



EMI TEST REPORT

Test Report No. : 31CE0024-HO-B

Applicant : Sharp Corporation, Communication Systems Group.
Type of Equipment : Cellular Phone
Model No. : 003SH
FCC ID : APYHRO00136
Test standard : FCC Part 15 Subpart B 2010 Class B
Test Result : Complied

1. This test report shall not be reproduced in full or partial, without the written approval of UL Japan, Inc.
2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with the above regulation.
4. The test results in this report are traceable to the national or international standards.
5. This test report must not be used by the customer product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

Date of test:

October 15, 2010

Representative test
engineer:


Tomotaka Sasagawa
Engineer of EMC Service

Approved by:


Mitsuru Fujimura
Manager of EMC Service



NVLAP LAB CODE: 200572-0

This laboratory is accredited by the NVLAP LAB CODE 200572-0, U.S.A. The tests reported herein have been performed in accordance with its terms of accreditation. *As for the range of Accreditation in NVLAP, you may refer to the WEB address, <http://www.ul.com/japan/jpn/pages/services/emc/about/mark1/index.jsp#nvlap>

UL Japan, Inc.

Head Office EMC Lab.

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MF058b (15.09.10)

CONTENTS	PAGE
SECTION 1: Customer information	3
SECTION 2: Equipment under test (E.U.T.)	3
SECTION 3: Test specification, procedures & results	4
SECTION 4: Operation of E.U.T. during testing	7
SECTION 5: Conducted Emission	9
SECTION 6: Radiated Emission	10
APPENDIX 1: Photographs of test setup.....	11
Conducted Emission	11
Radiated Emission	12
Worst Case Position (Horizontal: X-axis/ Vertical:X-axis)	13
APPENDIX 2: Data of EMI test	14
Conducted Emission	14
Radiated Emission	16
APPENDIX 3: Test instruments	20

SECTION 1: Customer information

Company Name : Sharp Corporation, Communication Systems Group.
Address : 2-13-1 Iida Hachihonmatsu HigashiHiroshima-City, Hiroshima, 739-0192 Japan
Telephone Number : +81-82-420-1827
Facsimile Number : +81-82-420-1572
Contact Person : Hiroyuki Uwatoko

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

2.1 Identification of E.U.T.

Type of Equipment : Cellular Phone
Model No. : 003SH
Serial No. : Refer to Section 4, Clause 4.2
Receipt Date of Sample : October 15, 2010
Country of Mass-production : Japan
Condition of EUT : Production prototype
(Not for Sale: This sample is equivalent to mass-produced items.)
Modification of EUT : No Modification by the test lab

2.2 Product description

Feature of EUT : 003SH is WCDMA & Tri-band (900/1800/1900) GSM Dual mode Cellular Phone.
The EUT has the function that Bluetooth wireless technology interface and wireless LAN technical interface for establishing contact and transmitting data with certain device.
Clock frequencies in the system : CPU: 1GHz
RTC: 32.768kHz
Source oscillation: 19.2MHz

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SECTION 3: Test specification, procedures & results

3.1 Test specification

Test Specification : FCC Part 15 Subpart B: 2010, final revised on October 13, 2010

Title : FCC 47CFR Part15 Radio Frequency Device
Subpart B Unintentional Radiators

3.2 Procedures and results

Item	Test Procedure	Limits	Deviation	Worst margin	Result
Conducted emission	ANSI C63.4: 2003 7. AC powerline conducted emission measurements	Class B	N/A	[QP] 15.4dB 0.16093MHz, N [AV] 18.0dB 0.16093MHz, N	Complied
Radiated emission	ANSI C63.4: 2003 8. Radiated emission measurements	Class B	N/A	7.3dB 447.294MHz, Horizontal, QP	Complied

*Note: UL Japan, Inc's EMI Work Procedure QPM05.

3.3 Addition to standard

No addition, exclusion nor deviation has been made from the standard.

3.4 Uncertainty

EMI

The following uncertainties have been calculated to provide a confidence level of 95% using a coverage factor k=2.

