



EMI TEST REPORT

Test Report No. : 24HE0350-HO

Applicant : **Matsushita Electric Industrial Co., Ltd.**
Type of Equipment : **Personal Computer**
Model No. : **CF-18 (IEEE802.11b/g, CDMA, Bluetooth)**
Test standard : **FCC Part 15 Subpart B : 2003 Class B**
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 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.
5. This test report does not constitute an endorsement by NIST/NVLAP or U.S. Government.

Date of test:

May14 and 15, 2004

Tested by:

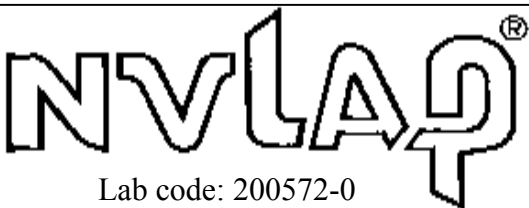
M. Fujimura

Mitsuru Fujimura
EMC Service

Approved by :

Naoki Sakamoto

Naoki Sakamoto
Group Leader of
EMC Service



This laboratory is accredited by the NIST/NVLAP, U.S.A. The tests reported herein have been performed in accordance with its terms of accreditation.

UL Apex Co., Ltd.

Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

MF060b(10.04.03)

<u>CONTENTS</u>	<u>PAGE</u>
SECTION 1: Client information.....	3
SECTION 2: Equipment under test (E.U.T.)	3
SECTION 3: Test specification, procedures & results	5
SECTION 4: Operation of E.U.T. during testing.....	7
SECTION 5: Conducted Emission	11
SECTION 6: Radiated Emission	12
APPENDIX 1: Photographs of test setup.....	13
Conducted Emission	13
Radiated Emission	14
APPENDIX 2: Test instruments	15
APPENDIX 3: Test Data of EMI	16
Conducted emission	16
Radiated emission	22

SECTION 1: Client information

Company Name : Matsushita Electric Industrial Co., Ltd.
Brand Name : Panasonic
Address : 1-10-12 Yagumohigashi-machi Moriguchi Osaka 570-0021 Japan
Telephone Number : +81 6 6907 4050
Facsimile Number : +81 6 6907 4043
Contact Person : Seiichi Inagaki

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

2.1 Identification of E.U.T.

Type of Equipment : Personal Computer
Model No. : CF-18 (IEEE802.11b/g, CDMA, Bluetooth)
Serial No. : DVT#20
Rating : AC Adaptor : (Input) AC100-240V, 50/60Hz, (Output) DC 16V
Country of Manufacture : Japan
Receipt Date of Sample : May 14, 2004
Condition of E.U.T. : Production Prototype
(Not for Sale: This sample is equivalent to mass-produced items.)

UL Apex Co., Ltd.

Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

MF060b(10.04.03)

2.2 Product description

Model: CF-18 (referred to as the EUT in this report) is personal computer that is installed with IEEE802.11b/g, CDMA, and Bluetooth.

The clock frequency used in EUT : LCD Clock 65MHz, System Clock 66MHz and Pentium N1 Processor 1.1GHz.

IEEE802.11b/g

Equipment Type	Transceiver
Frequency bands	Lower limit: 2412MHz
	Upper limit : 2462MHz
Frequency of operation	Controller Clock 40MHz
	Base band Clock 22MHz
Bandwidth & Channel spacing	25MHz(11b), 8MHz(11g) & 5MHz/CH
Antenna Type	Inverted-F
Antenna Connector Type	Soldering
Antenna Gain	2.59dBi max
Mode of operation	Simplex
ITU code	25M0G1D (11b), 8M00G1D (11g)
Power supply (Inner)	3.3V
Operating Temperature	5 – 35deg.C.

CDMA

Equipment Type	Transceiver
Frequency bands	Cellular band: TX824.2-848.8MHz MHz; RX869.2-893.8MHz PCS band: TX1850.2-1909.8MHz; RX1930-1990MHz
Frequency of operation	Reference Oscillator in CDMA radio module (SM555):19.2MHz
Bandwidth & Channel spacing	BW:1.25MHz Channel spacing: PCS band=50kHz, Cellular band=30kHz
Type of modulation	O-QPSK
Antenna Type	Inverted-F
Antenna Connector Type	Soldering
Antenna Gain	2.15dBi max
Mode of operation	Duplex
Power supply (Inner)	3.3V
Operating Temperature	5 – 35deg.C.

Bluetooth

Equipment Type	Transceiver
Frequency bands	Lower limit: 2402MHz
	Upper limit : 2480MHz
Frequency of operation	Baseband clock 16MHz
Bandwidth & Channel spacing	79CH, 1MHz/CH
Type of Modulation	FSK (Frequency Hopping Shift Keying)
Antenna Type	Inverted-F
Antenna Connector Type	Soldering
Antenna Gain	3.54dBi max
Mode of operation	Duplex
ITU code	79M0F7W
Power supply (Inner)	3.3V
Operating Temperature	5 – 35deg.C.

UL Apex Co., Ltd.

Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

MF060b(10.04.03)

SECTION 3: Test specification, procedures & results

3.1 Test specification

Test Specification : FCC Part 15 Subpart B : 2003 Class B
Title : FCC 47CFR Part15 Radio Frequency Device
Subpart B Unintentional Radiators

3.2 Procedures and results

Item	Test Procedure	Limits	Deviation	Worst margin	Results
Conducted emission	ANSI C63.4: 2001	Class B	N/A	6.9dB, 0.1648MHz, QP, L1 (wireless LAN IEEE802.11g, Bluetooth, CDMA: High(625ch)) 6.9dB, 0.1736MHz, QP, L1 (wireless LAN IEEE802.11g)	Complied
Radiated emission	ANSI C63.4: 2001	Class B	N/A	1.4 dB, 4000.000MHz, Vertical(wireless LAN IEEE802.11g, CDMA:Low(283ch))	Complied

*Note: UL Apex's EMI Work Procedure QPM05.

3.3 Additions or deviations to standards

No addition, deviation nor exclusion has been made from standards.

3.4 Confirmation

UL Apex Co., Ltd. hereby confirms that E.U.T., in the configuration tested, complies with the specifications, FCC Part15 Subpart B : 2003 Class B.

3.5 Uncertainty

Conducted Emission

The measurement uncertainty (with a 95% confidence level) for this test was ± 1.3 dB.
The data listed in this test report has enough margin.

Radiated Emission

The measurement uncertainty (with a 95% confidence level) for this test using Biconical antenna is ± 4.5 dB(3m).
The measurement uncertainty (with a 95% confidence level) for this test using Logperiodic antenna is ± 5.2 dB(3m).
The measurement uncertainty (with a 95% confidence level) for this test using Horn antenna is ± 6.6 dB.
The data listed in this report meets the limits unless the uncertainty is taken into consideration.

UL Apex Co., Ltd.

Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

MF060b(10.04.03)

3.6 Test Location

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

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116 Facsimile : +81 596 24 8124

	Listed date (for NVLAP)	Registration number (for NVLAP)	IC Number	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Other rooms
No.1 semi-anechoic chamber	February 01, 2002	313583	IC4247	19.2 x 11.2 x 7.7m	7.0 x 6.0m	Preparation room
No.2 semi-anechoic chamber	June 05, 2002	846015	IC4247-2	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 measurement room.

3.7 Test set up, Test instruments and Data of EMI

Refer to APPENDIX 1 to 3.

UL Apex Co., Ltd.

Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

MF060b(10.04.03)

SECTION 4: Operation of E.U.T. during testing

4.1 Operating modes

The EUT was operated in a manner similar to typical use during the tests.

Test mode is used;

1. Wireless LAN IEEE802.11b/IEEE802.11g
2. Bluetooth
3. CDMA: Low(283ch)/High(625ch)
4. H Pattern
 - WindowsXP Desktop
 - EMI Program run on Command-Prompt-Window
 - Display the all "H" characters simultaneous
 - Read & Write for FDD / HDD
 - Communicate the data with Serial port
 - Wireless LAN Connection tool
 - Communicate to the Air Station by Intel-ProSet-Program
 - Bluetooth Transmitting continuous by Blue-Test-Program
 - CDMA Connection by SB555 Program
 - Communicate to Radio-Communication-Analyzer

Justification: The system was configured in typical fashion (as a customer would normally use it) for testing

UL Apex Co., Ltd.

Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

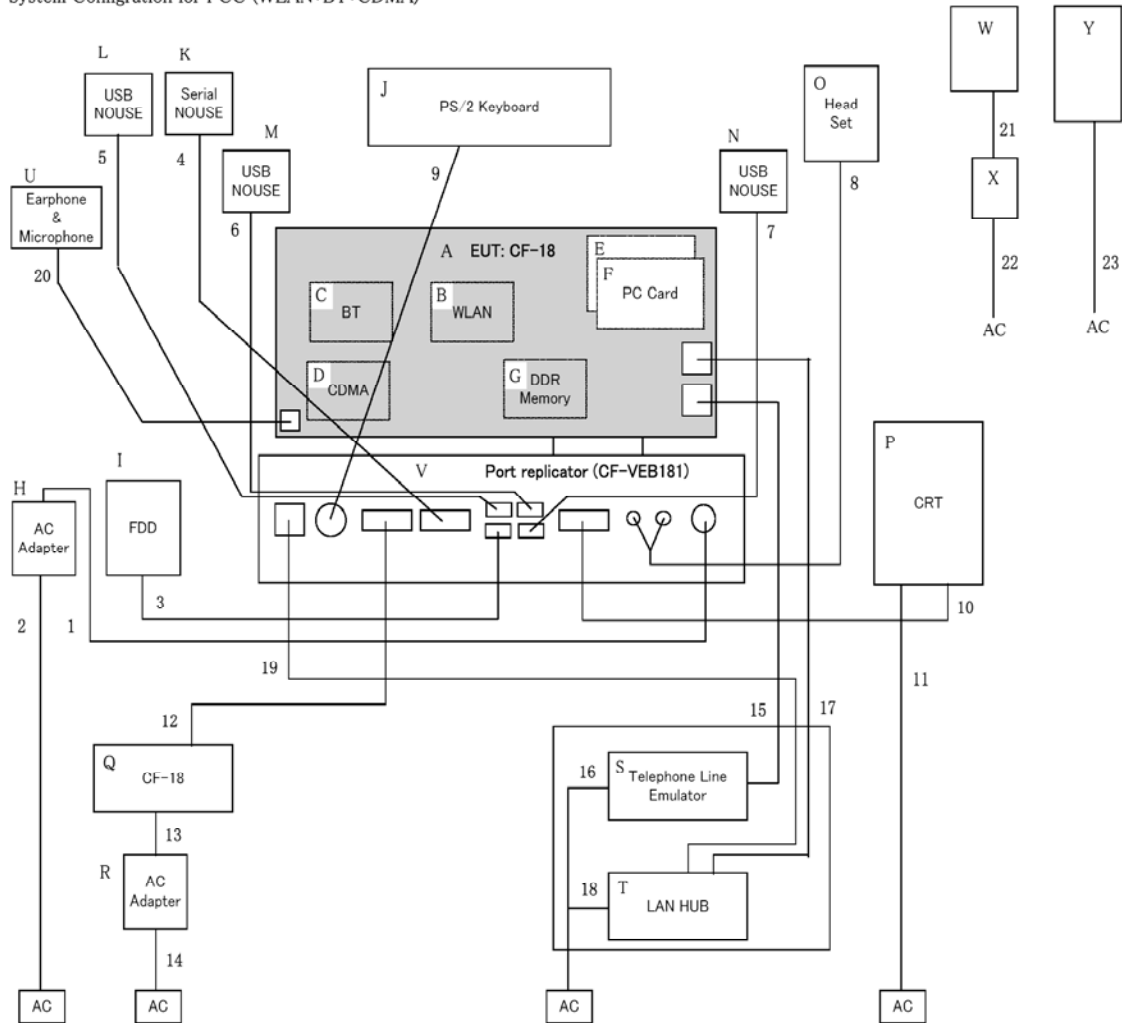
Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

MF060b(10.04.03)

4.2 Configuration and peripherals

System Configuration for FCC (WLAN+BT+CDMA)



*Cabling was taken into consideration and test data was taken under worse case conditions.

UL Apex Co., Ltd.

Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

MF060b(10.04.03)

Description of EUT for FCC (WLAN+BT+CDMA)

	Description	Model Name	S/N	Manufacture	FCC ID
A	Notebook Computer	CF-18	DVT#20	Panasonic	EUT/DoC
B	Wireless LAN Module	WM3B2100	5611FA213ADC28 569003	Intel	PD9WM3B2100
C	Bluetooth Module	DL3UP1237G	—	Panasonic	N/A
D	CDMA Module	SB555	E03031150108010 09900139823	SIERRA WIRELESS	N7NSB555
E	PCMCIA Slot Compact Flash Card & Adapter	SDCFB	AA0211RD	SanDisk	N/A
		HPC-ADP01	MACS019381	HAGIWARA SYS-COM	N/A
F	PCMCIA Slot SD Memory Card & Adapter	HPC-SD32M	BJ2LA007263	HAGIWARA SYS-COM	N/A
		PA-MLT	M026004644	MAXELL	DoC
G	DDR Memory Card	CF-WMBA40256F	—	Panasonic	N/A

Description of support equipment

	Description	Model Name	S/N	Manufacture	FCC ID
H	AC Adapter	CF-AA1623A	03Y03931A or 03Y06419B or 03402137A	Panasonic	N/A
V	Port replicator	CF-VEB181	DVT#98	Panasonic	DoC
I	USB FDD	CF-VFUD03	0008502	Panasonic	DoC
J	PS/2 Keyboard	X09-34976	6968200331503	Microsoft	DoC
K	Serial Mouse	M-C48	811423-0000	Logitech	DZL211121
L	USB Mouse	M-UB48	LZE92901498	Logitech	DZL211137
M	USB Mouse	X05-07298	52195-576- 0450813-0000	Microsoft	DoC
N	USB Mouse	X05-89304	52779-576- 1515916-0	Microsoft	DoC
O	Headset	MM-HS02		SANWA SUPPLY	N/A
P	CRT Display	6332-7HN	88-77264	IBM	Doc
Q	Notebook Computer (Terminator)	CF-18	3FKSA00389	Panasonic	DoC
R	AC Adapter	CF-AA1623A	03Y03931A or 03Y06419B or 03402137A	Panasonic	N/A
S	Telephone Line Emulator	TLE101E	610521	LSI JAPAN	N/A
T	LAN HUB	LAN-SHB1N4F	244305-002	Logitec	N/A
U	Earphone&Microphone	381320		FOSTER	N/A

UL Apex Co., Ltd.

Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

MF060b(10.04.03)

W	Air Station	WLA-L11G	16610525217053	MELCO	N/A
X	AC Adapter	AT7082A	A2L29B	Yokogawa	N/A
Y	Radio-Communication -Analyzer & Antenna	MT8810C	6200083859	Anritsu	N/A

List of cables used

	Description	Length	Ferrite Core	Shielded	Materials
1	AC Adapter Cable (DC)	1.3m	1turn	None	Resinous Cover
2	AC Adapter Cable (AC)	1.9m	None	None	Resinous Cover
3	USB FDD Cable	0.3m	1turn	Single Braided	Resinous Cover
4	Serial Mouse Cable	1.8m	None	Single Braided	Resinous Cover
5	USB Mouse Cable	0.8m	None	Single Braided	Resinous Cover
6	USB Mouse Cable	1.8m	1turn	Single Braided	Resinous Cover
7	USB Mouse Cable	0.8m	None	Single Braided	Resinous Cover
8	Headset Cable	1.8m	None	Single Braided	Resinous Cover
9	Keyboard Cable	2.0m	None	Single Braided	Resinous Cover
10	CRT Signal Cable	1.2m	1turn	Single Braided	Resinous Cover
11	AC Cable	1.8m	None	None	Resinous Cover
12	Serial Cable	3.0m	None	Single Braided	Resinous Cover
13	AC Adapter Cable (DC)	1.3m	1turn	None	Resinous Cover
14	AC Adapter Cable (AC)	1.9m	None	None	Resinous Cover
15	Telephone Line Cable	3m	None	None	Resinous Cover
16	AC Cable	1.9m	None	None	Resinous Cover
17	LAN Cable	3m	None	None	Resinous Cover
18	AC Cable	1.8m	None	None	Resinous Cover
19	LAN Cable	3m	None	None	Resinous Cover
20	Earphone&Mic Cable	1.3m	None	Single Braided	Resinous Cover
21	AC Adapter Cable (DC)	1.2m	None	None	Resinous Cover
22	AC Adapter Cable (AC)	0.5m	None	None	Resinous Cover
23	AC Cable	2.5m	None	None	Resinous Cover

UL Apex Co., Ltd.

Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

MF060b(10.04.03)

SECTION 5: Conducted Emission

5.1 Operating environment

Test place : No.1 semi anechoic chamber
Temperature : See data
Humidity : See data

5.2 Test configuration

EUT was placed on a platform of nominal size, 1m by 1.5m, raised 80cm above the conducting ground plane. The rear of tabletop was located 40cm to the vertical conducting plane. The rear of EUT and its peripherals was aligned and flushed with rear of tabletop. All other surfaces of tabletop were at least 80cm from any other grounded conducting surface. EUT was located 80cm from LISN and excess AC cable was bundled in center. They were folded back and forth forming a bundle 30cm to 40cm long and were hanged at a 40cm height to the ground plane. Each EUT current-carrying power lead, except the ground (safety) lead, was individually connected through a LISN to the input power source. All unused 50 ohm connectors of the LISN were resistively terminated in 50 ohm when not connected to the measuring equipment.
See APPENDIX 1 for the set up photographs.

5.3 Test conditions

Frequency range : 0.15 MHz-30MHz
EUT position : Table top
EUT operation mode : 1. Wireless LAN IEEE802.11b/IEEE802.11g
2. Bluetooth
3. CDMA: Low(283ch)/High(625ch)
4. H Pattern

5.4 Test procedure

The AC Mains Terminal Continuous disturbance Voltage has been measured with the EUT within a semi anechoic chamber. The EUT was connected to a Line Impedance Stabilization Network (LISN). An overview sweep with peak detection has been performed. The measurements have been performed with a quasi-peak detector and if required, with an average detector.

Detector Type : Quasi-Peak and Average
IF Bandwidth : 9 kHz/9kHz

5.5 Test result

Summary of the test results: Pass

Date: May 15, 2004

Test engineer: Mitsuru Fujimura

UL Apex Co., Ltd.

Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

MF060b(10.04.03)

SECTION 6: Radiated Emission

6.1 Operating environment

Test place : No.1 semi anechoic chamber
Temperature : See data
Humidity : See data

6.2 Test configuration

EUT was placed on a platform of nominal size, 1m by 1.5m, raised 80cm above the conducting ground plane. The EUT was set on the center of the tabletop. Test was made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna was varied in height above the conducting ground plane to obtain the maximum signal strength. A drawing of the set up is shown in the photos of APPENDIX 1.

6.3 Test conditions

Frequency range : 30MHz – 300MHz (Biconical antenna) / 300MHz – 1000MHz (Logperiodic antenna)
1000-6000MHz (Horn antenna)
Test distance : 3m
EUT position : Table top
EUT operation mode : 1. Wireless LAN IEEE802.11b/IEEE802.11g
2. Bluetooth
3. CDMA: Low(283ch)/High(625ch)
4. H Pattern

6.4 Test procedure

The Radiated Electric Field Strength intensity has been measured on a semi anechoic chamber with a ground plane and at a distance of 3m. Measurements were performed with a quasi-peak detector. The measuring antenna height 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.

Frequency	Below 1GHz	Above 1GHz
Detector Type	Quasi-peak	Peak and AV
IF Bandwidth	120kHz	1MHz(T/R)

6.5 Test result

Summary of the test results: Pass

Date: May 14 and 15, 2004

Test engineer: Mitsuru Fujimura

UL Apex Co., Ltd.

Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

MF060b(10.04.03)

APPENDIX 1: Photographs of test setup

Conducted Emission
Front



Rear

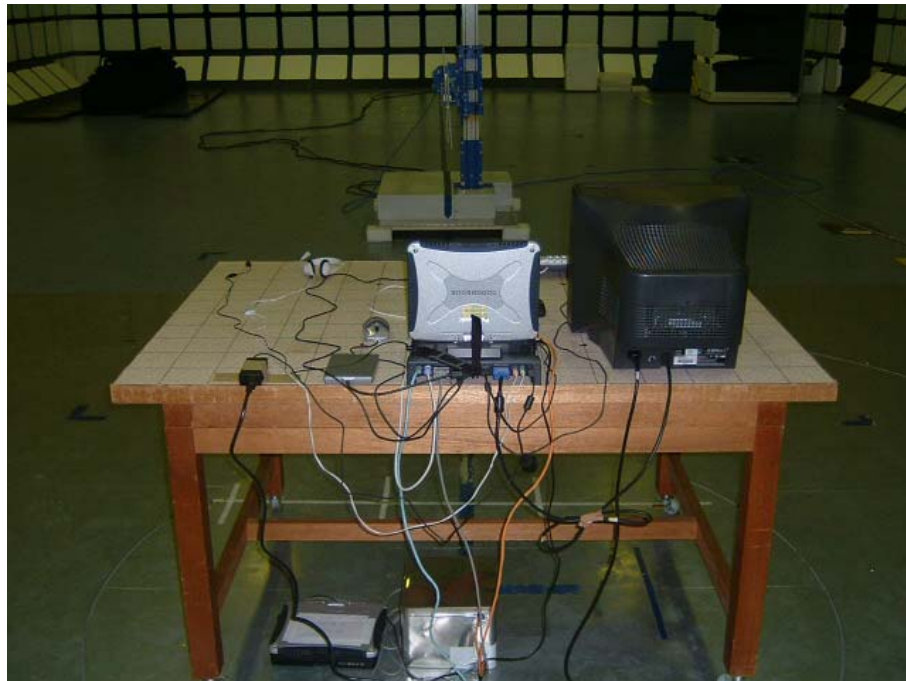


Radiated Emission

Front



Rear



UL Apex Co., Ltd.

Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

MF060b(10.04.03)

APPENDIX 2: Test instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Test Item	Calibration Date * Interval(month)
MAEC-01	Anechoic Chamber	TDK	Semi Anechoic Chamber 10m	RE/CE	2003/12/27 * 12
MTR-01	Test Receiver	Rohde & Schwarz	ESI40	RE/CE	2003/11/12 * 12
MCC-01	Coaxial Cable	Suhner/storm/Agilent/TSJ	-	RE	2003/12/19 * 12
MBA-01	Biconical Antenna	Schwarzbeck	BBA9106	RE	2003/10/15 * 12
MLA-01	Logperiodic Antenna	Schwarzbeck	USLP9143	RE	2003/10/15 * 12
MPA-02	Pre Amplifier	Agilent	87405A	RE	2004/04/16 * 12
MAT-06	Attenuator(6dB)	Weinschel Corp	2	RE	2003/12/16 * 12
MPA-01	Pre Amplifier	Agilent	8449B	RE	2004/02/06 * 12
MCC-05	Microwave Cable	Storm	421-011	RE	2004/01/06 * 12
MCC-23	Microwave Cable	Storm	-	RE	2004/05/01 * 12
MHF-02	High Pass Filter	Tokimec	TF323DCA	RE	2003/09/19 * 12
MHA-05	Horn Antenna	Schwarzbeck	BBHA9120D	RE	2004/01/10 * 12
MLS-02	LISN(AMN)	Schwarzbeck	NSLK8127	CE	2003/11/10 * 12
MLS-03	LISN(AMN)	Schwarzbeck	NSLK8127	CE	2003/11/10 * 12
MTA-04	Termination	MCL	NTRM-50	CE	2004/02/16 * 12
MCC-03	Coaxial Cable	Fujikura/Suhner/Agilent/TSJ	-	CE	2003/12/24 * 12
MPL-01	Pulse Limiter	Rohde & Schwarz	ESH3Z2	CE	2004/01/06 * 12

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

Test Item:

CE: Conducted emission

RE: Radiated emission

UL Apex Co., Ltd.

Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

MF060b(10.04.03)

APPENDIX 3: Test Data of EMI

Conducted emission

DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber
 Date : 2004/05/15 15:27:58

Applicant : Matsushita Electric Industrial Co.,Ltd. Report No. : 24HE0350-HO
 Kind of EUT : Personal Computer POWER : AC120V / 60Hz
 Model No. : CF-18 Temp°C/Humi% : 24 / 48
 Serial No. : DVT#20 Operator : Mitsuru Fujimura

Mode / Remarks : W-LAN IEEE802.11b / Bluetooth / CDMA:Low(283ch)

LIMIT : FCC15B ClassB (QP) (0.15-30MHz)
 FCC15B ClassB (AV) (0.15-30MHz)

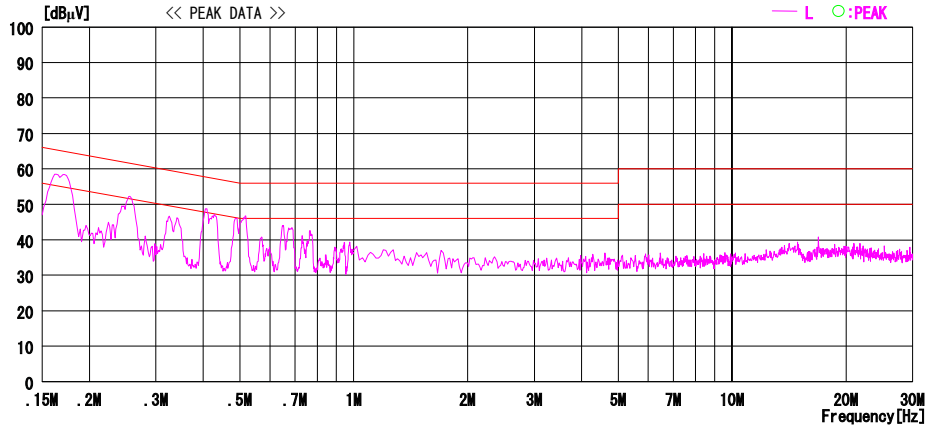
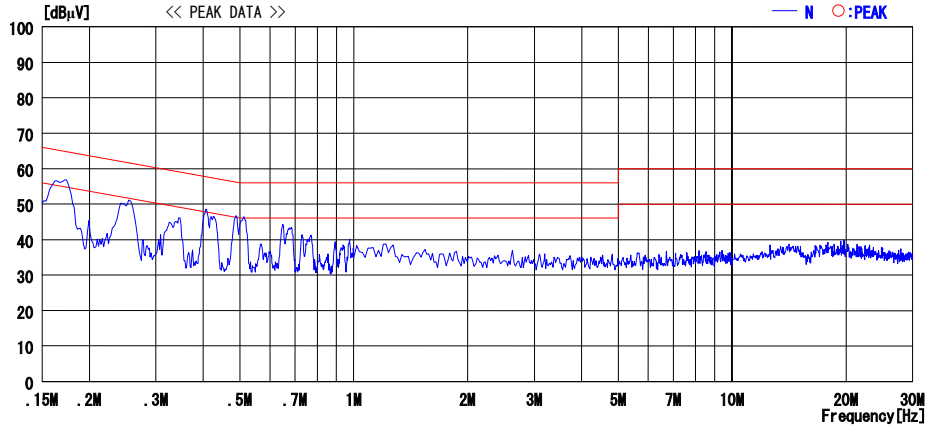


CHART : WITH FACTOR , CALCURATION : RESULT=READING+C.F(L1SN LOSS+CABLE LOSS)
 Except for the above table : adequate margin data below the limits.

