



EMI TEST REPORT

Test Report No. : 25LE0207-HO-10

Applicant : **FUJITSU LIMITED**

Type of Equipment : **Personal Computer**

Model No. : **P1510**

FCC ID : **EJE-WB0036**

Test standard : **FCC Part 15 Subpart C**
Section 15.247, Section 15.407 : 2005
***Spurious emission test only**
(Co-location & Co-operation)
according to the client's request.

Test Result : **Complied**

1. This test report shall not be reproduced in full or partial, without the written approval of UL Apex Co., Ltd.
2. The results in this report apply only to the sample tested.
3. This equipment is in compliance with the above regulation. We hereby certify that the data contain a true representation of the EMC profile.
4. The test results in this report are traceable to the national or international standards.

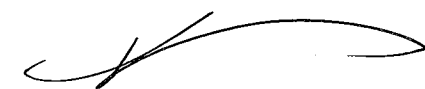
Date of test:

July 25, 2005

Tested by:


Makoto Kosaka
EMC Service

Approved by :


Naoki Sakamoto
Group Leader of
EMC Service

UL Apex Co., Ltd.

Head Office EMC Lab.

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SECTION 1: Client information

Company Name : FUJITSU LIMITED
Address : 1-1, Kamikodanaka 4-chome, Nakahara-ku, Kawasaki
211-8588 Japan
Telephone Number : +81-44-754-3885
Facsimile Number : +81-44-754-3769
Contact Person : Tsuyoshi Uchihara

SECTION 2: Equipment under test (E.U.T.)

2.1 Identification of E.U.T.

Type of Equipment : Personal Computer
Model No. : P1510
Serial No. : R5100030
Country of Manufacture : Japan
Condition of EUT : Engineering prototype
(Not for Sale: This sample is equivalent to mass-produced items.)
Rating : AC100-240V, 50/60Hz
DC out 16V/2.5A (AC Adapter)
Receipt Date of Sample : July 21, 2005

2.2 Product Description

This EUT has IEEE802.11 a/b/g module which consists of 2.4GHz and 5GHz in the same chip, and the other module is Bluetooth.

Standards	Test Report No.			
	IEEE802.11 a/b/g		Bluetooth	Bluetooth + IEEE802.11a/b/g
FCC	25LE0207-HO-1 (15.247)	25LE0207-HO-2 (15.407)	25LE0207-HO-9	25LE0207-HO-10 *
RSS-210	25LE0207-HO-3	25LE0207-HO-4	25LE0207-HO-11	25LE0207-HO-12

*This mark stands for This report.

< IEEE802.11 a/b/g >

Equipment Type : Transceiver
Frequency of operation : 11bg: 2412-2462MHz
11a: 5150-5350MHz/5745 - 5825MHz
Channel Spacing : 5MHz(11bg), 20MHz (11a)
Duty Cycle : over 90%
Type of Modulation : DSSS, OFDM
Mode of operation : Duplex
Antenna Type : Monopole Antenna (M/N: YCE-5008)
Antenna Gain : IEEE802.11b/g: Main -4.78 dBi /AUX -1.49 dBi
IEEE802.11a: Main Antenna: 0.90dBi, AUX Antenna -0.97 dBi
(This antenna gain are values in which antenna was mounted to the PC)
Antenna Connector Type : U-FL
Operating voltage : DC3.3V
Operating temperature range : 0-+70 deg.C.

<Bluetooth>

Equipment Type : Transceiver
Frequency of operation : 2402-2480MHz
Type of Modulation : FHSS
Antenna Type : Monopole Antenna (M/N: YCE-5008)
Antenna Gain : AUX -1.49 dBi
(This antenna gain are values in which antenna was mounted to the PC)
Antenna Connector Type : U-FL
Operating voltage : DC3.3V
Operating temperature range : 0-+70 deg.C.

FCC 15.31 (e)

This EUT provides stable voltage(DC3.3V) constantly to RF Modules regardless of input voltage. Therefore, this EUT complies with the requirement.

