EMC Technologies Pty Ltd
ABN 82 057 105 549
176 Harrick Road
Keilor Park Victoria Australia 3042

Ph: + 613 9365 1000
Fax: + 613 9331 7455
email: melb@emctech.com.au

EMI TEST REPORT FOR CERTIFICATION
to
FCC PART 15 Subpart C (Section 15.247) & RSS-210
Class II Permissive Change

FCC ID:	EJE-WL0010
Industry Canada ID:	337J-WL0010
Test Sample:	GOLAN INTEL Mini-PCI WLAN Module
Model:	WM3945ABG
Report Number:	M070316_Cert_WM3945ABG_DTS_C2PC
Tested for:	Fujitsu Australia Ltd.
Issue Date:	23rd April 2007

NATA Accredited Laboratory Number:
5292

EMI TEST REPORT FOR CERTIFICATION
to
FCC PART 15 Subpart C (Section 15.247) & RSS-210
Class II Permissive Change

EMC Technologies Report No. M070316_Cert_WM3945ABG_DTS_C2PC

Issue Date: 23rd April 2007

CONTENTS

EMI TEST REPORT FOR CERTIFICATION
to
FCC PART 15 Subpart C (Section 15.247) & RSS-210
Class II Permissive Change

Report Number:	M070316_Cert_WM3945ABG_DTS_C2PC
Test Sample:	GOLAN INTEL Mini-PCI WLAN Module
Model:	WM3945ABG
Manufacturer:	INTEL Corp
FCC ID:	EJE-WL0010
Industry Canada ID:	337J-WL0010
Equipment Type:	Intentional Radiator (Transceiver)
Manufacturer (LifeBook):	Fujitsu Ltd - Mobile Computing Division
Address:	1-1 Kamikodanaka 4-Chome, Nakahara-Ku, Kawasaki, Japan
Contact:	Mr. Tsuyoshi Uchihara
Tested for:	Fujitsu Australia Ltd
Test Standards:	FCC Part 15 – Radio Frequency Devices (August 2006) FCC Part 15 Subpart C - Intentional Radiators Section 15.247: 2400 – 2483.5 MHz & 5725 – 5850 MHz Operation Bands ANSI C63.4 – 2003 OET Bulletin No. 65 RSS-210 Issue 6 Low Power Licence-Exempt RadioCommunication Devices: 6.2.2 (o) 2400 – 2483.5 MHz & 5725 – 5850 MHz Spread Spectrum RSS-102 Issue 1 (Provisional), Evaluation Procedure for Mobile and Portable Radio Transmitters with respect to Health Canada's Safety Code 6 for Exposure of Humans to Radio Frequency Fields
Test Dates:	3rd to 23rd April 2007
Test Engineer:	**Chieu Huynh - B.Eng (Hons) Electronics**
Attestation:	*I hereby certify that the device(s) described herein were tested as described in this report and that the data included is that which was obtained during such testing.*
Authorised Signatory:	**Chris Zombolas** **Technical Director** **EMC Technologies Pty Ltd**

EMI TEST REPORT FOR CERTIFICATION
to
FCC PART 15 Subpart C (Section 15.247) & RSS-210
Class II Permissive Change

1.0 INTRODUCTION

Testing was performed on the INTEL Mini-PCI Wireless LAN Module (GOLAN 11a+b/g), Model: WM3945ABG installed in Fujitsu notebook PC.

The WM3945ABG WLAN module has been certified by Fujitsu Australia Ltd under the FCC ID: EJE-WL0010 (IC: 337J-WL0010). The intention of this application is to add host models (Fujitsu Notebooks) and re-certify the WM3945ABG WLAN module installed in host models: E8410/E8490 and A6030 as a **Class II Permissive Change.**

The GOLAN WLAN module was originally certified by INTEL as a modular approval under FCC ID: PD9WM3945ABG (Canada ID: 1000M-WM3945ABG). The intention of this application is to get a Limited Modular approval for this WLAN module for use in Fujitsu notebook PCs. The Radio modules are installed in a controlled environment at the Fujitsu notebook production/assembly factory.

The GOLAN WLAN supports IEEE 802.11b, IEEE 802.11g and IEEE802.11a (DTS & U-NII) configurations. Tests were performed in all three configurations.

