Technical Description

Broadcom Wireless LAN mini-PCI Card, model BCM94309MP

Data Transmission Rates 802.11b:

11 and 5.5 Mbit/s	8-chip complementary code keying (CCK)
2 Mbit/s	11-chip differential quadrature phase shift keying (DQPSK)
1 Mbit/s	11-chip differential binary phase shift keying (DBPSK)

Data Transmission Rates 802.11a/g:

54,48,36,24,18,12,9 & 6Mbits/s	Orthogonal Frequency Division Multiplexing (OFDM)

Antenna (highest gain)**:**

Type:	
Maximum Gain - 2400-2500MHz:	2.9dBi
Maximum Gain - 5150-5350MHz:	5.6dBi

Special FCC Requirements

Frequency Stability (15.407 (g))

FCC 15.407(g) states: “Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the users manual.”

The device uses 8 channels between 5.18GHz and 5.32GHz. The carrier is 20MHz wide centered at these frequencies. IE: Channel 32 (5.18GHz) would have the fc centered at 5.18GHz with a band width of 20Mhz or 5.17 to 5.19 GHz. This provides a guard band of 20 MHz (5.17 GHz - 5.15 GHz).

The device also requires a +/- 20 ppm XTAL over temperature and with aging. This is required per the 802.11a specification. Based on the tolerance of the XTAL and the 20 MHz guard band between 5.15GHz and 5.35 GHz the device will maintain emissions within the UNII 1 and 2 bands under normal operating conditions specified in the user manual.

Insuring Indoor Use in 5.15-5.25 GHz Band (15.407 (e))

FCC 15.407(e) states: “Within the 5.15-5.25 GHz band, U-NII devices will be restricted to indoor operations to reduce any potential for harmful interference to co-channel MSS operations.”

The user manual includes the following statement: “This device is restricted to indoor use only. Industry Canada and the FCC requires this product to be used indoors due to its operation in the frequency range 5.15 to 5.25 GHz”

Discontinue Transmitting with absence of Data or operational failure (15.407 (c))

FCC 15.407(e) states: “The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signaling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization a description of how this requirement is met.”

Data transmission is always initiated by software, which is then passed down through the MAC, through the digital and analog baseband, and finally to the RF chip. Several special packets (ACKs, CTS, PSPoll, etc...) are initiated by the MAC. These are the only ways the digital baseband portion will turn on the RF transmitter, which it then turns off at the end of the packet. Therefore, the transmitter will be on only while one of the aforementioned packets is being transmitted.