



EMC Technologies Pty Ltd
ABN 82 057 105 549
57 Assembly Drive
Tullamarine Victoria Australia 3043

Ph: + 613 9335 3333
Fax: + 613 9338 9260
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-BT0001
Industry Canada ID: 337J-BT0001

Test Sample: Bluetooth Module
Model: EYTF3CSFT

Report Number: M060410_Cert_EYTF3CSFT_Class_2

Tested for: Fujitsu Australia Ltd.

Issue Date: 7th May 2006

EMC Technologies Pty Ltd reports apply only to the specific samples tested under stated test conditions. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. EMC Technologies Pty Ltd shall have no liability for any deductions, inferences or generalisations drawn by the client or others from EMC Technologies Pty Ltd issued reports. This report shall not be used to claim, constitute or imply product endorsement by EMC Technologies Pty Ltd.



The tests, calibrations or measurements covered by this document have been performed in accordance with NATA requirements which include the requirements of ISO/IEC 17025 and are traceable to national standards of measurement. This document shall not be reproduced, except in full. The certificate on page 3 may be reproduced in full.

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. M060410_Cert_EYTF3CSFT_Class_2

Issue Date: 7th May 2006

CONTENTS

1.0 INTRODUCTION
2.0 GENERAL INFORMATION

RESULTS – Bluetooth, EYTF3CSFT
3.0 SPURIOUS EMI MEASUREMENTS
4.0 RADIO FREQUENCY EXPOSURE
5.0 COMPLIANCE STATEMENT

APPENDIX A: ANTENNA DETAILS

APPENDIX B: BT, WLAN and ANTENNA LOCATIONS PHOTOS



This Laboratory is accredited by the National Association of Testing Authorities, Australia. The tests reported herein have been performed in accordance with its terms of accreditation for FCC Part 15. This document shall not be reproduced, except in full.

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

Report Number: M060410_Cert_EYTF3CSFT_Class_2

Test Sample: Bluetooth Module
Model: EYTF3CSFT
Manufacturer: TAIYO YUDEN

FCC ID: EJE-BT0001
Industry Canada ID: 337J-BT0001
Equipment Type: Intentional Radiator (Transceiver)

Host Notebook Fujitsu Ltd.
Manufacturer: 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, Subpart C – Intentional Radiators
 FCC Part 15.247, 2400 – 2483.5 MHz Operation Band
 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 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: 19th April to 1st May 2006

Test Officer: C. Huynh
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: C. Zombolas
Chris Zombolas
Technical Director
EMC Technologies Pty Ltd



This Laboratory is accredited by the National Association of Testing Authorities, Australia. The tests reported herein have been performed in accordance with its terms of accreditation for FCC Part 15. This document shall not be reproduced, except in full.

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 TAIYO YUDEN Bluetooth Module, Model: EYTF3CSFT installed in Fujitsu notebook PC.

The EYTF3CSFT Bluetooth module has been recently certified by Fujitsu Australia Ltd under the FCC ID: EJE-BT0001 (IC: 337J-BT0001). The intention of this application is to add host models (Fujitsu Notebooks) and re-certify the EYTF3CSFT Bluetooth module installed in hosts: B6210 and C1410 as a **Class II Permissive Change**.

The EYTF3CSFT Bluetooth module was also originally certified by TAIYO YUDEN as a modular approval under FCC ID: RYYEYTF3CSFT (Canada ID: 4389AEYTF3CSFT). The intention of this application is to get a Limited Modular approval for this Bluetooth module for use in Fujitsu notebook PCs. The Radio modules are installed in a controlled environment at the Fujitsu notebook production/assembly factory.

The second transmitter in the notebook is INTEL WLAN module, model: WM3945ABG. This WLAN module has been recently certified by Fujitsu Australia Ltd under the FCC ID: EJE-WL0010 (IC: 337J-WL0010).

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 **Class II Permissive Change** 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.



This Laboratory is accredited by the National Association of Testing Authorities, Australia. The tests reported herein have been performed in accordance with its terms of accreditation for FCC Part 15. This document shall not be reproduced, except in full.