The results for configurations IEEE 802.11b, IEEE 802.11g and IEEE802.11a (DTS: 5725 – 5850 MHz) are reported in this test report.

The results for IEEE 802.11a (U-NII) are reported separately.
Refer to EMC Technologies' test report: M070316_Cert_WM3945ABG_NII_C2PC (U-NII)

The second transmitter in the notebook is a Bluetooth module, model: EYTF3CSFT. This Bluetooth module has been recently certified by Fujitsu Australia Ltd under the FCC ID: EJE-BT0001 (IC: 337J-BT0001).

Test results and procedures were performed in accordance with the following Federal Communications Commission (FCC) standards/regulations:

47 CFR, Part 15, Subpart C:	Rules for intentional radiators (particularly section 15.247)
Section 15.203:	Antenna requirements
Section 15.205:	Restricted bands of operation
Section 15.207:	Conducted Emission Limits
Section 15.209:	Radiated Emission Limits (General requirements)
Section 15.247:	Operation in the bands 902-928 MHz, 2400-2483.5 MHz, 5725-5850 MHz

The test sample **complied** with the requirements of 47 CFR, Part 15 Subpart C - Section 15.247.

The test sample also complied with the Industry Canada RSS-210 issue 6 (Low Power Licence-Exempt Radiocommunication Devices (All Frequency Bands)) clause 6.2.2(o) and the RF exposure requirements of RSS-102.

The measurement procedure used was in accordance with ANSI C63.4-2003 and OET Bulletin No. 65. The instrumentation conformed to the requirements of ANSI C63.2-1996.

1.1 Summary of Results

1.1.1 FCC Subpart C, Section 15.247

FCC Part 15 Subpart C Clauses	Industry Canada RSS-210 Clauses	Test Performed	Results
15.203	5.5	Antenna Requirement	**Note 1**
15.205	6.3	Operation in Restricted Band	**Complies**
15.207	6.6	Conducted Emissions	**Note 1**
15.209	6.3	Radiated Emissions	**Complies**
15.247 (a)(2)	6.2.2(o)(iv)	Channel Bandwidth	**Note 1**
15.247 (b)(3)	6.2.2(o)(b)	Peak Output Power	**Note 1**
15.247 (c)		Antenna Gain > 6 dBi	**Not Applicable.** Antenna gain < 6 dBi
15.247 (d)	6.2.2(o)(e1)	Out of Band Emissions	**Complies**
15.247 (e)	6.2.2(o)(iv)	Peak Power Spectral Density	**Note 1**
15.247 (f)		*Hybrid Systems	**Not Applicable.** EUT does not employ a hybrid system
15.247 (g)		Frequency Hopping	**Not Applicable.** EUT is not a frequency hopping
15.247 (h)		Frequency Hopping	**Not Applicable.** EUT is not a frequency hopping
15.247 (i)		Radio Frequency Hazard	**Complies**

*Hybrid systems are those that employ a combination of both frequency hopping and digital modulations technique.

Note 1: Refer to EMC test report M060108_Cert_WM3945ABG_DTS with FCC ID: EJE-WL0010 (IC ID: 337J-WL0010)

1.1.2 FCC Subpart E, Section 15.407 - WLAN

Refer to EMC Technologies Report M070316_Cert_WM3945ABG_NII_C2PC

1.2 Modifications by EMC Technologies

No modifications were required.

2.0 GENERAL INFORMATION

(Information supplied by the Client)

2.1 EUT (WLAN) Details

Transmitter:	Mini-PCI Wireless LAN Module
Wireless Module:	GOLAN (11a+b/g)
Model Number:	WM3945ABG
Manufacturer:	Intel Corporation
Modulation Type:	Direct Sequence Spread Spectrum (DSSS for 802.11b) Orthogonal Frequency Division Multiplexing (OFDM for 802.11g) Orthogonal Frequency Division Multiplexing (OFDM for 802.11a)
802.11a and 802.11g	BPSK – 6Mbps, 9Mbps QPSK – 12Mbps, 18Mbps 16QAM – 24Mbps, 36Mbps 64QAM – 48Mbps, 54Mbps
802.11b	DBPSK – 1Mbps DQPSK – 2Mbps CCK – 5.5Mbps, 11Mbps
Frequency Range:	2.4 –2483.5 GHz for 11b/g 5.15 - 5.35 GHz and 5.725 - 5.850 GHz for 11a
Number of Channels:	11 channels for 11b or 11g 13 channels for 11a
Antenna gain:	Max antenna gain is less than 6 dBi.
Power Supply:	3.3 VDC from PCI bus