Test room (semi-anechoic chamber)	Conducted emission (±dB)
	150kHz-30MHz
No.1	2.6dB
No.2	2.9dB
No.3	3.3dB
No.4	2.8dB

Test room (semi-anechoic chamber)	Radiated emission						
	(3m*)(±dB)				(1m*)(±dB)		(0.5m*)(±dB)
	9kHz -30MHz	30MHz -300MHz	300MHz -1GHz	1GHz -10GHz	10GHz -18GHz	18GHz -26.5GHz	26.5GHz -40GHz
No.1	2.9dB	4.8dB	5.0dB	3.9dB	4.3dB	4.5dB	4.3dB
No.2	3.5dB	4.8dB	5.1dB	4.0dB	4.2dB	4.4dB	4.2dB
No.3	3.8dB	4.6dB	4.7dB	4.0dB	4.2dB	4.5dB	4.2dB
No.4	3.5dB	4.4dB	4.9dB	4.0dB	4.2dB	4.6dB	4.2dB

*3m/1m/0.5m = Measurement distance

Conducted Emission test

The data listed in this test report has enough margin, more than the site margin.

Radiated emission test(3m)

The data listed in this test report has enough margin, more than the site margin.

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3.5 Test Location

UL Japan, Inc. 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	2973C-1	19.2 x 11.2 x 7.7m	7.0 x 6.0m	No.1 Power source room
No.2 semi-anechoic chamber	655103	2973C-2	7.5 x 5.8 x 5.2m	4.0 x 4.0m	-
No.3 semi-anechoic chamber	148738	2973C-3	12.0 x 8.5 x 5.9m	6.8 x 5.75m	No.3 Preparation room
No.3 shielded room	-	-	4.0 x 6.0 x 2.7m	N/A	-
No.4 semi-anechoic chamber	134570	2973C-4	12.0 x 8.5 x 5.9m	6.8 x 5.75m	No.4 Preparation room
No.4 shielded room	-	-	4.0 x 6.0 x 2.7m	N/A	-
No.5 semi-anechoic chamber	-	-	6.0 x 6.0 x 3.9m	6.0 x 6.0m	-
No.6 shielded room	-	-	4.0 x 4.5 x 2.7m	4.75 x 5.4 m	-
No.6 measurement room	-	-	4.75 x 5.4 x 3.0m	4.75 x 4.15 m	-
No.7 shielded room	-	-	4.7 x 7.5 x 2.7m	4.7 x 7.5m	-
No.8 measurement room	-	-	3.1 x 5.0 x 2.7m	N/A	-
No.9 measurement room	-	-	8.0 x 4.5 x 2.8m	2.0 x 2.0m	-
No.10 measurement room	-	-	2.6 x 2.8 x 2.5m	2.4 x 2.4m	-
No.11 measurement room	-	-	3.1 x 3.4 x 3.0m	2.4 x 3.4m	-

* Size of vertical conducting plane (for Conducted Emission test) : 2.0 x 2.0m for No.1, No.2, No.3, and No.4 semi-anechoic chambers and No.3 and No.4 shielded rooms.

3.6 Test set up, Data of EMI, and Test instruments

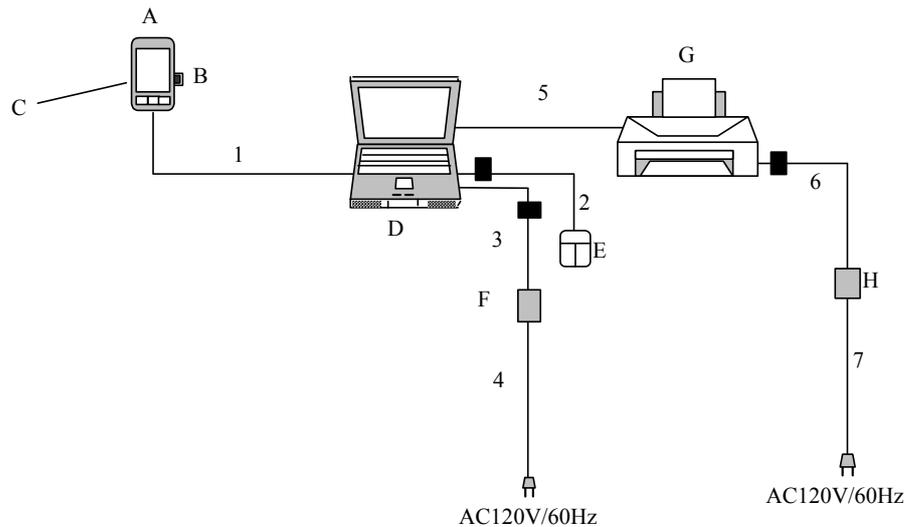
Refer to APPENDIX.