1.1 Summary of Results

FCC Subpart C (Section 15.247)

FCC Part 15, Subpart C Clauses	Industry Canada RSS-210 Clauses	Test Performed	Result
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)(1)	6.2.2(o)(ii)	Channel Occupancy/Bandwidth	Note 1
15.247 (b)(1)	6.2.2(o)(b)	Peak Output Power	Note 1
15.247 (i)		Radio Frequency Hazard	Complies
15.247 (d)	6.2.2(o)(e1)	Out of Band Emissions	Complies

Note 1: Refer to EMC test report **M060108_Cert_EYTF3CSFT** and **M060108_Cert_EYTF3CSFT_Class_2** with FCC ID: EJE-BT0001 (IC ID: 337J-BT0001)

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.

1.2 Modifications by EMC Technologies

No modifications were required.

2.0 GENERAL INFORMATION

(Information supplied by the Client)

2.1 EUT (Bluetooth) Details

Transmitter:	Bluetooth Module
Model Number:	EYTF3CSFT
Manufacturer:	TAIYO YUDEN
Network Standard:	Bluetooth™ RF Test Specification
Modulation Type:	Frequency Hopping Spread Spectrum (FHSS)
Frequency Range:	2402 MHz to 2480 MHz
Number of Channels:	79
Carrier Spacing:	1.0 MHz
Interface Type:	USB
Reference Oscillator:	16 MHz (Built-in)
Power Supply:	3.3 VDC from host.

Frequency allocation:

Channel Number	Frequency (MHz)	Bluetooth Utility power setting
1*	2402	
2	2403	
3	2404	
.	.	
39	2440	
40*	2441	
41	2442	
.	.	
77	2478	
78	2479	
79*	2480	

*Channels tested and reported in this report



This Laboratory is accredited by the National Association of Testing Authorities, Australia. The tests reported herein have been performed in accordance with its terms of accreditation for FCC Part 15. This document shall not be reproduced, except in full.

2.2 Operational Description

The Bluetooth Utility Software 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	Bluetooth Module	Bluetooth Antenna	Antenna Gain dBi	FCC/IC Certification Status
S7110	EYTF3CSFT	Inverted F	2.78	GRANT Issued FCC ID: EJE-BT0001
E8110			-0.22	
E8210			-0.22	
Q2010			3.27	
S6310			0.38	
Following NEW Models to be added				
B6210	EYTF3CSFT	Monopole	-1.3	Class II Permissive Change
C1410		Inverted F	3.20	

Refer to the above table, the Bluetooth antenna installed in the new host B6210 and C1410 notebooks have lower gains than in host Q2010 (had been certified). Therefore, for harmonics and spurious emissions of the Bluetooth (with higher antenna gain) refer to EMC Technologies report numbers: M060108_Cert_EYTF3CSFT and M060108_Cert_EYTF3CSFT_Class_2.

There are IM spurious emissions recorded for host B6210 when both radio modules (WLAN and Bluetooth) were simultaneously transmitting. The IM results are reported under section 3.0 of this report.

Refer to Appendix A1_B6210 and Appendix A2_C1410 for antenna details.

To qualify for a class II permissive change, the output power was re-measured on host B6210. The highest output power is reported below.

Frequency GHz	Output Power Granted dBm	New Output Power Measured dBm
2.4	3.3	3.2



This Laboratory is accredited by the National Association of Testing Authorities, Australia. The tests reported herein have been performed in accordance with its terms of accreditation for FCC Part 15. This document shall not be reproduced, except in full.

2.4 Host PC Details

2.4.1 B6210 Model Notebook

Host notebook :	LifeBook B Series
Model Name:	B6210
Serial Number:	Pre-production Sample
Manufacturer:	FUJITSU LIMITED
CPU Type and Speed:	Yonah-SC(ULV) 1.2GHz
LCD	12"XGA
Wired LAN:	Marvell 88E8055 : 10 Base-T/100 Base-TX/1000Base-T
Modem:	Agere MDC1.5 modem Model: D40
Port Replicator Model:	FPCPR52, FPCPR56, FMV-NPR8, FMV-NPR9
AC Adapter Model:	SEC80N2-16.0(Sanken)
Voltage:	16 V
Current Specs:	3.75A
Watts:	60W
RADIO MODULES	
Module # 1:	Bluetooth Module
Model Number:	EYTF3CSFT
Manufacturer:	TAIYO YUDEN
Interface Type:	USB
Antenna Type:	Taiyo Yuden Monopole Antenna, Model: AH104N2450D2-T Location: Top center edge of LCD screen
Antenna gain:	-1.3 dBi (Refer antenna data provided separately)
Max. Output Power:	4 dBm
Module # 2	WLAN (Golan IEEE802.11a+b/g)
WLAN Model No.:	WM3945ABG
FCC/IC ID:	EJE-WL0010 / 337J-WL0010
WLAN Manufacturer:	Intel Corp.
Interface Type:	Mini-Card Wireless LAN Module
Antenna Types:	2 x Taiyo Yuden Monopole Antenna Model: AH104N2450D2-T Located on top edge(right and left) of LCD screen