Frequency Allocation Table:

				Americas	Europe	Japan	High Band
Band	Channel	Lower Frequency	Upper Frequency	SKU #1 MOW1	SKU #2 MOW2	SKU #3 Japan	SKU #4 ROW
802.11b/g	1-11	2.401 GHz	2.473 GHz	X	X	X	X
802.11b/g	12-13	2.467 GHz	2.483 GHz		X	X	X
802.11a	34-46	5.08 GHz	5.22 GHz		X	X	
802.11a	36-48	5.150 GHz	5.250 GHz	X	X		
802.11a	52-64	5.250 GHz	5.350 GHz	X	X		
802.11a	100-140	5.470 GHz	5.725 GHz		X		
802.11a	149-161	5.725 GHz	5.825 GHz	X			X
802.11a	165	5.815 GHz	5.835 GHz	X			X

Channels Tested and Output power setting:

Channel and Mode:	Output Power setting (average, dBm)
802.11b mode	
*Channels 1	16
*Channel 6 and 11	18
802.11g mode	
*Channel 1	16
*Channel 6	17
*Channel 11	15
802.11a mode	
**Channel 36	16
**Channels 52 and 64	17
*Channels 149, 157 and 165	17

*Channels tested and reported in this report

**Channels tested and reported in the U-NII submission (M070316_Cert_WM3945ABG_NII_C2PC)

2.2 Operational Description

The GOLAN WLAN Module was tested in Fujitsu host notebook E8410(80W) / E8490(100W).

The Intel WLAN test software "CRTU" was used to transmit continuously during the tests. For Spurious and Harmonics tests both radio modules (WLAN and Bluetooth) were simultaneously transmitting.

2.3 Test Configuration

Radiated tests were performed for measuring the harmonics and spurious from the transmitters.

Limited Modular Approval (LMA) details to cover the following Fujitsu notebook configurations:

Fujitsu Notebook Model	WLAN Module	WLAN Antenna	FCC/IC CERTIFICATION STATUS
E8210	GOLAN WM3945ABG	2 x Inverted F antenna	GRANT Issued FCC ID: EJE-WL0010
Q2010		2 x Inverted F antenna	
S7110		2 x Monopole Antenna	
Following NEW Models to be added			
E8410/E8490	GOLAN WM3945ABG	2 x Inverted F antenna	Tested model in this application
A6030		2 x Inverted F antenna	Low gain

Fujitsu Notebook Model	WLAN antenna type	WLAN antenna Peak gain [dBi]			
		2.4GHz band	5GHz low band	5GHz Mid band	5GHz High band
E8210	Inverted F	2.47	-0.44	0.38	0.38
Q2010	Inverted F	2.32	3.23	3.36	1.48
S7110	Monopole	2.08	1.66	0.59	1.79
E8410/E8490	Inverted F	1.65	3.96	3.24	3.36
A6030	Inverted F	1.66	3.19	2.6	2.03

The WLAN Module was tested in Fujitsu host notebook E8410/E8490 as this notebook has the highest antenna gain (5 GHz low band and 5 GHz high band).

The location of the antennas and the design of the antennas (Inverted-F) are identical in both host E8410/E8490 and A6030 notebooks. Refer to Appendix_A1_E8410/E8490 and Appendix_A2_A6030 for details.

To qualify for a class 2 permissive change, the output power was re-measured on host E8410/E8490. The highest output powers are report below.