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

4.1 Operating modes

The mode(s) : 1) USB Data Com Mode
The USB data is communicated between EUT and Personal computer (Pair of EUT).
2) Standby Mode
Standby state for USB communication.

4.2 Configuration and peripherals



■ : Standard Ferrite Core

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

Description of EUT and Support equipment

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	Cellular Phone	003SH	004401/11/292882/1	Sharp Corporation	EUT
B	microSD Memory Card	SD-SDQ-016	None	SanDisk	-
C	Lithium-Ion Battery	SHBDL1	THA	Sharp Corporation	EUT
D	Personal Computer	PP11L	CN-0D4571-48643-55V-1651	DELL	-
E	Mouse	M-BE55	LZE21450232	Logitech	-
F	AC Adapter (PC)	PA-1650-05D2	CN-0F7970-71615-561-14A1	DELL	-
G	Printer	895Cxi	SG8BL1W16V	Hewlett Packard	-
H	AC Adapter (Printer)	C4557-60004	C8K28B	Hewlett Packard	-

List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	USB Data Cable	0.80	Shielded	Shielded	-
2	Mouse Cable	0.72	Unshielded	Unshielded	-
3	AC Adaptor Cable (PC)	1.76	Unshielded	Unshielded	-
4	AC Power Cable (PC)	0.85	Unshielded	Unshielded	-
5	Parallel Cable	1.65	Shielded	Shielded	-
6	AC Adapter Cable (printer)	2.00	Unshielded	Unshielded	-
7	AC Power Cable (printer)	1.75	Unshielded	Unshielded	-

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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 urethane platform of nominal size, 1.0m by 1.5m, raised 0.8m 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 the LISN/AMN and excess AC cable was bundled in center. I/O cables that were connected to the other peripherals were 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/AMN to the input power source. All unused 50 ohm connectors of the LISN/AMN were resistivity terminated in 50 ohm when not connected to the measuring equipment. Photographs of the set up are shown in Appendix 1.

Frequency range : 0.15 MHz-30MHz
EUT position : Table top
EUT operation mode : See Clause 4.1

5.3 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)/ Artificial Mains network (AMN). 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.

The conducted emission measurements were made with the following detector function of the test receiver.

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

5.4 Test result

Summary of the test results: Pass

Date: October 15, 2010

Test engineer: Tomotaka Sasagawa

UL Japan, Inc.

Head Office EMC Lab.

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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 urethane platform of nominal size, 1.0m by 1.5m, raised 0.8m above the conducting ground plane. The EUT was set on the edge 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. Photographs of the set up are shown in Appendix 1.

6.3 Test conditions

Frequency range : 30MHz-300MHz (Biconical antenna) / 300MHz-1000MHz (Logperiodic antenna)
1000MHz - 5000MHz (Horn antenna)
Test distance : 3m
EUT position : Table top
EUT operation mode : See Clause 4.1

6.4 Test procedure

The height of the measuring antenna 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.
The radiated emission measurements were made with the following detector function of the test receiver and the Spectrum analyzer.

Frequency	Below 1GHz	Above 1GHz
Instrument used	Test Receiver	Spectrum Analyzer
IF Bandwidth	QP: BW 120kHz	PK: RBW:1MHz/VBW: 3MHz AV *1): RBW:1MHz/VBW:10Hz

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

- The noise levels were confirmed at each position of X and Y axes of EUT to see the position of maximum noise, and the test was made at representative X-axis since no difference was found among each position.

6.5 Test result

Summary of the test results: Pass

Date: October 15, 2010

Test engineer: Tomotaka Sasagawa

UL Japan, Inc.