FCC Part 15.203 Antenna requirement

These modules have the external (particular) antenna connector, and the installation is to be done by the professionals. Therefore, the equipment complies with the antenna requirement of Section 15.203.

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SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification : FCC Part15 Subpart C : 2005
Title : FCC 47CFR Part15 Radio Frequency Device Subpart C Intentional Radiators
Section 15.247 Operation within the bands 902-928MHz,
2400-2483.5MHz, and 5725-5850MHz : 2005
Section 15.407 General technical requirements

3.2 Procedures and results [FHSS] FCC Part 15 Subpart C

No.	Item	Test Procedure	Specification	Remarks	Deviation	Worst Margin*0)	Results
1	Conducted emission	ANSI C63.4:2003 7. AC powerline conducted emission measurements	Section 15.207	-	N/A	N/A	N/A
2	Carrier Frequency Separation	ANSI C63.4:2003 13. Measurement of intentional radiators	Section15.247(a)(1)	Conducted	N/A	N/A	N/A
3	20dB Bandwidth	ANSI C63.4:2003 13. Measurement of intentional radiators	Section15.247(a)(1)	Conducted	N/A	N/A	N/A
4	Number of Hopping Frequency	ANSI C63.4:2003 13. Measurement of intentional radiators	Section15.247(a)(1)(iii)	Conducted	N/A	N/A	N/A
5	Dwell time	ANSI C63.4:2003 13.Measurement of intentional radiators	Section15.247(a)(1)(iii)	Conducted	N/A	N/A	N/A
6	Maximum Peak Output Power	ANSI C63.4:2003 13. Measurement of intentional radiators	Section15.247(b)(1)	Conducted	N/A	N/A	N/A
7	Band Edge Compliance	ANSI C63.4:2003 13. Measurement of intentional radiators	Section15.247(d)	Conducted	N/A	N/A	N/A
8	Spurious Emission	ANSI C63.4:2003 13. Measurement of intentional radiators	Section15.247(d)	Conducted/ Radiated	N/A	N/A	N/A

Note: UL Apex's EMI Work Procedures No.QPM05 and QPM15.

*0) The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

Uncertainty:

Spurious Emission (Radiated)

The measurement uncertainty (with a 95% confidence level) for this test using Biconical antenna is $\pm 4.5\text{dB}(3\text{m})/\pm 4.7\text{dB}(10\text{m})$.

The measurement uncertainty (with a 95% confidence level) for this test using Logperiodic antenna is $\pm 5.2\text{dB}(3\text{m})/\pm 3.8\text{dB}(10\text{m})$.

The measurement uncertainty (with a 95% confidence level) for this test using Horn antenna is $\pm 6.6\text{dB}$.

The data listed in this report meets the limits unless the uncertainty is taken into consideration.

*These tests were also referred to FCC Public Notice DA 00-705 "Guidance on Measurement for Frequency Hopping Spread Spectrum Systems".

*These tests were performed without any deviations from test procedure except for additions or exclusions.

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FCC Part 15 Subpart E

No.	Item	Test Procedure	Specification	Remarks	Deviation	Worst margin*0)	Results
1	26dB Emission Bandwidth	ANSI C63.4:2003	FCC 15.407(a)(1)(2)(3) RSS210 6.2.2(q1)	-	N/A	N/A	N/A
2	Peak Transmit Power	ANSI C63.4:2003	FCC 15.407(a)(1)(2)(3) RSS210 6.2.2(q1)	Conducted	N/A	N/A	N/A
3	Peak Power Spectral Density	ANSI C63.4:2003	FCC 15.407(a)(1)(2)(3) RSS210 6.2.2(q1)	Conducted	N/A	N/A	N/A
4	Peak Excursion Ratio	ANSI C63.4:2003	FCC 15.407(a)(6) RSS210 N/A	Conducted	N/A	N/A	N/A
5	Spurious Emission	ANSI C63.4:2003	FCC 15.407(b)(1)(2)(3)(4)(5)(6)(7), 15.205 and 15.209 RSS210 6.2.2(o)(e)(e1), 6.3 and 6.2.2(q1)	Conducted	N/A	N/A	N/A
6	Spurious Emission	ANSI C63.4:2003	FCC 15.407(b)(6)/15.207 RSS210 6.6	Radiated	N/A	N/A	N/A
7	AC Conducted Emission	ANSI C63.4:2003	FCC 15.407(b)(7)/15.205 RSS210 6.2.2(o)(e)(e1), 6.3 and 6.2.2(q1)	Tx5320MHz	N/A	N/A	N/A
8	Band Edge Compliance	ANSI C63.4:2003	RSS210(issue 5): 2001 + Amendment:2002 + Amendment2:2003 + Amendment3:2004 + Amendment4:2004	Conducted Radiated	N/A	N/A	N/A
9	99% Occupied Band Width	RSS210(issue 5): 2001 + Amendment:2002 + Amendment2:2003 + Amendment3:2004 + Amendment4:2004	RSS210(issue 5): 2001 + Amendment:2002 + Amendment2:2003 + Amendment3:2004 + Amendment4:2004	Conducted	N/A	N/A	N/A