The highest output powers were granted:

Frequency MHz	Output Power Granted dBm
5800	17.9
2400	17.1

The highest new output powers are measured:

Frequency MHz	New Output Power Measured dBm
5800	17.8
2400	17.6

2.4 Host PC Details

2.4.1 E8410 (80W) / E8490 (100W) Model Notebook

Host notebook :	LifeBook E series
Model Name:	E8410(80W) / E8490(100W)
Serial Number:	Pre-production Sample
Manufacturer:	FUJITSU LIMITED
CPU Type and Speed:	Core2 Duo T7700 2.40GHz
LCD	15”WUXGA / 15”WSXGA+ / 15”WXGA
Wired LAN:	Intel 82566MM : 10 Base-T/100 Base-TX/1000Base-T
Modem:	Agere MDC1.5 modem Model: D40
Port Replicator Model:	FPCPR63
AC Adapter Model:	80W: SEC100P2-19.0(Sanken), ADP-80NB A(Delta), SEC100P3-19.0(Sanken, 3pin) 100W: SED110P2-19.0(Sanken)
Voltage:	19 V
Current Specs:	4.22A / 5.27
Watts:	80W / 100W
RADIO MODULES	
Module # 1:	WLAN (Golan IEEE802.11a+b/g)
WLAN Model Number:	WM3945ABG
WLAN Manufacturer:	Intel Corp.
Interface Type:	Mini-Card Wireless LAN Module
Antenna Types:	Nissei Electric Inverted F Antenna Model: CP313551(T1:Left), CP313552(T2:Right) Location: Top edge of LCD screen
Antenna gain:	Refer antenna data provided separately (Appendix A)
Module # 2:	Bluetooth Module
Model Number:	EYTF3CS FT
Manufacturer:	TAIYO YUDEN
Interface Type:	USB
Antenna Types:	Taiyo Yuden Monopole Antenna, Model: CP331590 Location: Right hinge of LCD screen
Antenna gain:	Refer antenna data provided separately
Max. Output Power:	4 dBm

2.4.2 A6030 Model Notebook

Host notebook :	LifeBook A series
Model Name:	A6030
Serial Number:	Pre-production Sample
Manufacturer:	FUJITSU LIMITED
CPU Type and Speed:	Core2 Duo T7700 2.40GHz
LCD	15.4"WXGA
Wired LAN:	Marvell 88E8055 : 10 Base-T/100 Base-TX/1000Base-T
Modem:	Agere MDC1.5 modem Model: D40
Port Replicator Model:	Non
AC Adapter Model:	80W: SEC100P2-19.0(Sanken), ADP-80NB A(Delta)
Voltage:	19V
Current Specs:	4.22A
Watts:	80W
RADIO MODULES	
Module # 1:	WLAN (Golan IEEE802.11a+b/g)
WLAN Model Number:	WM3945ABG
WLAN Manufacturer:	Intel Corp.
Interface Type:	Mini-Card Wireless LAN Module
Antenna Types:	Nissei Electric Inverted F Antenna - Model: CP115445 Location: Top edge of LCD screen
Antenna gain:	Refer antenna data provided separately (Appendix A)
Module # 2:	Bluetooth Module
Model Number:	EYTF3CS FT
Manufacturer:	TAIYO YUDEN
Interface Type:	USB
Antenna Types:	Taiyo Yuden Monopole Antenna, Model: CP341612 Location: edge of palm rest area
Max. Output Power:	4 dBm

2.5 Test Procedure

Emissions measurements were performed in accordance with the procedures of ANSI C63.4-2003. Radiated emissions tests were performed at a distance of 1 and 3 metres from the EUT. OET Bulletin 65 dated June 2001 was used for reference.

2.6 Test Facility

2.6.1 General

Radiated Emission measurements were performed at EMC Technologies open area test site (OATS) situated at Lerderderg Gorge, near the township of Bacchus Marsh in Victoria, Australia. Conducted measurements at an antenna ports were performed at EMC Technologies' laboratory in Tullamarine, Victoria Australia.

The above test sites have been accepted for testing by the Federal Communications Commission (FCC) - **FCC Registration Number 90560**.
EMC Technologies open area test site (OATS) has also been accepted by Industry Canada for the performance of radiated measurements in accordance with RSS 212, Issue 1 (Provisional).
Industry Canada File Number IC 4161.

2.6.2 NATA Accreditation

EMC Technologies is accredited in Australia to test to the following standards by the National Association of Testing Authorities (NATA).