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APPENDIX 1: Photographs of test setup

Conducted Emission

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Radiated Emission

This page has been submitted for a separate exhibit.

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

This page has been submitted for a separate exhibit.

APPENDIX 2: Data of EMI test

Conducted Emission

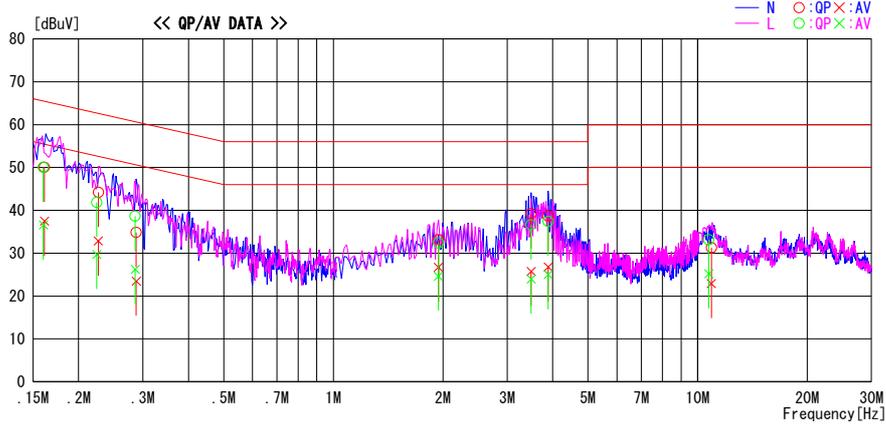
DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2010/10/15

Report No. : 31CE0024-HO
Temp./Humi. : 21deg. C / 53%
Engineer : Tomotaka Sasagawa

Mode / Remarks : USB Data Com Mode

LIMIT : FCC15.107(a) QP
FCC15.107(a) AV



Frequency [MHz]	Reading Level		Corr. Factor	Results		Limit		Margin		Phase	Comment
	QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dB]	AV [dB]		
0.16001	36.8	23.3	13.2	50.0	36.5	65.5	55.5	15.5	19.0	L	
0.16093	36.8	24.2	13.2	50.0	37.4	65.4	55.4	15.4	18.0	N	
0.22653	31.0	19.6	13.2	44.2	32.8	62.6	52.6	18.4	19.8	N	
0.22414	28.7	16.5	13.2	41.9	29.7	62.7	52.7	20.8	23.0	L	
0.28585	25.3	12.9	13.3	38.6	26.2	60.6	50.6	22.0	24.4	L	
0.28774	21.5	10.2	13.3	34.8	23.5	60.6	50.6	25.8	27.1	N	
1.94335	19.7	13.2	13.5	33.2	26.7	56.0	46.0	22.8	19.3	N	
1.94166	18.9	11.1	13.5	32.4	24.6	56.0	46.0	23.6	21.4	L	
3.48833	22.8	10.2	13.8	36.6	24.0	56.0	46.0	19.4	22.0	L	
3.48833	25.4	12.0	13.8	39.2	25.8	56.0	46.0	16.8	20.2	N	
3.88821	23.6	11.2	13.8	37.4	25.0	56.0	46.0	18.6	21.0	L	
3.88821	24.9	13.0	13.8	38.7	26.8	56.0	46.0	17.3	19.2	N	
10.91432	16.7	8.3	14.6	31.3	22.9	60.0	50.0	28.7	27.1	N	
10.72688	18.6	10.6	14.6	33.2	25.2	60.0	50.0	26.8	24.8	L	

CHART: WITH FACTOR, Peak hold data. CALCULATION: RESULT[dBuV]=READING[dBuV]+C.F[dB] (LISN LOSS+CABLE LOSS)
Except for the above table : adequate margin data below the limits.

*The test result is rounded off to one or two decimal places, so some differences might be observed.