Note: UL Apex's EMI Work Procedures No.QPM05 and QPM15.

*0) The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

Uncertainty:

*In case of the margin below the EMC Head Office's uncertainty.

The data listed in this report meets the limits unless the uncertainty is taken into consideration.

Conducted Emission

The measurement uncertainty (with a 95% confidence level) for this test is ± 1.3 dB.

Spurious Emission (Radiated)

The measurement uncertainty (with a 95% confidence level) for this test using Biconical antenna is ± 4.5 dB(3m)/ ± 4.7 dB(10m).

The measurement uncertainty (with a 95% confidence level) for this test using Logperiodic antenna is ± 5.2 dB(3m)/ ± 3.8 dB(10m).

The measurement uncertainty (with a 95% confidence level) for this test using Horn antenna is ± 6.6 dB.

Other test except Conducted Emission and Spurious Emission (Radiated)

The measurement uncertainty (with a 95% confidence level) for this test is ± 3.0 dB.

*These tests were also referred to FCC Public Notice DA 02-2138 "Measurement Procedure Updated for Peak Transmit Power in the Unlicensed National Information Infrastructure (U-NII) Bands".

*These tests were performed without any deviations from test procedure except for additions or exclusions.

3.3 Addition to standards

No.	Item	Test Procedure	Specification	Remarks	Deviation	Worst margin	Results
1	Co-location & Co-operation (Confirmation testing for Radiated Spurious Emission at simultaneous transmission)	ANSI C63.4:2003 13. Measurement of intentional radiators	Section15.247(d) Section15.407(b)	Radiated	N/A	<IEEE802.11g> 3.7dB 2483.5MHz Vertical, PK <IEEE802.11a> 2.6dB 36260.0MHz Vertical	Complied

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3.4 Test Location

UL Apex Co., Ltd. Head Office EMC Lab. *NVLAP Lab. code: 200572-0

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	FCC Registration Number	IC Registration Number	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Other rooms
No.1 semi-anechoic chamber	313583	IC4247A	19.2 x 11.2 x 7.7m	7.0 x 6.0m	Preparation room
No.2 semi-anechoic chamber	846015	IC4247A-2	7.5 x 5.8 x 5.2m	4.0 x 4.0m	-
No.3 shielded room	-	-	4.7 x 7.5 x 2.7m	4.7 x 7.5m	-
No.4 measurement room	-	-	3.1 x 5.0 x 2.7m	N/A	-

* Size of vertical conducting plane (for Conducted Emission test) : 2.0 x 2.0m for No.1 and No.2 semi-anechoic and No.3 shielded room.

3.5 Test set up, Test instruments and Data of EMI

Refer to APPENDIX 1 to 3.