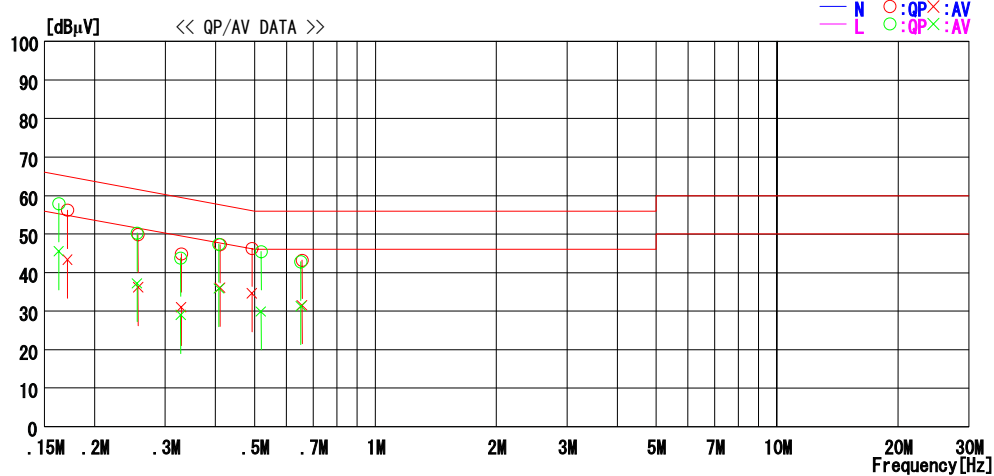
DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2004/05/15 15:27:58

Applicant : Matsushita Electric Industrial Co.,Ltd. Report No. : 24HE0350-HO
Kind of EUT: Personal Computer POWER : AC120V / 60Hz
Model No. : CF-18 Temp°C/Humi% : 24 / 48
Serial No. : DVT#20 Operator : Mitsuru Fujimura

Mode / Remarks: W-LAN IEEE802.11b / Bluetooth / CDMA:Low(283ch)

LIMIT : FCC15B ClassB (QP) (0.15-30MHz)
FCC15B ClassB (AV) (0.15-30MHz)



NO	FREQ [MHz]	READING		C. F [dB]	RESULT		LIMIT		MARGIN		PHASE
		QP [dBμV]	AV [dBμV]		QP [dBμV]	AV [dBμV]	QP [dBμV]	AV [dBμV]	QP [dB]	AV [dB]	
1	0.1712	46.2	33.4	10.0	56.2	43.4	64.9	54.9	8.7	11.5	N
2	0.2566	39.8	26.1	10.1	49.9	36.2	61.5	51.5	11.6	15.3	N
3	0.3286	34.7	20.8	10.2	44.9	31.0	59.5	49.5	14.6	18.5	N
4	0.4104	37.0	25.8	10.3	47.3	36.1	57.6	47.6	10.3	11.5	N
5	0.4922	35.9	24.2	10.4	46.3	34.6	56.1	46.1	9.8	11.5	N
6	0.6568	32.7	21.0	10.5	43.2	31.5	56.0	46.0	12.8	14.5	N
7	0.1628	47.9	35.5	10.0	57.9	45.5	65.3	55.3	7.4	9.8	L
8	0.2549	40.2	27.1	10.1	50.3	37.2	61.6	51.6	11.3	14.4	L
9	0.3274	33.6	18.8	10.2	43.8	29.0	59.5	49.5	15.7	20.5	L
10	0.4074	37.1	25.6	10.3	47.4	35.9	57.7	47.7	10.3	11.8	L
11	0.5187	35.0	19.4	10.5	45.5	29.9	56.0	46.0	10.5	16.1	L
12	0.6526	32.3	20.8	10.5	42.8	31.3	56.0	46.0	13.2	14.8	L

CHART : WITH FACTOR , CALCURATION : RESULT=READING+C. F (LISN LOSS+CABLE LOSS)
Except for the above table : adeauate margin data below the limits.

Page:

UL Apex Co., Ltd.

Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

MF060b(10.04.03)

DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2004/05/15 16:06:10

Applicant : Matsushita Electric Industrial Co.,Ltd. Report No. : 24HE0350-HO
Kind of EUT : Personal Computer POWER : AC120V / 60Hz
Model No. : CF-18 Temp°C/Humi% : 24 / 48
Serial No. : DVT#20 Operator : Mitsuru Fujimura

Mode / Remarks: W-LAN IEEE802.11g / Bluetooth / CDMA:High(625ch)

LIMIT : FCC15B ClassB(OP) (0.15-30MHz)
FCC15B ClassB(AV) (0.15-30MHz)

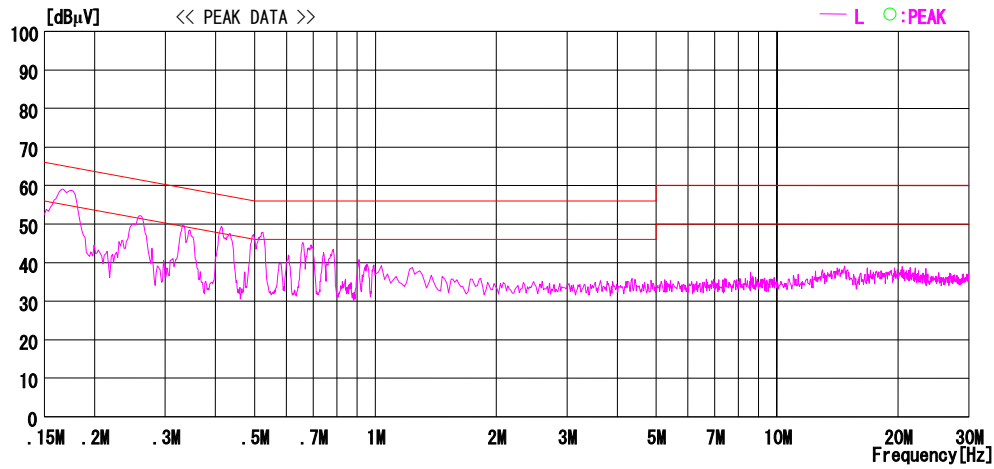
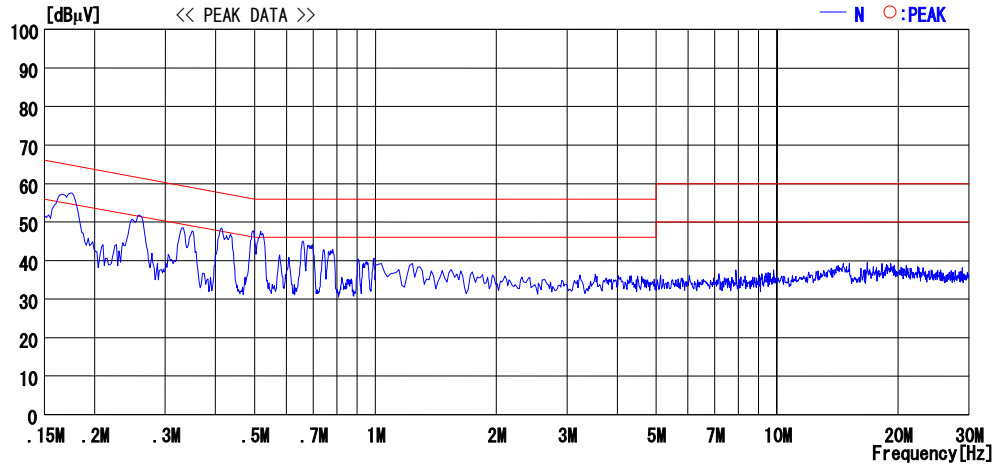


CHART : WITH FACTOR , CALCURATION : RESULT=READING+C.F(LISN LOSS+CABLE LOSS)
Except for the above table : adeauate margin data below the limits.

Page:

UL Apex Co., Ltd.

Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

MF060b(10.04.03)

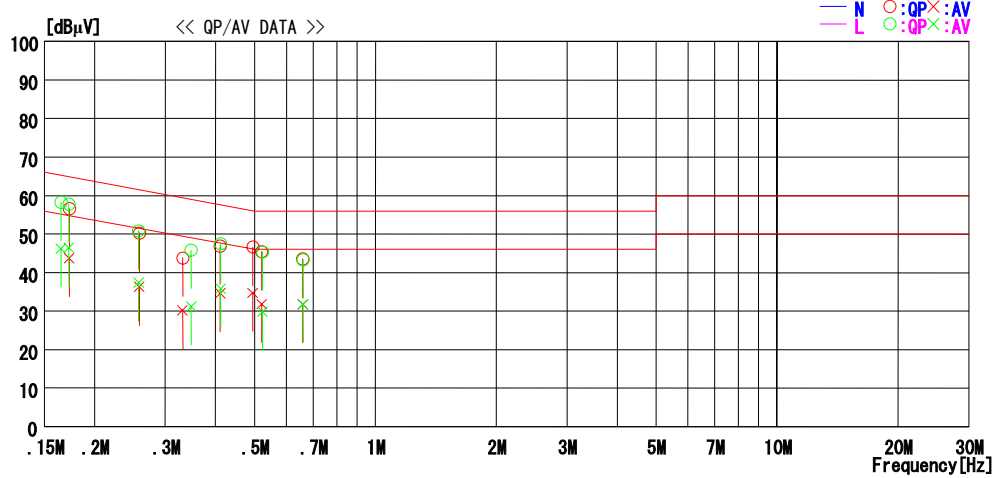
DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber
 Date : 2004/05/15 16:06:10

