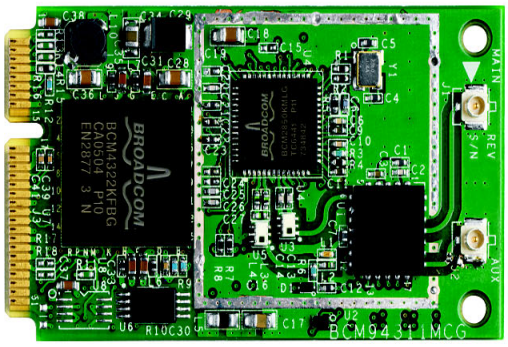
POWER MANAGEMENT

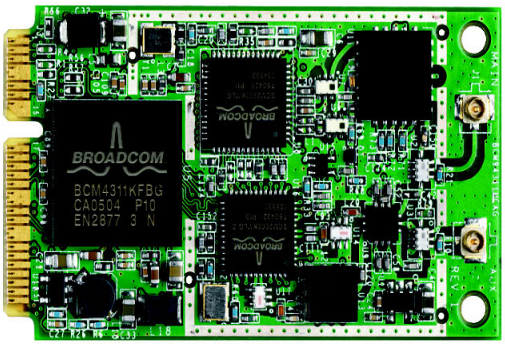
- DSP architecture reduces the power required to transmit data by 30%.
- Low-power consumption improves battery life of Wi-Fi devices, including handheld devices and consumer electronics.
- Meets PCI Power Management Interface version 1.1 (ACPI).
- Designed for low CPU usage to ensure these CPU resources are available for handheld applications.

AIRFORCE FEATURE SET

- SmartRadio™: Continuous calibration reduces test time and improves manufacturability.
- Xpress™ Technology: Standards-based frame bursting improves overall network efficiency.
- 125 High Speed Mode™: Standards-plus performance enhancement delivers best real-world performance when both client and AP support high speed mode.
- BroadRange Technology: Standards-compliant feature increases receive sensitivity to improve range at the higher data rates.
- Security:
  - WPA- and WPA2-CERTIFIED™ for powerful encryption and authentication.
  - AES in hardware for faster data encryption and 802.11i compatibility
  - Cisco® Compatible Extensions (CCX, CCX 2.0) certified
  - SecureEasySetup™ for simple Wi-Fi setup and WPA security configuration
- Worldwide support: Global products supported with worldwide homologated design.

BCM94311 Reference Design


802.11b/g PCI Express Reference Design


802.11a/g PCI Express Reference Design

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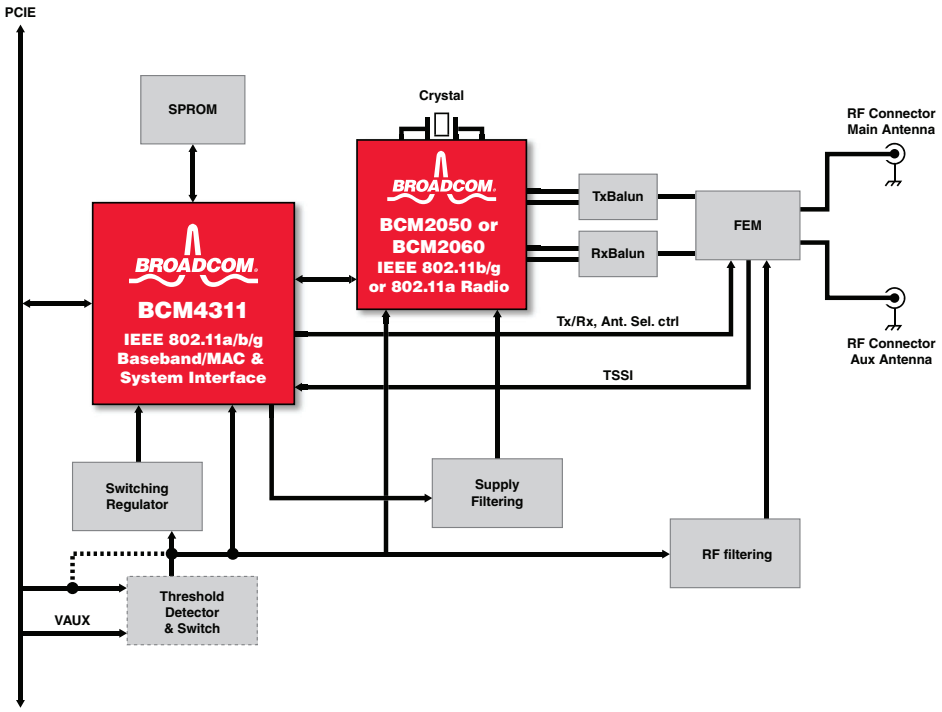
OVERVIEW



BCM94311 Functional Block Diagram

BCM94311 Specifications

Item	*Description*
Interface	USB 1.1 Host interface, PCIe™, GPIO, UART, JTAG
System bus support	PCIe
Standard	IEEE 802.11g with external radio BCM2050, 802.11a with external radio BCM2060
Data rate	802.11g: 54, 48, 36, 24, 18, 12, 9, 6 Mbps; 802.11b, 11, 5.5, 2, 1 Mbps
Modulation	OFDM, CCK, DQPSK, DBPSK
Network architectures	Infrastructure and ad hoc
Operating frequencies	2.4 GHz—2.497 GHz, 4.9 GHz —5.85 GHz with 2060 option
Operating channels	11 for North America; 13 for Europe, and 14 for Japan
RF output power	20 dBm maximum
Antenna connectors	Hardware diversity support—Transmit and Receive
Power requirements	3.3V for reference designs
Security	802.1x; WEP; WEP2; WPA, WPA2; TKIP; WEP128; Weak-key avoidance; CCX, CCX 2.0; 128-bit OCB mode AES, 802.11i
Software support	Microsoft® WHQL certified for Windows XP, Windows 2000, Windows Me, WindowsSE, and Linux operating systems.
Certifications	IEEE 802.11 compliant; WI-FI CERTIFIED™; ACPI power management

ORDERING INFORMATION

- BCM4311: 196-pin package
- BCM94311: Reference design

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