"FCC Part 15 unintentional and intentional emitters in the frequency range 9kHz to 18 GHz excluding TV receivers (15.117 and 15.119), TV interface devices (15.115), cable ready consumer electronic equipment (15.118), cable locating equipment (15.213) and unlicensed national information infrastructure devices (Sub part E)."

The current full scope of accreditation can be found on the NATA website: www.nata.asn.au
It also includes a large number of emission, immunity, SAR, EMR and Safety standards.

NATA is the Australian national laboratory accreditation body and has accredited EMC Technologies to operate to the IEC/ISO17025 requirements. A major requirement for accreditation is the assessment of the company and its personnel as being technically competent in testing to the standards. This requires fully documented test procedures, continued calibration of all equipment to the National Standard at the National Measurements Laboratory (NML) and an internal quality system to ISO 9002. NATA has mutual recognition agreements with the National Voluntary Laboratory Accreditation Program (NVLAP) and the American Association for Laboratory Accreditation (A^2LA).

2.7 Test Equipment Calibration

All measurement instrumentation and transducers were calibrated in accordance with the applicable standards by an independent NATA registered laboratory such as Agilent Technologies (Australia) Pty Ltd or the National Measurement Laboratory (NML). All equipment calibration is traceable to Australia national standards at the National Measurements Laboratory. The reference antenna calibration was performed by NML and the working antennas (biconical and log-periodic) calibrated by the NATA approved procedures.

2.8 Ambients at OATS

The Open Area Test Site (OATS) is an area of low background ambient signals. No significant broadband ambients are present however commercial radio and TV signals exceed the limit in the FM radio, VHF and UHF television bands. Radiated prescan measurements were performed in the shielded enclosure to check for possible radiated emissions at the frequencies where the OATS ambient signals exceeded the test limit.

RESULTS
WLAN Module – WM3945ABG (802.11b, 802.11g and 802.11a (DTS))

3.0 SPURIOUS EMISSION MEASUREMENTS

3.1 Test Procedure

Testing was performed in accordance with the requirements of FCC Part 15.247(d).

Radiated emission measurements were performed to the limits as per section 15.209. The measurements were made at the open area test site.

The EUT was set up on the table top (placed on turntable) of total height 80 cm above the ground plane, and operated as described in section 2 of this report. The EMI Receiver was operated under software control via the PC Controller through the IEEE.488 Interface Bus Card Adaptor. The test frequency range was sub-divided into smaller bands with sufficient frequency resolution to permit reliable display and identification of possible EMI peaks while also permitting fast frequency scan times. Calibrated EMCO 3115, EMCO 3116 and ETS standard gain horn antennas were used for measurements between 1 to 40 GHz.

The measurement of emissions between 30 - 1000 MHz, refer to EMC test report M060108_Cert_WM3945ABG_DTS with FCC ID: EJE-WL0010 (IC ID: 337J-WL0010)

The measurement of emissions above 1000 MHz was measured using a following setting:
Peak measurements setting: RBW = VBW = 1 MHz
Average measurements setting: RBW = 1 MHz and VBW = 10 Hz

The receiver bandwidth was set to 6 dB.

The EUT was slowly rotated with the Peak Detector set to Max-Hold. This was performed for two antenna heights. When an emission was located, it was positively identified and its maximum level found by rotating the automated turntable, and by varying the antenna height. Each significant peak was investigated with the Quasi-Peak/Average Detectors. The software for cable losses automatically corrected the measurement data for each frequency range, antenna factors and preamplifier gain and all data was then stored on disk in sequential data files. This process was performed for both horizontal and vertical antenna polarisations.

3.2 Calculation of field strength

The field strength was calculated automatically by the software using all the pre-stored calibration data. The method of calculation is shown below:

E = V + AF - G + L Where:

E = Radiated Field Strength in dBµV/m.
V = EMI Receiver Voltage in dBµV. (measured value)
AF = Antenna Factor in dB(m^{-1}). (stored as a data array)
G = Preamplifier Gain in dB. (stored as a data array)
L = Cable loss in dB. (stored as a data array of Insertion Loss versus frequency)

- **Example Field Strength Calculation**

Assuming a receiver reading of 34.0 dBµV is obtained at 90 MHz, the Antenna Factor at that frequency is 9.2 dB. The cable loss is 1.9 dB while the preamplifier gain is 20 dB. The resulting Field Strength is therefore as follows:

34.0 + 9.2 + 1.9 - 20 = 25.1 dBµV/m

Measurement uncertainty with a confidence interval of 95% is:
- Free radiation tests (1000 MHz – 18,000 MHz) ± 4.1 dB

3.3 Radiated Emissions (Spurious and Harmonics)

3.3.1 Frequency Band: 1 – 40 GHz

All measurements above 1 GHz were initially made over a distance of 3 metres. This was decreased to 1.0 metre as the emission levels from the device were very low.