Applicant : Matsushita Electric Industrial Co.,Ltd. Report No. : 24HE0350-HO
 Kind of EUT : Personal Computer POWER : AC120V / 60Hz
 Model No. : CF-18 Temp°C/Humi% : 24 / 48
 Serial No. : DVT#20 Operator : Mitsuru Fujimura

Mode / Remarks: W-LAN IEEE802.11g / Bluetooth / CDMA:High(625ch)

LIMIT : FCC15B ClassB (QP) (0.15-30MHz)
 FCC15B ClassB (AV) (0.15-30MHz)



NO	FREQ [MHz]	READING		C. F [dB]	RESULT		LIMIT		MARGIN		PHASE
		QP [dBµV]	AV [dBµV]		QP [dBµV]	AV [dBµV]	QP [dBµV]	AV [dBµV]	QP [dB]	AV [dB]	
1	0.1729	46.6	33.7	10.0	56.6	43.7	64.8	54.8	8.2	11.1	N
2	0.2584	40.1	26.2	10.1	50.2	36.3	61.5	51.5	11.3	15.2	N
3	0.3313	33.6	20.0	10.2	43.8	30.2	59.4	49.4	15.6	19.2	N
4	0.4110	36.6	24.3	10.3	46.9	34.6	57.6	47.6	10.7	13.0	N
5	0.4950	36.2	24.3	10.4	46.6	34.7	56.1	46.1	9.5	11.4	N
6	0.6597	33.0	21.3	10.5	43.5	31.8	56.0	46.0	12.5	14.2	N
7	0.5215	34.9	21.3	10.5	45.4	31.8	56.0	46.0	10.6	14.2	N
8	0.1648	48.3	36.2	10.0	58.3	46.2	65.2	55.2	6.9	9.0	L
9	0.2573	40.7	27.3	10.1	50.8	37.4	61.5	51.5	10.7	14.1	L
10	0.3477	35.6	21.0	10.2	45.8	31.2	59.0	49.0	13.2	17.8	L
11	0.4119	37.2	25.6	10.3	47.5	35.9	57.6	47.6	10.1	11.7	L
12	0.5234	34.9	19.3	10.5	45.4	29.8	56.0	46.0	10.6	16.2	L
13	0.6598	32.8	21.3	10.5	43.3	31.8	56.0	46.0	12.7	14.2	L
14	0.1723	47.8	36.5	10.0	57.8	46.5	64.8	54.8	7.0	8.3	L

CHART : WITH FACTOR , CALCURATION : RESULT=READING+C.F (LISN LOSS+CABLE LOSS)
 Except for the above table : adeauate margin data below the limits.

UL Apex Co., Ltd.

Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2004/05/15 16:37:55

Applicant : Matsushita Electric Industrial Co.,Ltd. Report No. : 24HE0350-HO
Kind of EUT : Personal Computer POWER : AC120V / 60Hz
Model No. : CF-18 Temp°C/Humi% : 24 / 48
Serial No. : DVT#20 Operator : Mitsuru Fujimura

Mode / Remarks: W-LAN IEEE802.11g

LIMIT : FCC15B ClassB(OP) (0.15-30MHz)
FCC15B ClassB(AV) (0.15-30MHz)

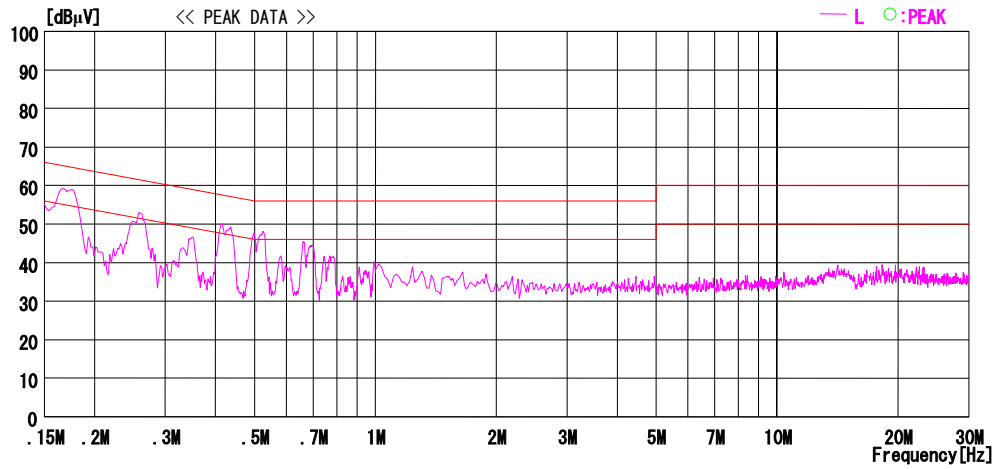
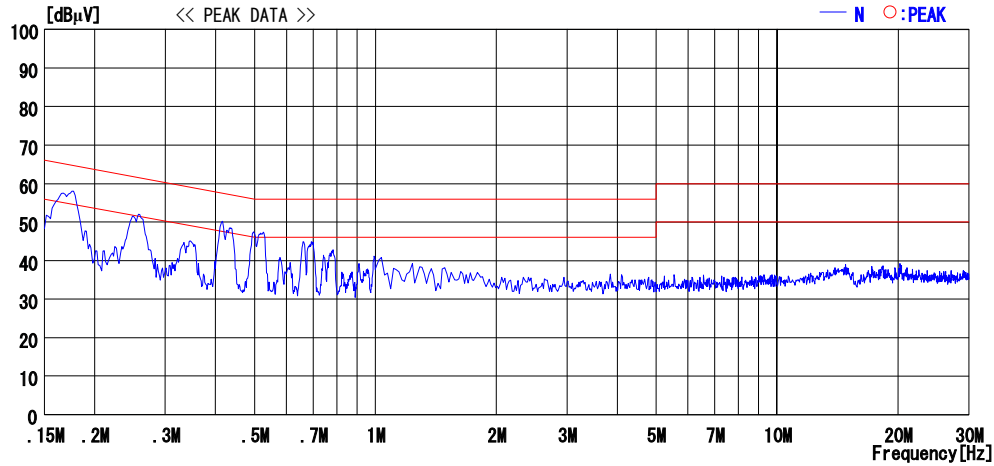


CHART : WITH FACTOR , CALCURATION : RESULT=READING+C.F(LISN LOSS+CABLE LOSS)
Except for the above table : adequate margin data below the limits.

UL Apex Co., Ltd.

Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

MF060b(10.04.03)

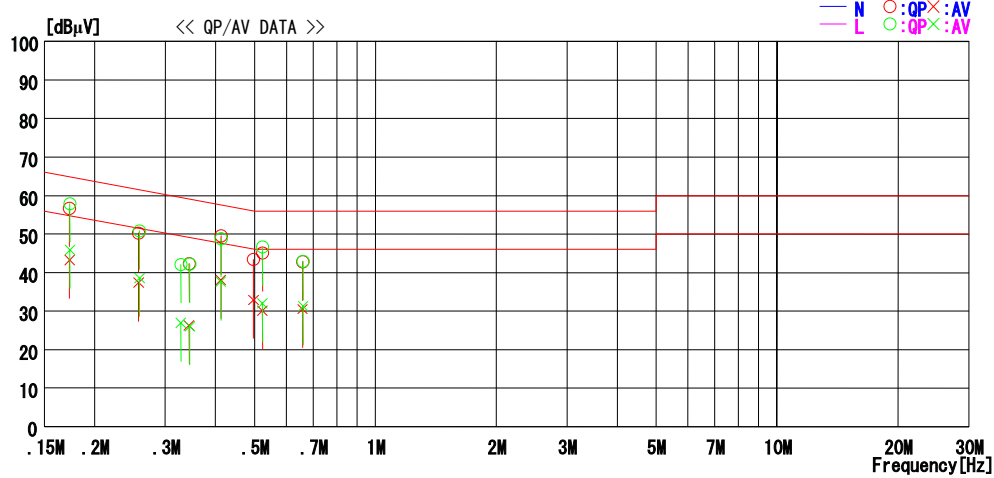
DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2004/05/15 16:37:55

Applicant : Matsushita Electric Industrial Co.,Ltd. Report No. : 24HE0350-HO
Kind of EUT : Personal Computer POWER : AC120V / 60Hz
Model No. : CF-18 Temp°C/Humi% : 24 / 48
Serial No. : DVT#20 Operator : Mitsuru Fujimura

Mode / Remarks: W-LAN IEEE802.11g

LIMIT : FCC15B ClassB (QP) (0.15-30MHz)
FCC15B ClassB (AV) (0.15-30MHz)



NO	FREQ [MHz]	READING		C. F [dB]	RESULT		LIMIT		MARGIN		PHASE
		QP [dBµV]	AV [dBµV]		QP [dBµV]	AV [dBµV]	QP [dBµV]	AV [dBµV]	QP [dB]	AV [dB]	
1	0.1732	46.7	33.3	10.0	56.7	43.3	64.8	54.8	8.1	11.5	N
2	0.2574	40.1	27.3	10.1	50.2	37.4	61.5	51.5	11.3	14.1	N
3	0.3436	32.2	16.1	10.2	42.4	26.3	59.1	49.1	16.7	22.8	N
4	0.4123	39.2	27.8	10.3	49.5	38.1	57.6	47.6	8.1	9.5	N
5	0.4969	33.0	22.5	10.4	43.4	32.9	56.1	46.1	12.7	13.2	N
6	0.5232	34.6	19.6	10.5	45.1	30.1	56.0	46.0	10.9	15.9	N
7	0.6589	32.3	20.0	10.5	42.8	30.5	56.0	46.0	13.2	15.5	N
8	0.1736	47.9	35.9	10.0	57.9	45.9	64.8	54.8	6.9	8.9	L
9	0.2587	40.7	28.5	10.1	50.8	38.6	61.5	51.5	10.7	12.9	L
10	0.3277	31.9	16.8	10.2	42.1	27.0	59.5	49.5	17.4	22.5	L
11	0.3450	32.0	15.8	10.2	42.2	26.0	59.1	49.1	16.9	23.1	L
12	0.4121	38.5	27.3	10.3	48.8	37.6	57.6	47.6	8.8	10.0	L
13	0.5228	36.1	21.5	10.5	46.6	32.0	56.0	46.0	9.4	14.0	L
14	0.6605	32.4	20.8	10.5	42.9	31.3	56.0	46.0	13.1	14.7	L

CHART : WITH FACTOR , CALCURATION : RESULT=READING+C. F (LISN LOSS+CABLE LOSS)
Except for the above table : adequate margin data below the limits.