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Description of EUT and Support equipment

No.	Item	Model number	Serial number	Manufacturer	FCC ID	Remarks
A	Personal Computer	P1510	B0516019	FUJITSU LIMITED	EJE-WB0036	EUT
B	PC Card	-	-	IO DATA	-	-
C	SD Card	-	-	IO DATA	-	-
D	Port Replicator	-	30	FUJITSU LIMITED	-	-
E	AC Adapter	CA01007-0730	01208879C	FUJITSU LIMITED	-	-
F	LCD Monitor	PLE430-B1S	05205G4538698	Iiyama	-	-
G	AC Adapter	ADPC12416BB	12416B042126921	Iiyama	-	-
H	Personal Computer	PGMJ140M	09632777	SHARP	-	-
I	Mouse	M-UB48	LZE02650788	Logitech	-	-
J	Mouse	M-UB48	LZE02601001	Logitech	-	-
K	Headset	LT-100	0010D	Panasonic	-	-
L	Microphone	-	-	Fujitsu	-	-

List of cables used

No.	Name	Length (m)	Shield	Backshell Material
1	DC Cable	1.8	N	Polyvinyl chloride
2	Monitor Cable	1.8	Y	Polyvinyl chloride
3	LAN Cable	2.9	N	Polyvinyl chloride
4	TEL Line	2.0	N	Polyvinyl chloride
5	Mouse Cable	0.7	N	Polyvinyl chloride
6	Mouse Cable	0.7	N	Polyvinyl chloride
7	Headset Cable	3.0	N	Polyvinyl chloride
8	AC Cable	2.0	N	Polyvinyl chloride
9	DC Cable	1.2	N	Polyvinyl chloride
10	AC Cable	1.8	N	Polyvinyl chloride
11	Microphone Cable	1.6	N	Polyvinyl chloride

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SECTION 5: Spurious Emission

[Radiated]

Test Procedure

EUT was placed on a platform of nominal size, 1.0m by 1.0m, raised 80cm above the conducting ground plane.

The Radiated Electric Field Strength intensity has been measured in a Semi Anechoic Chamber with a ground plane and at a distance of 3m(Below 10GHz) and 1m(Upper 10GHz).

The height of the measuring varied between 1 and 4m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity.

The measurements were performed for both vertical and horizontal antenna polarization with the Test Receiver, or the Spectrum Analyzer (in linear mode).

The test was made with the detector (RBW/VBW) in the following table.

When using Spectrum analyzer, the test was made with adjusting span to zero by using peak hold.

In any 100kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator confirmed 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on a radiated measurement.

20dBc was applied to the frequency over the limit of FCC 15.209 and outside the restricted band of 15.205.

Frequency	Below 1GHz *1)	Above 1GHz
Instrument used	Test Receiver / Spectrum Analyzer	Spectrum Analyzer
Detector	QP: BW 120kHz(T/R)	PK: RBW:1MHz/VBW: 1MHz
IF Bandwidth	20dBc : RBW: 100kHz VBW: 300kHz (S/A)	AV: RBW:1MHz/VBW:10Hz 20dBc : RBW:100kHz/VBW:300kHz

*1) The pre-check test was made in the frequency below 1GHz.

As a result, there is no difference in the noise level compared with the result in Test report No. 25LE0207-HO-9.

Test data : **APPENDIX 3**

Test result : **Pass**

- The carrier level and noise levels were confirmed at each position of X, Y and Z axes of EUT to see the position of maximum noise, and the test was made at the position that has the maximum noise.