Conducted Emission

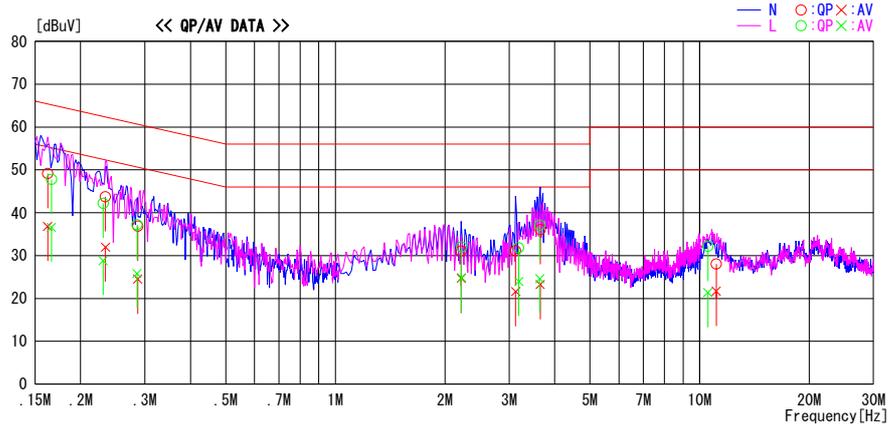
DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2010/10/15

Report No. : 31CE0024-HO
Temp./Humi. : 21deg. C / 53%
Engineer : Tomotaka Sasagawa

Mode / Remarks : Standby Mode

LIMIT : FCC15.107(a) QP
FCC15.107(a) AV



Frequency [MHz]	Reading Level		Corr. Factor	Results		Limit		Margin		Phase	Comment
	QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dB]	AV [dB]		
0.16220	36.0	23.6	13.2	49.2	36.8	65.4	55.4	16.2	18.6	N	
0.23369	30.4	18.7	13.3	43.7	32.0	62.3	52.3	18.6	20.3	N	
0.28670	23.6	11.2	13.3	36.9	24.5	60.6	50.6	23.7	26.1	N	
2.21599	17.5	11.1	13.6	31.1	24.7	56.0	46.0	24.9	21.3	N	
3.12481	17.4	7.8	13.8	31.2	21.6	56.0	46.0	24.8	24.4	N	
3.65192	22.2	9.4	13.8	36.0	23.2	56.0	46.0	20.0	22.8	N	
11.10019	13.4	7.1	14.6	28.0	21.7	60.0	50.0	32.0	28.3	N	
0.16624	34.6	23.4	13.2	47.8	36.6	65.1	55.1	17.3	18.5	L	
0.23050	28.9	15.5	13.3	42.2	28.8	62.4	52.4	20.2	23.6	L	
0.28533	23.9	12.5	13.3	37.2	25.8	60.7	50.7	23.5	24.9	L	
2.22055	18.4	11.3	13.6	32.0	24.9	56.0	46.0	24.0	21.1	L	
3.18903	18.0	10.2	13.8	31.8	24.0	56.0	46.0	24.2	22.0	L	
3.64116	23.3	10.8	13.8	37.1	24.6	56.0	46.0	18.9	21.4	L	
10.53404	17.5	6.8	14.6	32.1	21.4	60.0	50.0	27.9	28.6	L	

CHART: WITH FACTOR, Peak hold data. CALCULATION: RESULT [dBuV] = READING [dBuV] + C. F [dB] (L ISN LOSS + CABLE LOSS)
Except for the above table : adequate margin data below the limits.

*The test result is rounded off to one or two decimal places, so some differences might be observed.