This Laboratory is accredited by the National Association of Testing Authorities, Australia. The tests reported herein have been performed in accordance with its terms of accreditation for FCC Part 15. This document shall not be reproduced, except in full.

2.4.2 C1410 Model Notebook

Host notebook :	LifeBook C Series
Model Name:	C1410
Serial Number:	Pre-production Sample
Manufacturer:	FUJITSU LIMITED
CPU Type and Speed:	Yonah-DC 2.16GHz
LCD	15"WXGA / 15"XGA
Wired LAN:	Marvell 88E8055 : 10 Base-T/100 Base-TX/1000Base-T
Modem:	Agere MDC1.5 modem Model: D40
Port Replicator Model:	FPCPR63
AC Adapter Model:	SEC100P2-19.0(Sanken) / SQ2N80W19P-01(Nagano JRC)
Voltage:	19 V
Current Specs:	4.22A
Watts:	80W
RADIO MODULES	
Module # 1:	Bluetooth Module
Model Number:	EYTF3CSFT
Manufacturer:	TAIYO YUDEN
Interface Type:	USB
Antenna Type:	Yokowo Inverted F Antenna, Model: YCE-5250 Location: right hinge of LCD
Antenna gain:	3.2 dBi (Refer antenna data provided separately)
Max. Output Power:	4 dBm
Module # 2	WLAN (Golan IEEE802.11a+b/g)
WLAN Model No.:	WM3945ABG
FCC/IC ID:	EJE-WL0010 / 337J-WL0010
WLAN Manufacturer:	Intel Corp.
Interface Type:	Mini-Card Wireless LAN Module
Antenna Types:	Nissei Electric Inverted F Antenna Model: CP250925 Located on top edge of LCD screen

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.



This Laboratory is accredited by the National Association of Testing Authorities, Australia. The tests reported herein have been performed in accordance with its terms of accreditation for FCC Part 15. This document shall not be reproduced, except in full.

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 (A²LA).

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.



This Laboratory is accredited by the National Association of Testing Authorities, Australia. The tests reported herein have been performed in accordance with its terms of accreditation for FCC Part 15. This document shall not be reproduced, except in full.

RESULTS

Bluetooth Module, Model EYTF3CSFT

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_EYTF3CSFT with FCC ID: EJE-BT0001 (IC ID: 337J-BT0001).

The measurement of emissions above 1000 MHz, appearing in the restricted bands, was made using an average detector with a bandwidth of 1.0 MHz.

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 dB μ V/m.

V = EMI Receiver Voltage in dB μ V. (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 dB μ V 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:

$$34.0 + 9.2 + 1.9 - 20 = 25.1 \text{ dB}\mu\text{V/m}$$

Measurement uncertainty with a confidence interval of 95% is:

- Free radiation tests (1000 MHz – 18,000 MHz) \pm 4.1 dB



This Laboratory is accredited by the National Association of Testing Authorities, Australia. The tests reported herein have been performed in accordance with its terms of accreditation for FCC Part 15. This document shall not be reproduced, except in full.

3.3 Radiated Emissions (IM Spurious)

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.

Testing was performed while both the WLAN transmitter and Bluetooth transmitter continuously operated. IM spurious emissions are reported below.

For harmonics and spurious emissions of the Bluetooth, refer to EMC Technologies report numbers: M060108_Cert_EYTF3CSFT and M060108_Cert_EYTF3CSFT_Class_2 (other host notebooks with higher antenna gain).

