

Statement

The Broadcom 54gMiniPCI card BCM94306MP is a wireless LAN card in the 2.4 GHz frequency range using up to 54 Mbit/sec data rate and OFDM modulation technique. (Modular approval under **FCC ID QDS-BRCM1005**).

The card acts as 802.11 b product using DSSS modulation technique if the data rate is below 11 Mbit/sec. All the parameters were checked at different data rates. The test report reflects the worst-case of data rate and modulation technique.

The WLAN card is named in the DELL laptop as "Dell™ TrueMobile™ WLAN Card" (see User's Guide)

This application is for the use in following DELL laptop models:

| Laptop Model | Antenna type | Peak Antenna gain |
|--------------|-----------------------|-------------------|
| PP01L | Foxconn CCBG-CABLE-ME | 3.55 dBi |
| PP05L | Wistron NeWeb CA5-Q | 2.26 dBi |
| | Hitachi HFT01-DL01 | 1.2 dBi |
| PP07L | Wistron NeWeb CAA-C | 2.55 dBi |
| PP02X | Wistron NeWeb CA9-C | 2.39 dBi |
| | Hitachi HFT04-DL01 | 1.1 dBi |

User guide

If a radio is included in the laptops mentioned above a separate user guide is provided for the WLAN and/or Bluetooth. These user guides includes all the necessary statements related to the radio portion.

EMC/Radio Test report

Covers full testing on PP01L as per FCC 15.247, since PP01L uses highest antenna gain of 3.55 dBm for all antenna related parameters. The spurious emissions dominated by the laptop, pre-testing data on the different models identified the PP02X as worst-case sample for radiated emissions for these measurements.

However Data for the spurious and band edge compliance are provided in a second report for each model.

No conducted RF tests, were done since this application refers to the module approval with the **FCC ID QDS-BRCM1005** but reported in the main EMC report for better overview.

The SAR tests were done on following Laptop Models:

The SAR tests were done using the WLAN card BCM94306MP **and** the built in Bluetooth module (**FCC ID: IXMUB2211S**). It was first evaluated which is the worst case (Bluetooth on or off). The results in the SAR reports represent the worst-case mode

PP02X; PP05L including a Bluetooth module and PP07L WLAN only.

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Annex1

Bluetooth evaluation

According the public notice DA 00-1407 paragraph 6.), the module can be used without further testing since the **antenna is integrated in the module** and no changes were made.

The minimum distance guaranteed by construction is 21.5 cm to any of the WLAN antennas. (only PP05L and PP02X have a built in Bluetooth radio)

For this reason the transmitters are not co-located according the October 2002 TCB training, since the distance is more than 20 cm.

However SAR testing was performed with Bluetooth on which was identified as the worst-case configuration.

Detailed distance information from DELL see below.

Distance measurements provided by DELL

PP05L

Hi Lothar,

This e-mail relates to the distances between the Bluetooth antenna and the Wireless LAN antennas in **PP05L**:

Please note, my calculations show the distances in cm to be:

From the BT module to the Right (MAIN) antenna is $9 \frac{5}{8}'' = 24.4\text{cm}$

From the BT module to the Left (AUX) antenna is $8 \frac{7}{8}'' = 22.5\text{cm}$

The closest it can be physically is $8.5'' = 21.5\text{cm}$

Best regards

Chris

-----Original Message-----

From: Jason Limoges
Sent: Tuesday, January 14, 2003 1:25 PM
To: Chris McGough
Subject: FW: Blackdog/Bondi Co-existence with BT Module
Importance: High
Chris,

Here is the BT/802.11 antenna distance measurement. Based on this, it appears we don't have perform any co-existent SAR or emissions testing on Bondi. Please confirm this with Cetecom and let me now.

Thanks

Jason Limoges
Regulatory Engineer
Dell Computer Corporation
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PP02X

Hi Lothar,

Please find attached the e-mail from Dell confirming the distance between the Bluetooth and Wireless LAN antennas for **PP02X**:

thanks
Chris

-----Original Message-----

From: Jason Limoges
Sent: Monday, February 03, 2003 7:14 AM
To: Brian Bedrosian; David Boldy
Cc: Chris McGough
Subject: RE: ABBA SAR testing.
Importance: High

Dave,

Abacus (**PP07L**) does not have Bluetooth.

Here are the antenna separation distances for Lindbergh (**PP02X**).

From the BT module to the Right antenna is 24.5cm. From the BT module to the Left antenna is 30.5cm.

There should be (2) Lindbergh's w/ the WNC antenna and (1) with the Hitachi antenna at Broadcom. Please confirm with Chris.

Jason Limoges
Regulatory Engineer
Dell Computer Corporation
Tel: (512) 728-4623

See Photos “BT antenna distance rear” and “BT antenna distance front”.

Note: The “BT antenna distance rear” photo shows actually the BT module mounted vertically like the other antennas

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