Radiated Emission

DATA OF RADIATED EMISSION TEST

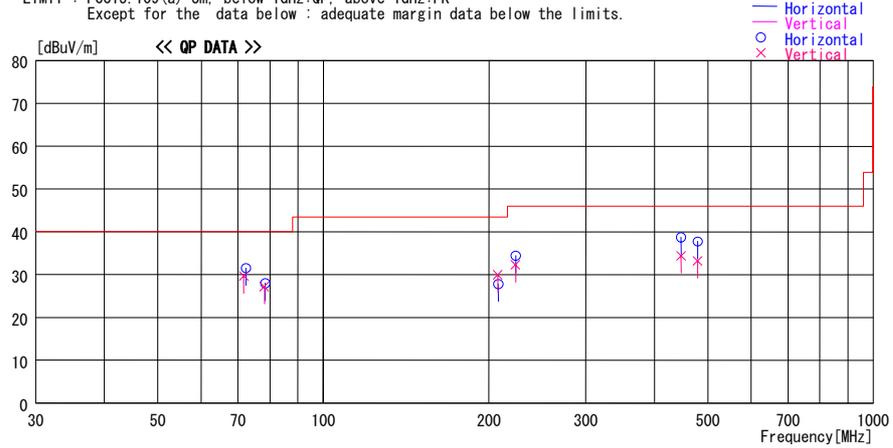
UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2010/10/15

Report No. : 31CE0024-HO

Temp./Humi. : 21deg. C / 53%
Engineer : Tomotaka Sasagawa

Mode / Remarks : USB Data Com Mode

LIMIT : FCC15.109(a) 3m, below 1GHz:QP, above 1GHz:PK
Except for the data below : adequate margin data below the limits.



Frequency [MHz]	Reading [dBuV]	DET	Antenna	Loss&	Level	Angle	Height	Polar.	Limit	Margin	Comment
			Factor	Gain							
			[dB/m]	[dB]	[dBuV/m]	[Deg]	[cm]		[dBuV/m]	[dB]	
72.368	58.2	QP	6.5	-33.2	31.5	146	258	Hori.	40.0	8.5	
71.669	56.4	QP	6.5	-33.2	29.7	248	116	Vert.	40.0	10.3	
78.424	54.7	QP	6.4	-33.1	28.0	144	228	Hori.	40.0	12.0	
78.156	53.9	QP	6.4	-33.1	27.2	1	100	Vert.	40.0	12.8	
208.015	42.0	QP	16.8	-31.0	27.8	181	283	Hori.	43.5	15.7	
207.695	44.2	QP	16.8	-31.0	30.0	10	100	Vert.	43.5	13.6	
223.686	48.2	QP	17.0	-30.8	34.4	214	123	Hori.	46.0	11.6	
223.688	46.1	QP	17.0	-30.8	32.3	0	100	Vert.	46.0	13.7	
447.294	49.9	QP	17.9	-29.1	38.7	68	100	Hori.	46.0	7.3	
447.359	45.6	QP	17.9	-29.1	34.4	298	100	Vert.	46.0	11.6	
479.321	48.7	QP	18.1	-29.0	37.8	228	100	Hori.	46.0	8.2	
479.559	44.1	QP	18.1	-29.0	33.2	47	100	Vert.	46.0	12.8	

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

*The limit is rounded down to one decimal place.
*The test result is rounded off to one or two decimal places, so some differences might be observed.

Radiated Emission

DATA OF RADIATED EMISSION TEST

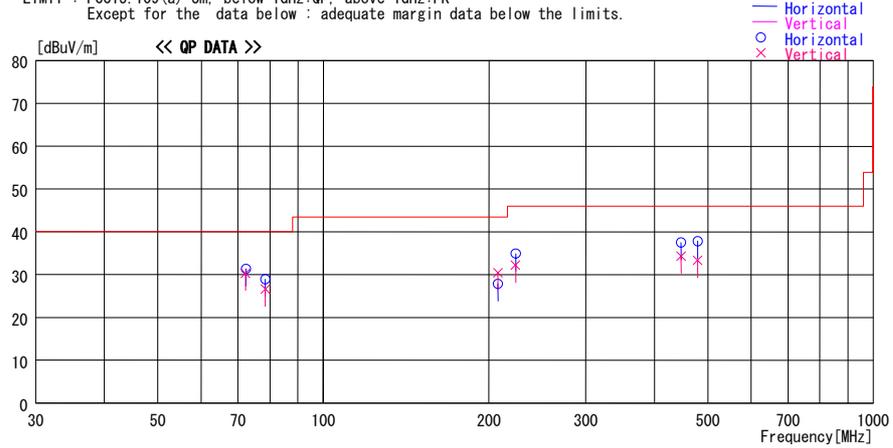
UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2010/10/15

Report No. : 31CE0024-HO

Temp./Humi. : 21deg. C / 53%
Engineer : Tomotaka Sasagawa

Mode / Remarks : Standby Mode

LIMIT : FCC15.109(a) 3m, below 1GHz:QP, above 1GHz:PK
Except for the data below : adequate margin data below the limits.