Both WLAN and Bluetooth Transmitters Transmitting

802.11a and BT	Frequency MHz	Peak Detector dBuV	Average Detector dBuV	Peak Limit dBuV/m	Average Limit dBuV/m	Result
5745 MHz & 2402 MHz	3344	48.2	32.5	-	-	-
5785 MHz & 2402 MHz	3382	47.6	32.1	-	-	-
5825 MHz & 2402 MHz	3426	46.4	30.8	-	-	-
5760 MHz & 2402 MHz	3357	47.7	32.0	74.0	54.0	Pass
5800 MHz & 2402 MHz	3404	47.5	31.6	-	-	-
5745 MHz & 2441 MHz	3303	49.9	33.4	-	-	-
5785 MHz & 2441 MHz	3344	49.2	33.1	-	-	-
5825 MHz & 2441 MHz	3382	47.3	32.7	-	-	-
5760 MHz & 2441 MHz	3320	46.9	32.2	-	-	-
5800 MHz & 2441 MHz	3357	46.5	32.1	-	-	-
5745 MHz & 2480 MHz	3262	47.1	32.3	74.0	54.0	Pass
5785 MHz & 2480 MHz	3303	48.2	33.6	-	-	-
5825 MHz & 2480 MHz	3346	47.4	33.0	74.0	54.0	Pass
5760 MHz & 2480 MHz	3276	46.7	32.3	-	-	-
5800 MHz & 2480 MHz	3323	46.9	31.8	-	-	-

802.11b and BT	Frequency MHz	Peak Detector dBuV	Average Detector dBuV	Peak Limit dBuV/m	Average Limit dBuV/m	Result
2437 MHz & 2402 MHz	2484	50.1	38.4	74.0	54.0	Pass
2437 MHz & 2441 MHz	2484	49.6	38.2	74.0	54.0	Pass
2437 MHz & 2480 MHz	2484	58.3	44.1	74.0	54.0	Pass
2462 MHz & 2402 MHz	2500	52.7	43.8	74.0	54.0	Pass
2462 MHz & 2441 MHz	2500	52.0	43.2	74.0	54.0	Pass
2462 MHz & 2480 MHz	2500	51.8	43.4	74.0	54.0	Pass

802.11g and BT	Frequency MHz	Peak Detector dBuV	Average Detector dBuV	Peak Limit dBuV/m	Average Limit dBuV/m	Result
2462 MHz & 2402 MHz	2500	51.5	42.7	74.0	54.0	Pass
2462 MHz & 2441 MHz	2500	52.3	42.8	74.0	54.0	Pass
2462 MHz & 2480 MHz	2500	51.4	42.0	74.0	54.0	Pass



This Laboratory is accredited by the National Association of Testing Authorities, Australia. The tests reported herein have been performed in accordance with its terms of accreditation for FCC Part 15. This document shall not be reproduced, except in full.

802.11a and BT	Frequency MHz	Peak Detector dBuV	Average Detector dBuV	Peak Limit dBuV/m	Average Limit dBuV/m	Result
5180 MHz & 2402 MHz	2778	50.4	35.9	74.0	54.0	Pass
5260 MHz & 2402 MHz	2857	54.6	39.2	74.0	54.0	Pass
5320 MHz & 2402 MHz	2917	53.1	38.0	68.3	-	Pass
5180 MHz & 2441 MHz	2740	51.8	37.5	74.0	54.0	Pass
5260 MHz & 2441 MHz	2820	57.2	40.6	74.0	54.0	Pass
5320 MHz & 2441 MHz	2878	56.3	40.3	74.0	54.0	Pass
5180 MHz & 2480 MHz	2700	54.1	38.7	74.0	54.0	Pass
5260 MHz & 2480 MHz	2779	55.1	40.4	74.0	54.0	Pass
5320 MHz & 2480 MHz	2839	55.4	39.7	74.0	54.0	Pass
5210 MHz & 2402 MHz	2809	51.3	37.8	74.0	54.0	Pass
5250 MHz & 2402 MHz	2849	53.7	38.6	74.0	54.0	Pass
5290 MHz & 2402 MHz	2886	53.5	38.4	74.0	54.0	Pass
5210 MHz & 2441 MHz	2771	50.9	37.2	74.0	54.0	Pass
5250 MHz & 2441 MHz	2808	52.6	39.5	74.0	54.0	Pass
5290 MHz & 2441 MHz	2850	55.1	40.1	74.0	54.0	Pass
5210 MHz & 2480 MHz	2732	52.0	36.6	74.0	54.0	Pass
5250 MHz & 2480 MHz	2771	51.7	37.3	74.0	54.0	Pass
5290 MHz & 2480 MHz	2810	52.9	38.0	74.0	54.0	Pass