UL Apex Co., Ltd.

Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

MF060b(10.04.03)

Radiated emission

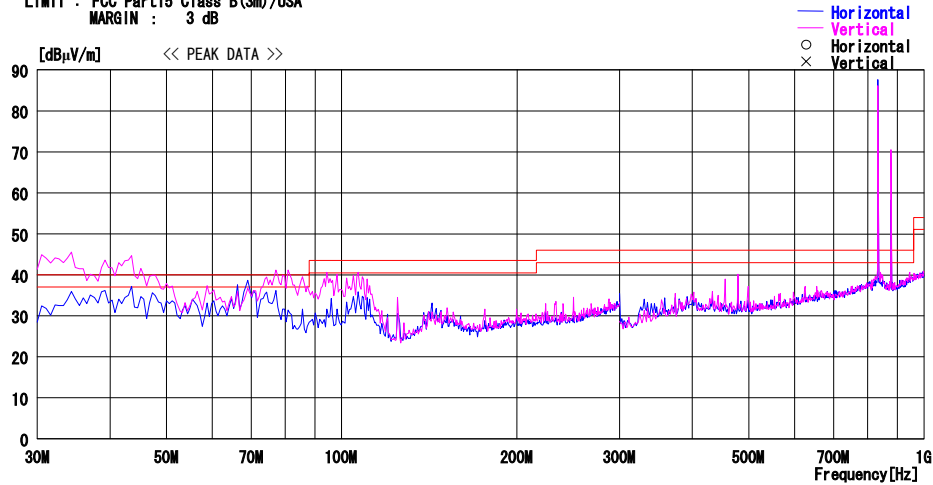
DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber
 Date : 2004/05/14 19:55:57

Applicant : Matsushita Electric Industrial Co.,Ltd. Report No. : 24HE0350-HO
 Kind of EUT : Personal Computer Power : AC120V / 60Hz
 Model No. : CF-18 Temp°C/Humi% : 23 / 45
 Serial No. : DVT#20 Operator : Naoki Sakamoto

Mode / Remarks : W-LAN:11b / Bluetooth / CDMA:Low(283ch)

LIMIT : FCC Part15 Class B(3m)/USA
 MARGIN : 3 dB



No.	FREQ	READING	ANT	LOSS	GAIN	RESULT	LIMIT	MARGIN	ANTENNA	TABLE
	[MHz]	[dBµV]	FACTOR	[dB]	[dB]	[dBµV/m]	[dBµV/m]	[dB]	[cm]	[DEG]
		[dBµV]	[dB/m]							

CHART:WITH FACTOR ANT TYPE : -30MHz LOOP, 30-300MHz BICONICAL, 300MHz-1000MHz LOGPERIODIC
 CALCULATION : READING + ANT FACTOR + LOSS (CABLE+ATTEN.) - AMP. GAIN

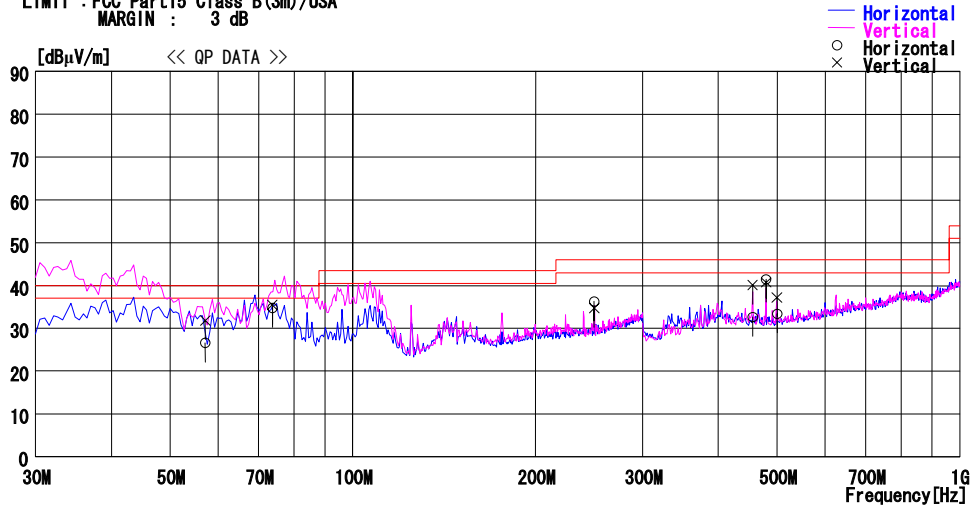
DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2004/05/14 20:41:58

Applicant : Matsushita Electric Industrial Co.,Ltd. Report No. : 24HE0350-HO
Kind of EUT : Personal Computer Power : AC120V / 60Hz
Model No. : CF-18 Temp°C/Humi% : 23 / 45
Serial No. : DVT#20 Operator : Naoki Sakamoto

Mode / Remarks: W-LAN:11g / Bluetooth / CDMA:High(625ch)

LIMIT : FCC Part15 Class B(3m)/USA
MARGIN : 3 dB



No.	FREQ [MHz]	READING QP [dBμV]	ANT FACTOR [dB/m]	LOSS [dB]	GAIN [dB]	RESULT [dBμV/m]	LIMIT [dBμV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal -----										
1	57.108	33.6	8.7	7.4	23.1	26.6	40.0	13.4	341	120
2	73.654	43.8	6.6	7.5	23.1	34.8	40.0	5.2	285	247
3	250.003	32.3	17.5	9.5	23.0	36.3	46.0	9.7	137	105
4	456.087	26.5	18.1	10.8	22.8	32.6	46.0	13.4	100	260
5	480.004	35.4	18.0	11.0	22.9	41.5	46.0	4.5	198	168
6	500.018	27.2	17.9	11.2	22.9	33.4	46.0	12.6	276	217
----- Vertical -----										
7	57.110	38.8	8.7	7.4	23.1	31.8	40.0	8.2	115	172
8	73.657	44.5	6.6	7.5	23.1	35.5	40.0	4.5	106	133
9	250.016	30.7	17.5	9.5	23.0	34.7	46.0	11.3	100	234
10	456.084	34.0	18.1	10.8	22.8	40.1	46.0	5.9	100	197
11	480.002	34.6	18.0	11.0	22.9	40.7	46.0	5.3	177	0
12	500.005	31.0	17.9	11.2	22.9	37.2	46.0	8.8	109	143

CHART:WITH FACTOR ANT TYPE: -30MHz LOOP, 30-300MHz BICONICAL, 300MHz-1000MHz LOGPERIODIC
CALCULATION : READING + ANT FACTOR + LOSS (CABLE+ATTEN.) - AMP. GAIN

UL Apex Co., Ltd.

Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

MF060b(10.04.03)

DATA OF RADIATED EMISSION TEST

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

Applicant : Matsushita Electric Industrial Co.,Ltd. Report No. : 24HE0350-HO
Kind of EUT : Personal Computer Power : AC120V / 60Hz
Model No. : CF-18 Temp°C/Humi% : 23 / 50
Serial No. : DVT#20 Operator : Mitsuru Fujimura

Mode / Remarks: W-LAN IEEE802.11b / Bluetooth / CDMA:Low(283ch)