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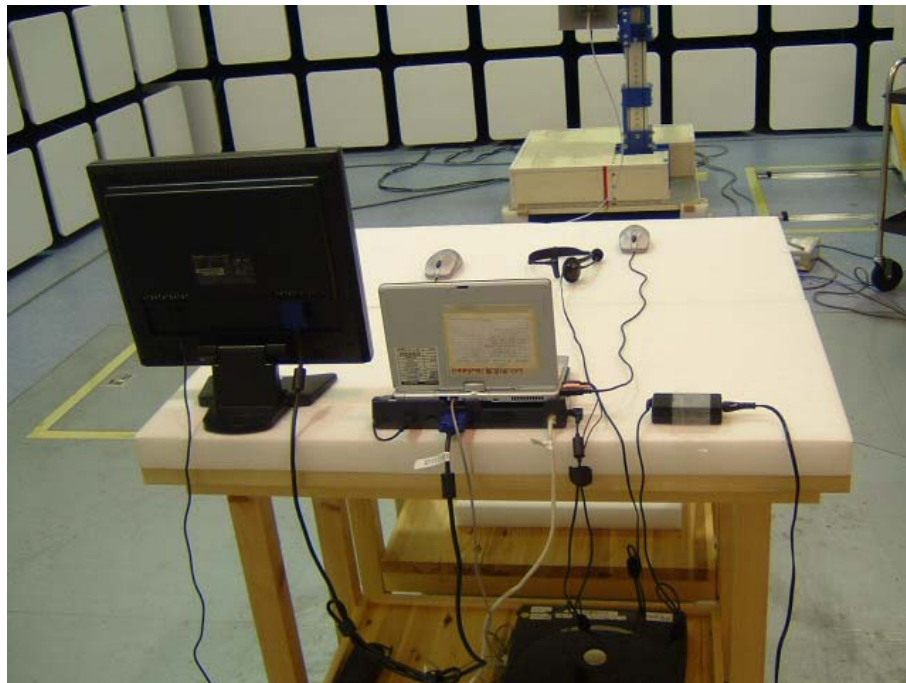
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APPENDIX 1: Photographs of test setup
Spurious Emission (Radiated)

Front



Rear



Worst Case Position (Z-axis:Horizontal / X-axis:Vertical)

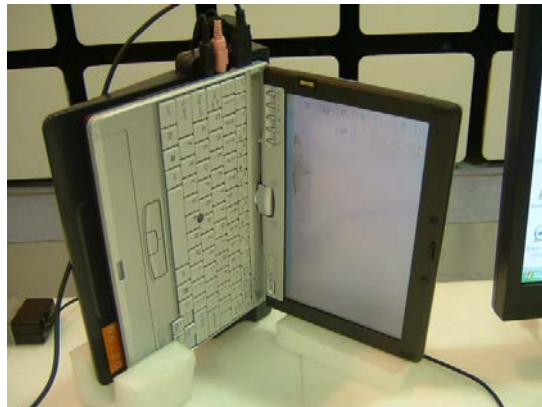
X-axis



Y-axis



Z-axis



APPENDIX 2:Test instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Test Item	Calibration Date * Interval(month)
MAEC-02	Anechoic Chamber	TDK	Semi Anechoic Chamber 3m	RE	2005/04/11 * 12
MSA-03	Spectrum Analyzer	Agilent	E4448A	RE	2005/06/03 * 12
MTR-02	Test Receiver	Rohde & Schwarz	ESCS30	RE	2005/02/02 * 12
MBA-02	Biconical Antenna	Schwarzbeck	BBA9106	RE	2004/10/14 * 12
MLA-02	Logperiodic Antenna	Schwarzbeck	USLP9143	RE	2004/10/14 * 12
MAT-07	Attenuator(6dB)	Weinschel Corp	2	RE	2004/12/16 * 12
MCC-12	Coaxial Cable	Fujikura/Agilent	-	RE	2005/02/24 * 12
MPA-06	Pre Amplifier	Hewlett Packard	8447D	RE	2004/08/29 * 12
MHA-02	Horn Antenna	EMCO	3160-09	RE	2005/01/10 * 12
MHA-06	Horn Antenna	Schwarzbeck	BBHA9120D	RE	2005/01/10 * 12
MCC-04	Microwave Cable 1G-50GHz	Storm	421-011 (90-1394-079)	RE	2005/01/05 * 12
MCC-19	Microwave Cable 1G-26.5GHz	Suhner	SUCOFLEX 104	RE	2005/02/03 * 12
MPA-05	Pre Amplifier	TSJ	TSJ 1-26.5GHz PreAmp	RE	2005/07/08 * 12
MHF-02	High Pass Filter	Tokimec	TF323DCA	RE	2004/09/18 * 12
MHA-04	Horn Antenna	EMCO	3160-10	RE	2005/01/10 * 12
MCC-17	Microwave Cable 1G-50GHz	Suhner	SUCOFLEX 101	RE	2005/02/03 * 12
MCC-27	Microwave Cable 1G-50GHz	Suhner	SUCOFLEX101	RE	2004/08/26 * 12
MPA-03	Microwave System Power Amplifier	Agilent	83050A	RE	2005/05/11 * 12