Result: IM spurious emissions were recorded within the restricted bands of up to 40 GHz. Emissions were complied with the FCC limits in section 15.209 and 15.247. The measurement uncertainty for radiated emissions in this band was ± 4.1 dB.

There are no IM spurious emissions recorded for host C1410 when both radio modules (WLAN and Bluetooth) simultaneously transmitting.



This Laboratory is accredited by the National Association of Testing Authorities, Australia. The tests reported herein have been performed in accordance with its terms of accreditation for FCC Part 15. This document shall not be reproduced, except in full.

4.0 RADIO FREQUENCY EXPOSURE (HAZARD) INFORMATION

Testing was performed in accordance with the requirements of FCC Part 15.247(i) and 15.407(f).

Spread spectrum transmitters operating in the 2400 - 2483.5 MHz, 5150 – 5350 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 Bluetooth antenna is located at the middle of top edge of LCD screen and projected distance of greater than 20cm from user.

Transmitter # 2: 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.

The separation distance between the WLAN and BT antennas is less than 20cm. Therefore, they are co-located transmitters.

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

The MPE calculation shown below is for the WLAN and BT power densities.

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: $P_d = (P \cdot G) / (4 \cdot \pi \cdot r^2)$

where: P_d = 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)

The result was extracted from EMC report: M060108_Cert_WM3945ABG_NII_Class_2

Prediction frequency = **5320 MHz**

Maximum peak output power = 17.8 dBm = 60.3 mW

Antenna (Monopole) gain (max) = 3.23 dBi = 2.104 numeric

The power density calculated = 0.026 mW/cm^2

The result was extracted from EMC report: M060108_Cert_WM3945ABG_DTS (WLAN)

Prediction frequency = **5785 MHz**

Maximum peak output power = 17.9 dBm = 61.7 mW

Antenna (Inverted F) gain (max) = 3.08 dBi = 2.03 numeric

The power density calculated = 0.025 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

The result was extracted from EMC report: M060108_Cert_EYTF3CSFT (BT)

Prediction frequency = **2480 MHz**

Maximum peak output power = 3.3 dBm = 2.1 mW

Antenna (Monopole) gain (max) = 3.27 dBi = 2.12 numeric

The power density calculated = 0.001 mW/cm^2

Therefore, the power density (WLAN + BT) = 0.027 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



This Laboratory is accredited by the National Association of Testing Authorities, Australia. The tests reported herein have been performed in accordance with its terms of accreditation for FCC Part 15. This document shall not be reproduced, except in full.

5.0 COMPLIANCE STATEMENT

The Bluetooth Module, Model: EYTF3CSFT 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.

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	Result
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)(1)	6.2.2(o)(ii)	Channel Occupancy/Bandwidth	Note 1
15.247 (b)(1)	6.2.2(o)(b)	Peak Output Power	Note 1
15.247 (i)		Radio Frequency Hazard	Complies
15.247 (d)	6.2.2(o)(e1)	Out of Band Emissions	Complies

Note 1: Refer to EMC test report M060108_Cert_EYTF3CSFT and M060108_Cert_EYTF3CSFT_Class_2 with FCC ID: EJE-BT0001 (IC ID: 337J-BT0001)



This Laboratory is accredited by the National Association of Testing Authorities, Australia. The tests reported herein have been performed in accordance with its terms of accreditation for FCC Part 15. This document shall not be reproduced, except in full.

TEST REPORT APPENDICES

APPENDIX A: ANTENNA DETAILS

APPENDIX B: BT, WLAN and ANTENNA LOCATIONS PHOTOS



This Laboratory is accredited by the National Association of Testing Authorities, Australia. The tests reported herein have been performed in accordance with its terms of accreditation for FCC Part 15. This document shall not be reproduced, except in full.