LIMIT : FCC Part15 Class B(3m)/USA
MARGIN : 3 dB

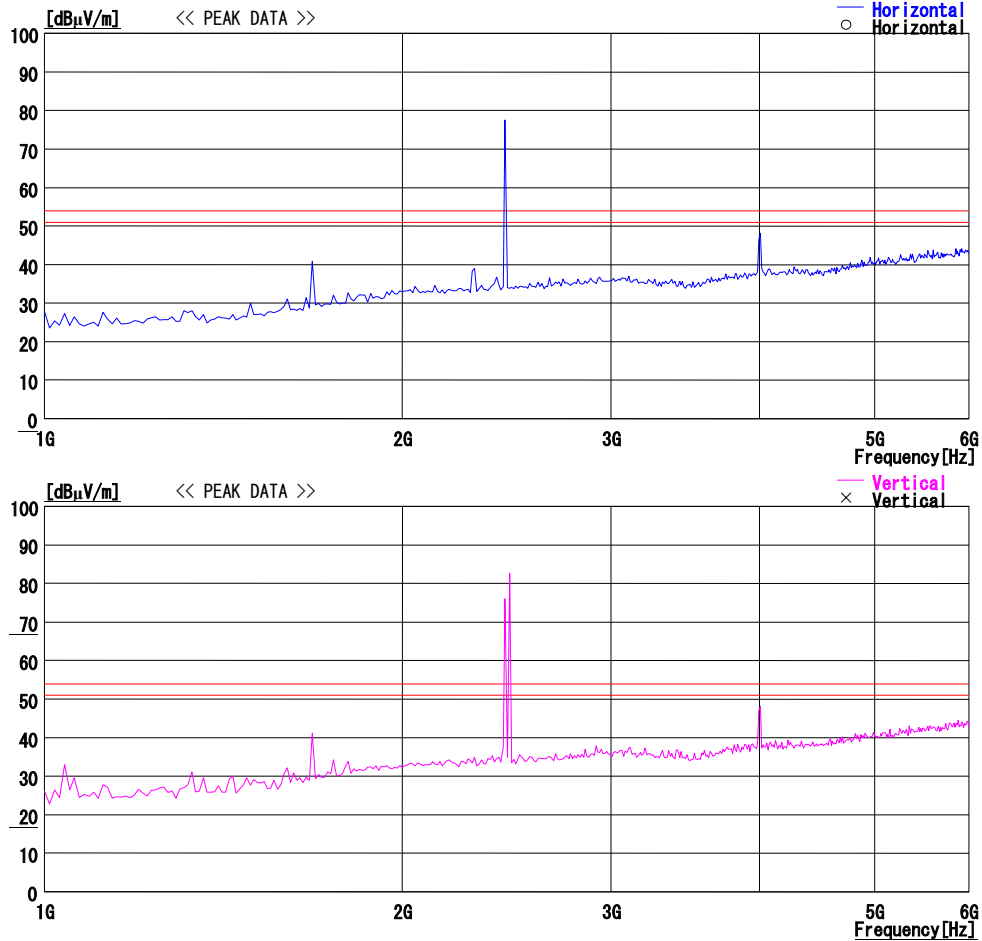


CHART: WITH FACTOR ANT TYPE : 1000MHz- HORN
CALCULATION : READING + ANT FACTOR + LOSS (CABLE+ATTEN.) - AMP. GAIN

UL Apex Co., Ltd.

Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

MF060b(10.04.03)

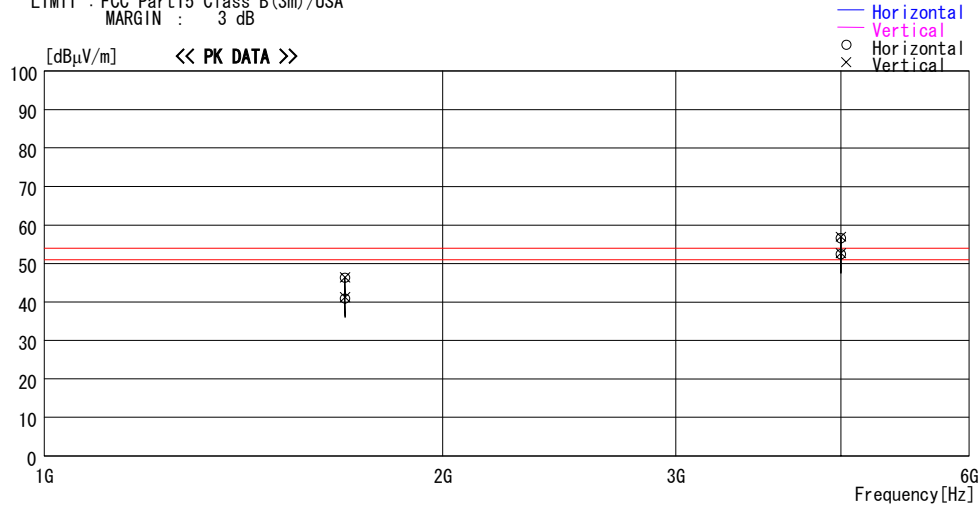
DATA OF RADIATED EMISSION TEST

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

Applicant : Matsushita Electric Industrial Co.,Ltd. Report No. : 24HE0350-HO
Kind of EUT : Personal Computer Power : AC120V / 60Hz
Model No. : CF-18 Temp°C/Humi% : 23 / 50
Serial No. : DVT#20 Operator : Mitsuru Fujimura

Mode / Remarks: W-LAN IEEE802.11b / Bluetooth / CDMA:Low(283ch)

LIMIT : FCC Part15 Class B(3m)/USA
MARGIN : 3 dB



No.	FREQ [MHz]	READING PK [dBμV]	ANT FACTOR [dB/m]	LOSS [dB]	GAIN [dB]	RESULT [dBμV/m]	LIMIT [dBμV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal -----										
1	1688.001	51.7	26.5	4.6	36.5	46.3	74.0	27.7	100	0
2	3999.998	50.7	33.5	8.3	35.9	56.6	74.0	17.4	100	0
----- Vertical -----										
3	1688.001	51.7	26.5	4.6	36.5	46.3	74.0	27.7	100	0
4	4000.000	51.0	33.5	8.4	35.9	57.0	74.0	17.0	100	0

CHART: WITH FACTOR ANT TYPE : 1000MHz- HORN
CALCULATION : READING + ANT FACTOR + LOSS(CABLE+ATTEN.) - AMP. GAIN

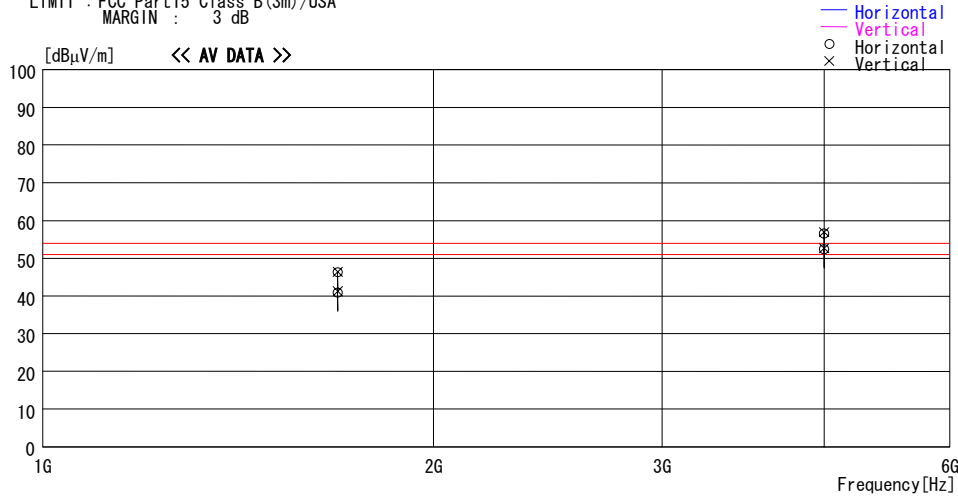
DATA OF RADIATED EMISSION TEST

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

Applicant : Matsushita Electric Industrial Co.,Ltd. Report No. : 24HE0350-HO
Kind of EUT : Personal Computer Power : AC120V / 60Hz
Model No. : CF-i8 Temp°C/Humi% : 23 / 50
Serial No. : DVT#20 Operator : Mitsuru Fujimura

Mode / Remarks: W-LAN IEEE802.11b / Bluetooth / CDMA:Low(283ch)

LIMIT : FCC Part15 Class B(3m)/USA
MARGIN : 3 dB



No.	FREQ [MHz]	READING AV [dBμV]	ANT FACTOR [dB/m]	LOSS [dB]	GAIN [dB]	RESULT [dBμV/m]	LIMIT [dBμV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal -----										
1	1688.001	46.3	26.5	4.6	36.5	40.9	54.0	13.1	100	0
2	3999.998	46.5	33.5	8.3	35.9	52.4	54.0	1.7	100	0
----- Vertical -----										
3	1688.001	46.7	26.5	4.6	36.5	41.3	54.0	12.7	100	0
4	4000.000	46.6	33.5	8.4	35.9	52.6	54.0	1.4	100	0

CHART: WITH FACTOR ANT TYPE: 1000MHz- HORN
CALCULATION : READING + ANT FACTOR + LOSS(CABLE+ATTEN.) - AMP. GAIN

UL Apex Co., Ltd.

Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

MF060b(10.04.03)

DATA OF RADIATED EMISSION TEST

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

Applicant : Matsushita Electric Industrial Co.,Ltd. Report No. : 24HE0350-HO
Kind of EUT : Personal Computer Power : AC120V / 60Hz
Model No. : CF-18 Temp°C/Humi% : 23 / 50
Serial No. : DVT#20 Operator : Mitsuru Fujimura

Mode / Remarks: W-LAN IEEE802.11g / Bluetooth / CDMA:High(625ch)

LIMIT : FCC Part15 Class B(3m)/USA
MARGIN : 3 dB

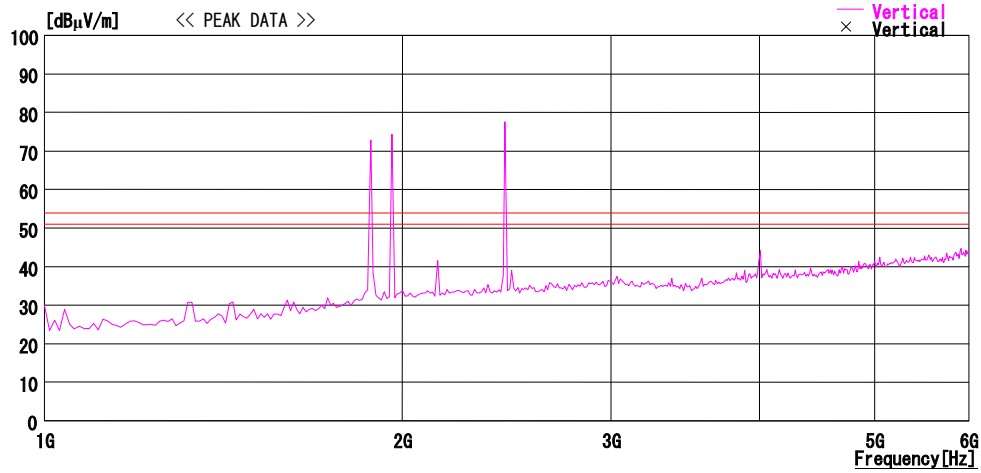
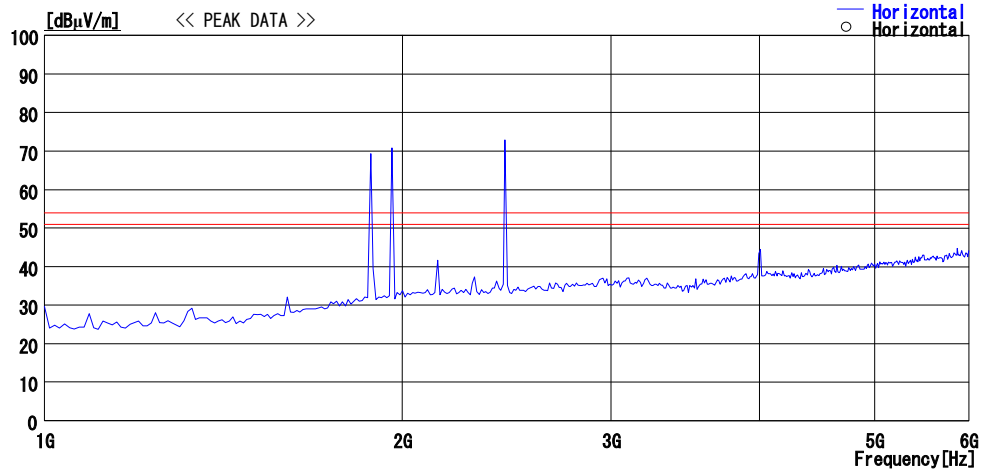


CHART:WITH FACTOR ANT TYPE : 1000MHz- HORN
CALCULATION : READING + ANT FACTOR + LOSS (CABLE+ATTEN.) - AMP. GAIN

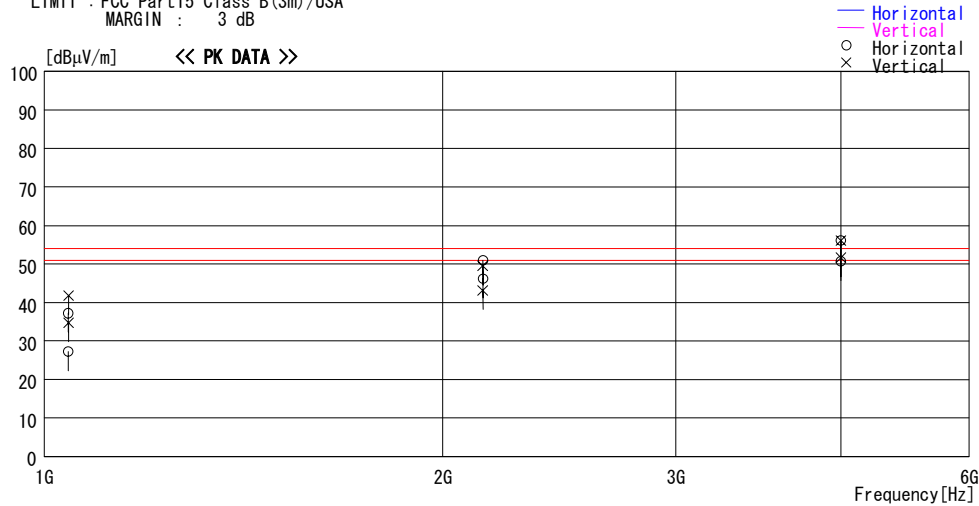
DATA OF RADIATED EMISSION TEST

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

Applicant : Matsushita Electric Industrial Co.,Ltd. Report No. : 24HE0350-HO
Kind of EUT : Personal Computer Power : AC120V / 60Hz
Model No. : CF-18 Temp°C/Humi% : 23 / 50
Serial No. : DVT#20 Operator : Mitsuru Fujimura

Mode / Remarks: W-LAN IEEE802.11g / Bluetooth / CDMA:High(625ch)

LIMIT : FCC Part15 Class B(3m)/USA
MARGIN : 3 dB



No.	FREQ [MHz]	READING PK [dBμV]	ANT FACTOR [dB/m]	LOSS [dB]	GAIN [dB]	RESULT [dBμV/m]	LIMIT [dBμV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal -----										
1	1042.467	48.3	22.5	3.6	37.1	37.3	74.0	36.7	100	0
2	2144.850	51.7	30.4	5.2	36.3	51.0	74.0	23.0	100	0
3	4000.001	50.1	33.5	8.4	35.9	56.1	74.0	17.9	100	0
----- Vertical -----										
4	1043.470	52.8	22.5	3.6	37.1	41.8	74.0	32.2	100	0
5	2144.843	50.2	30.4	5.2	36.3	49.5	74.0	24.5	100	0
6	3999.993	50.2	33.5	8.3	35.9	56.1	74.0	17.9	100	0

CHART: WITH FACTOR ANT TYPE : 1000MHz- HORN
CALCULATION : READING + ANT FACTOR + LOSS (CABLE+ATTEN.) - AMP. GAIN

UL Apex Co., Ltd.

Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

MF060b(10.04.03)

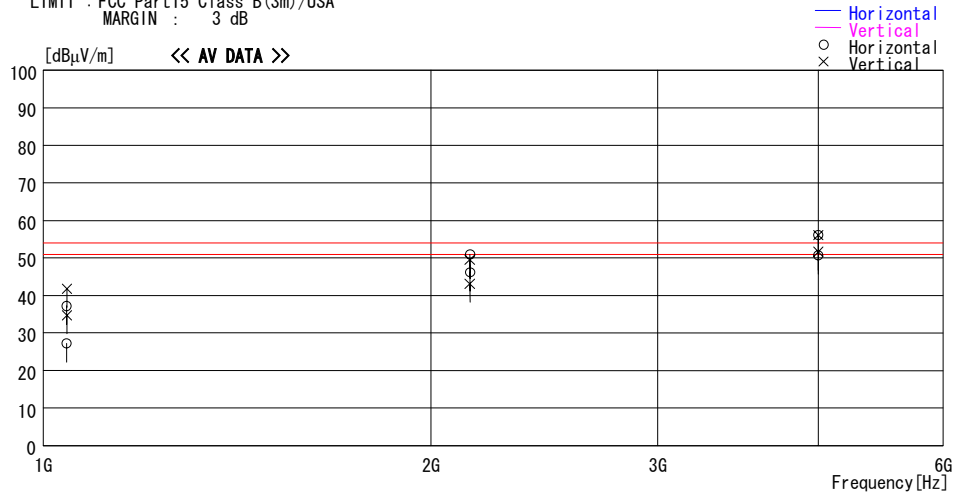
DATA OF RADIATED EMISSION TEST

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

Applicant : Matsushita Electric Industrial Co.,Ltd. Report No. : 24HE0350-HO
Kind of EUT : Personal Computer Power : AC120V / 60Hz
Model No. : CF-18 Temp°C/Humi% : 23 / 50
Serial No. : DVT#20 Operator : Mitsuru Fujimura

Mode / Remarks : W-LAN IEEE802.11g / Bluetooth / CDMA:High(625ch)

LIMIT : FCC Part15 Class B(3m)/USA
MARGIN : 3 dB



No.	FREQ [MHz]	READING AV [dBμV]	ANT FACTOR [dB/m]	LOSS [dB]	GAIN [dB]	RESULT [dBμV/m]	LIMIT [dBμV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
----- Horizontal -----										
1	1042.467	38.2	22.5	3.6	37.1	27.2	54.0	26.8	100	0
2	2144.850	46.9	30.4	5.2	36.3	46.2	54.0	7.8	100	0
3	4000.001	44.7	33.5	8.4	35.9	50.7	54.0	3.3	100	0
----- Vertical -----										
4	1043.470	45.7	22.5	3.6	37.1	34.7	54.0	19.3	100	0
5	2144.843	43.9	30.4	5.2	36.3	43.2	54.0	10.8	100	0
6	3999.993	45.8	33.5	8.3	35.9	51.7	54.0	2.3	100	0

CHART:WITH FACTOR ANT TYPE : 1000MHz- HORN
CALCULATION : READING + ANT FACTOR + LOSS(CABLE+ATTEN.) - AMP. GAIN

UL Apex Co., Ltd.

Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

MF060b(10.04.03)