All equipment is calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

Test Item:

RE: Radiated emission,

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APPENDIX 3: Data of EMI test

Radiated emission Band Edge compliance Above 1GHz

UL Apex Co., Ltd.
Head Office EMC Lab. No.2Semi Anechoic Chamber

Company	: Fujitsu Limited	REPORT NO	: 25LE0207-HO
Equipment	: Personal Computer	REGULATION	: Fcc Part15 Subpart C 15.247(d)
Model	: P1510	TEST DISTANCE	: 3/1m
Sample No.	: R5100030	DATE	: 07/25/2005
Power	: AC 120 V / 60 Hz	TEMPERATURE	: 23deg.C
Mode	: W-LAN 11g 2412MHz + Bluetooth Hopping	HUMIDITY	: 65%
	: W-LAN 11g 2462MHz + Bluetooth Hopping	ENGINEER	: Makoto Kosaka
Remarks	: Hor Z , Ver X-axis		

PK DETECT (RBW: 1MHz, VBW: 1MHz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit PK [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
		[dBuV]						[dBuV/m]			[dB]	
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss												
1	2390.0	72.3	74.2	30.5	41.2	3.7	0.0	65.3	67.2	74.0	8.7	6.8
2*	2400.0	77.9	81.8	30.5	41.2	3.7	0.0	70.9	74.8	74.0	3.1	-0.8
3	2483.5	74.6	77.4	30.5	41.3	3.7	0.0	67.5	70.3	74.0	6.5	3.7

AV DETECT (RBW: 1MHz, VBW: 10Hz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit AV [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
		[dBuV]						[dBuV/m]			[dB]	
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss												
1	2390.0	41.7	41.1	30.5	41.2	3.7	0.0	34.7	34.1	54.0	19.3	19.9
2*	2400.0	51.1	49.4	30.5	41.2	3.7	0.0	44.1	42.4	54.0	9.9	11.6
3	2483.5	42.9	43.0	30.5	41.3	3.7	0.0	35.8	35.9	54.0	18.2	18.1

* Reference data

20dBc(Fundamental 2412MHz) (RBW: 100kHz, VBW: 300kHz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit 20dBc [dBuV/m]	MARGIN	
		HOR	VER					HOR [dBuV/m]	VER [dB]		HOR [dB]	VER [dB]
		[dBuV]										
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss												
0	2412.0	111.4	114.9	30.5	41.2	3.7	0.0	104.4	107.9	-	-	-
2	2400.0	63.0	69.6	30.5	41.2	3.7	0.0	56.0	62.6	Funda-20dB	28.4	25.3

Test Distance 1.0m : Distance Factor(Dfac) = 20log(3/1.0) = 9.5dB

*Except for the above table : All other spurious emissions were less than 20dB for the limit.

*In the frequency over the fifth harmonic, the noise from the EUT was not seen.The data above is its base noise.

*The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

*Hi-Pass Fiter was not used for factor 0.0dB of the above table.

Radiated Spurious Emission(FHSS) Above 1GHz

UL Apex Co., Ltd.
Head Office EMC Lab. No.2Semi Anechoic Chamber

Company : Fujitsu Limited
Equipment : Personal Computer
Model : P1510
Sample No. : R5100030
Power : AC 120 V / 60 Hz
Mode : W-LAN 11g 2412MHz + Bluetooth Hopping
Remarks : Hor Z, Ver X-axis

REPORT NO : 25LE0207-HO
REGULATION : Fcc Part15 Subpart C 15.247(d)
TEST DISTANCE : 3/1m
DATE : 07/25/2005
TEMPERATURE : 23deg.C
HUMIDITY : 65%
ENGINEER : Makoto Kosaka