The 74 dBμV/m @ 3m and 54 dBμV/m @ 3m limits are applied for emissions fall in the restricted bands.

Measurements were performed on Fujitsu host notebook E8410/E8490 (5 GHz high band) and the test results are reported.

Testing was performed while both the WLAN transmitter and Bluetooth transmitter continuously operated. Emissions related to the WLAN transmitter (5.725 – 5.850 GHz) is reported below. Emissions in the frequency band (5.15 – 5.35 GHz), refer to M070316_Cert_WM3945ABG_NII_C2PC. Emissions in the frequency band (2.4 – 2.4835 GHz, 802.11b/g) refer to EMC test report M060108_Cert_WM3945ABG_DTS_Class_2 with FCC ID: EJE-WL0010 (IC ID: 337J-WL0010)

Configuration 802.11a (5.725 – 5.850 MHz)

Initial investigations were performed with all data rates: (6 Mbps to 54 Mbps). No significant differences in emissions were observed. Final testing was performed while the transmitter continuously operated with the modulation rate of 6 Mbps (BPSK).

Channel 149 - 5745 MHz

Frequency MHz	Peak Detector dBuV	Average Detector dBuV	Peak Limit dBuV/m	Average Limit dBuV/m	Result
5745	106.1	94.4	-	-	-
11490	67.8	52.3	74.0	54.0	Pass
17235	67.3	51.7	-	-	-
4700	54.1	40.8	74.0	54.0	Pass

Channel 157 - 5785 MHz

Frequency MHz	Peak Detector dBuV	Average Detector dBuV	Peak Limit dBuV/m	Average Limit dBuV/m	Result
5785	106.5	94.5	-	-	-
11570	66.7	51.6	74.0	54.0	Pass
17355	67.4	52.1	-	-	-
4825	57.4	43.3	74.0	54.0	Pass

Channel 165 - 5825 MHz

Frequency MHz	Peak Detector dBuV	Average Detector dBuV	Peak Limit dBuV/m	Average Limit dBuV/m	Result
5825	107.2	95.3	-	-	-
11650	67.1	51.9	74.0	54.0	Pass
17475	66.8	51.4	-	-	-
4854.7	58.1	44.0	74.0	54.0	Pass

Result: Harmonic and spurious emissions were recorded up to 40 GHz. Other harmonics were confirmed low with both RBW and VBW reduced. The worst case emissions were complied with the FCC limits in sections 15.209 and 15.247 by a margin of 1.7 dB. The measurement uncertainty for radiated emissions in this band was ±4.1 dB.

3.3.2 Both WLAN and Bluetooth Transmitters Transmitting

Result: IM spurious emissions were recorded within the restricted bands of up to 40 GHz. Emissions complied with the FCC limits of section 15.209 and 15.247.

3.3.3 Band Edge Measurements

Refer to EMC test report: M060108_Cert_WM3945ABG_DTS and M060108_Cert_WM3945ABG_DTS_Class_2 with FCC ID: EJE-WL0010 (IC ID: 337J-WL0010)

4.0 RADIO FREQUENCY EXPOSURE (HAZARD) INFORMATION

Testing was performed in accordance with the requirements of FCC Part 15.247(i)

Spread spectrum transmitters operating in the 2400 - 2483.5 MHz and 5725 – 5850 MHz bands are required to be operated in a manner that ensures that the public is not exposed to RF energy levels in accordance with CFR 47, Section 1.1307(b)(1).

Transmitter # 1: The WLAN antennas are located on the top edge of LCD screen (2 antennas left and right) and projected distance of greater than 20cm from user.