PK DETECT (RBW: 1MHz, VBW: 1MHz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit PK [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
		[dBuV]						[dBuV/m]			[dB]	
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss												
1	2390.0	72.3	74.2	30.5	41.2	3.7	0.0	65.3	67.2	74.0	8.7	6.8
2*	2400.0	77.9	81.8	30.5	41.2	3.7	0.0	70.9	74.8	74.0	3.1	-0.8
3	4824.0	48.7	48.2	35.3	42.5	5.3	1.0	47.8	47.3	74.0	26.2	26.7
4	7236.0	46.7	46.6	37.7	41.8	6.6	0.4	49.6	49.5	74.0	24.4	24.5
5	9648.0	43.9	44.3	36.9	40.8	8.0	0.2	48.2	48.6	74.0	25.8	25.4
Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac												
6	12060.0	44.6	46.3	41.6	40.4	0.0	0.2	46.0	47.7	74.0	28.0	26.3
7	14472.0	45.5	45.6	41.9	42.0	0.2	0.1	45.7	45.8	74.0	28.3	28.2
8	16884.0	46.3	46.7	45.2	41.8	1.3	1.1	52.1	52.5	74.0	21.9	21.5
9	19296.0	43.5	42.7	40.2	40.2	2.5	0.0	46.0	45.2	74.0	28.0	28.8
10	21708.0	44.0	44.1	39.8	40.2	2.5	0.0	46.1	46.2	74.0	27.9	27.8
11	24120.0	45.9	46.7	40.4	39.3	4.4	0.0	51.4	52.2	74.0	22.6	21.8

AV DETECT (RBW: 1MHz, VBW: 10Hz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit AV [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER			
		[dBuV]									[dBuV/m]	
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss												
1	2390.0	41.7	41.1	30.5	41.2	3.7	0.0	34.7	34.1	54.0	19.3	19.9
2*	2400.0	51.1	49.4	30.5	41.2	3.7	0.0	44.1	42.4	54.0	9.9	11.6
3	4824.0	35.5	35.5	35.3	42.5	5.3	1.0	34.6	34.6	54.0	19.4	19.4
4	7236.0	33.5	33.4	37.7	41.8	6.6	0.4	36.4	36.3	54.0	17.6	17.7
5	9648.0	30.3	30.5	36.9	40.8	8.0	0.2	34.6	34.8	54.0	19.4	19.2
Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac												
6	12060.0	32.2	32.2	41.6	40.4	0.0	0.2	33.6	33.6	54.0	20.4	20.4
7	14472.0	32.7	32.7	41.9	42.0	0.2	0.1	32.9	32.9	54.0	21.1	21.1
8	16884.0	32.7	32.7	45.2	41.8	1.3	1.1	38.5	38.5	54.0	15.5	15.5
9	19296.0	29.9	29.6	40.2	40.2	2.5	0.0	32.4	32.1	54.0	21.6	21.9
10	21708.0	31.0	31.0	39.8	40.2	2.5	0.0	33.1	33.1	54.0	20.9	20.9
11	24120.0	32.8	33.1	40.4	39.3	4.4	0.0	38.3	38.6	54.0	15.7	15.4

* Reference data

20dBc(Fundamental 2412MHz) (RBW: 100kHz, VBW: 300kHz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit 20dBc [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
		[dBuV]						[dBuV/m]			[dB]	
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss												
0	2412.0	111.4	114.9	30.5	41.2	3.7	0.0	104.4	107.9	-	-	-
2	2400.0	63.0	69.6	30.5	41.2	3.7	0.0	56.0	62.6	Funda-20dB	28.4	25.3

Test Distance 1.0m : Distance Factor(Dfac) = 20log(3/1.0) = 9.5dB

*Except for the above table : All other spurious emissions were less than 20dB for the limit.

*In the frequency over the fifth harmonic, the noise from the EUT was not seen. The data above is its base noise.

*The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

*Hi-Pass Filter was not used for factor 0.0dB of the above table.

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MF060b(01.06.05)

Radiated Spurious Emission (FHSS) Above 1GHz

UL Apex Co., Ltd.
Head Office EMC Lab. No.1 Semi Anechoic Chamber

Company : Fujitsu Limited Equipment : Personal Computer Model : P1510 Sample No. : R5100030 Power : AC 120 V / 60 Hz Mode : W-LAN 11a 5180MHz + Bluetooth Hopping Remarks : Hor Z , Ver X-axis	REPORT NO : 25LE0207-HO REGULATION : Fcc Part15 Subpart E 15.407(b) TEST DISTANCE : 3/1m DATE : 07/25/2005 TEMPERATURE : 23deg.C HUMIDITY : 65% ENGINEER : Makoto Kosaka
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PK DETECT (RBW: 1MHz, VBW: 1MHz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit PK [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
		[dBuV]						[dBuV/m]			[dB]	
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss												
1	5150.0	48.7	48.8	36.1	42.5	5.5	0.0	47.8	47.9	74.0	26.2	26.1
Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac												
2*	10360.0	44.7	45.2	37.1	40.5	-1.1	0.9	41.1	41.6	74.0	32.9	32.4
3	15540.0	45.9	45.6	40.1	41.6	0.6	0.7	45.7	45.4	74.0	28.3	28.6
4	20720.0	45.6	44.8	40.4	40.4	2.7	0.0	48.3	47.5	74.0	25.7	26.5
5*	25900.0	46.8	47.2	40.7	40.7	4.7	0.0	51.5	51.9	74.0	22.5	22.1
6*	31080.0	46.3	47.3	42.1	25.0	-8.3	0.0	55.1	56.1	74.0	18.9	17.9
7*	36260.0	56.3	56.9	42.5	23.9	-9.9	0.0	65.0	65.6	74.0	9.0	8.4

AV DETECT (RBW: 1MHz, VBW: 10Hz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit A V [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
		[dBuV]						[dBuV/m]			[dB]	
Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss												
1	5150.0	36.1	36.1	36.1	42.5	5.5	0.0	35.2	35.2	54.0	18.8	18.8
Test distance 1meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss - Dfac												
2*	10360.0	32.8	31.8	37.1	40.5	-1.1	0.9	29.2	28.2	54.0	24.8	25.8
3	15540.0	32.6	31.9	40.1	41.6	0.6	0.7	32.4	31.7	54.0	21.6	22.3
4	20720.0	33.3	32.8	40.4	40.4	2.7	0.0	36.0	35.5	54.0	18.0	18.5
5*	25900.0	30.8	30.5	40.7	40.7	4.7	0.0	35.5	35.2	54.0	18.5	18.8
6*	31080.0	32.5	32.6	42.1	25.0	-8.3	0.0	41.3	41.4	54.0	12.7	12.6
7*	36260.0	32.1	32.1	42.5	23.9	-9.9	0.0	40.8	40.8	54.0	13.2	13.2

Outside of the frequency band

No.	Freq. [MHz]	Electric Field Strength [dBuV/m]		Result (EIRP) [dBm]		Lmit dBm/MHz	Margin [dB]	
		HOR	VER	HOR	VER		HOR	VER
2	10351.00	41.1	41.6	-54.1	-53.6	-27.0	27.1	26.6
5	25900.00	51.5	51.9	-43.7	-43.3	-27.0	16.7	16.3
6	31080.00	55.1	56.1	-40.1	-39.1	-27.0	13.1	12.1
7	36260.00	65.0	65.6	-30.2	-29.6	-27.0	3.2	2.6

* Reference data
*Result(EIRP[dBm])=10*LOG((Electric Field Strength [V/m] * Distance:3[m]) ^ 2 / 30)
*Test Distance 1.0m : Distance Factor(Dfac) = 20log(3/1.0) = 9.5dB
*Test Distance 0.5m(above 26.5GHz) : Distance Factor(Dfac) = 20log(3/0.5) = 15.6dB
(This factor(Dfac) is subtracted from the cable loss.)
*Except for the above table : All other spurious emissions were less than 20dB for the limit.
*In the frequency over the fifth harmonic, the noise from the EUT was not seen.The data above is its base noise.
*The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.
*Hi-Pass Fiter was not used for factor 0.0dB of the above table.