Transmitter # 2: The Bluetooth antenna is located right hinge of LCD screen and projected distance of less than 20cm from user.

SAR is not required as the WLAN transmitter is mobile device and the power for the Bluetooth transmitter is below the low threshold.

The separation distance between the WLAN and BT antennas is greater than 20cm. Therefore, they are not co-located transmitters.

The MPE calculation shown below is for the WLAN power density.

In accordance with Section 1.1310, the Maximum Permissible Exposure (MPE) limit for the General Population/Uncontrolled Exposure of 1.0 has been applied, i.e 1mW/cm^2.

Friis transmission formula: $Pd = (P*G) / (4*\pi*r^2)$

where: Pd = power density (mW/cm^2)
P = power input to the antenna (mW)
G = antenna gain (numeric)
r = distance to the center of radiation of the antenna (cm)

Prediction frequency = **5785 MHz**
Maximum peak output power = 17.9 dBm = 61.7 mW
Antenna (Inverted F) gain (max) = 3.36 dBi = 2.17 numeric
The power density calculated = 0.03 mW/cm^2

Prediction frequency = **2437 MHz**
Maximum peak output power = 17.1 dBm = 51.3 mW
Antenna (Inverted F) gain (max) = 2.47 dBi = 1.77 numeric
The power density calculated = 0.02 mW/cm^2

MPE limit for uncontrolled exposure at prediction frequency = 1 mW/cm^2

Results: Calculations show that the Radio devices with described antennas complied with Maximum Permissible Exposure (MPE) limit for the General Population/Uncontrolled Exposure

5.0 COMPLIANCE STATEMENT

The INTEL Mini-PCI Wireless LAN Module (GOLAN 11a+b/g), Model: WM3945ABG installed in Fujitsu notebook PCs tested on behalf of Fujitsu Australia Ltd, **comply** with the **Class II Permissive Change** requirements of 47 CFR, Part 15 Subpart C - Rules for Radio Frequency Devices (intentional radiators), Section 15.247 - Operation in the frequency band 2400 - 2483.5 MHz and 5725 – 5850 MHz.

The test sample also complies with the Industry Canada RSS-210 issue 6 (Low Power Licence-Exempt Radiocommunication Devices (All Frequency Bands)) clause 6.2.2(o) 2400 – 2483.5 MHz Spread Spectrum requirements and the RF exposure requirements of RSS-102.

Results were as follows:

FCC Subpart C, Section 15.247

FCC Part 15 Subpart C Clauses	Industry Canada RSS-210 Clauses	Test Performed	Results
15.203	5.5	Antenna Requirement	**Note 1**
15.205	6.3	Operation in Restricted Band	**Complies**
15.207	6.6	Conducted Emissions	**Note 1**
15.209	6.3	Radiated Emissions	**Complies**
15.247 (a)(2)	6.2.2(o)(iv)	Channel Bandwidth	**Note 1**
15.247 (b)(3)	6.2.2(o)(b)	Peak Output Power	**Note 1**
15.247 (c)		Antenna Gain > 6 dBi	**Not Applicable.** Antenna gain < 6 dBi
15.247 (d)	6.2.2(o)(e1)	Out of Band Emissions	**Complies**
15.247 (e)	6.2.2(o)(iv)	Peak Power Spectral Density	**Note 1**
15.247 (f)		*Hybrid Systems	**Not Applicable.** EUT does not employ a hybrid system
15.247 (g)		Frequency Hopping	**Not Applicable.** EUT is not a frequency hopping
15.247 (h)		Frequency Hopping	**Not Applicable.** EUT is not a frequency hopping
15.247 (i)		Radio Frequency Hazard	**Complies**

*Hybrid systems are those that employ a combination of both frequency hopping and digital modulations technique.

Note 1: Refer to EMC test report M060108_Cert_WM3945ABG_DTS with FCC ID: EJE-WL0010 (IC ID: 337J-WL0010)

FCC Subpart E, Section 15.407
Refer to EMC Technologies Report M070316_Cert_WM3945ABG_NII_C2PC

TEST REPORT APPENDICES

APPENDIX A: ANTENNA INFORMATION

APPENDIX B: WLAN and ANTENNA LOCATIONS PHOTOS

Attachment 1: RF Exposure Information