Frequency [MHz]	Reading [dBuV]	DET	Antenna	Loss&	Level	Angle [Deg]	Height [cm]	Polar.	Limit [dBuV/m]	Margin [dB]	Comment
			Factor [dB/m]	Gain [dB]							
72.393	58.1	QP	6.5	-33.2	31.4	167	332	Hori.	40.0	8.6	
72.204	57.0	QP	6.5	-33.2	30.3	231	100	Vert.	40.0	9.7	
78.412	55.6	QP	6.4	-33.1	28.9	292	277	Hori.	40.0	11.1	
78.414	53.3	QP	6.4	-33.1	26.6	0	100	Vert.	40.0	13.4	
207.710	42.1	QP	16.8	-31.0	27.9	25	229	Hori.	43.5	15.6	
207.706	44.7	QP	16.8	-31.0	30.5	3	100	Vert.	43.5	13.0	
223.685	48.8	QP	17.0	-30.8	35.0	184	211	Hori.	46.0	11.1	
223.692	46.0	QP	17.0	-30.8	32.2	11	100	Vert.	46.0	13.8	
447.365	48.7	QP	17.9	-29.1	37.5	226	100	Hori.	46.0	8.5	
479.316	44.2	QP	18.1	-29.0	33.3	96	100	Vert.	46.0	12.7	
479.559	48.7	QP	18.1	-29.0	37.8	228	100	Hori.	46.0	8.2	
447.355	45.5	QP	17.9	-29.1	34.3	298	100	Vert.	46.0	11.7	

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

*The limit is rounded down to one decimal place.
*The test result is rounded off to one or two decimal places, so some differences might be observed.

Radiated Emission

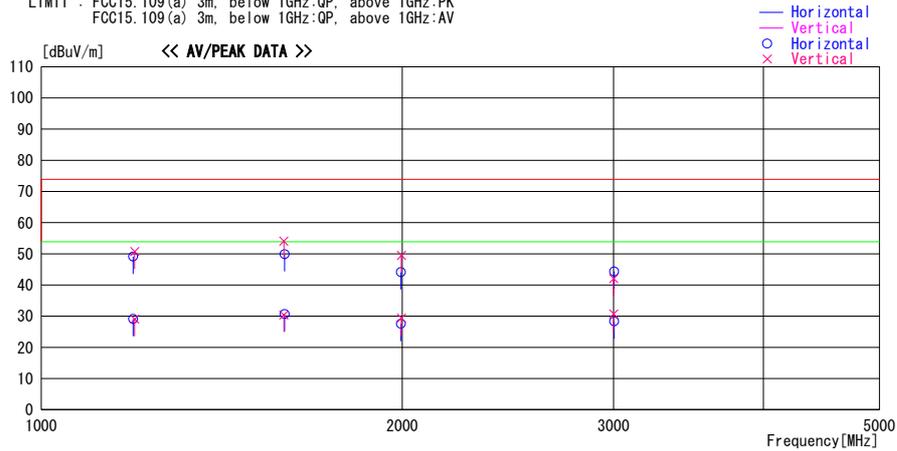
DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2010/10/15

Report No. : 31AE0241-H0
Temp./Humi. : 21deg. C / 53%
Engineer : Tomotaka Sasagawa

Mode / Remarks : USB Data Com Mode

LIMIT : FCC15.109(a) 3m, below 1GHz:QP, above 1GHz:PK
FCC15.109(a) 3m, below 1GHz:QP, above 1GHz:AV



Frequency [MHz]	Reading [dBuV]	DET	Antenna	Loss&	Level	Angle	Height	Polar.	Limit	Margin	Comment
			Factor [dB/m]	Gain [dB]							
1192.384	59.5	PK	24.5	-34.9	49.1	11	100	Hori.	73.9	24.8	
1192.384	39.5	AV	24.5	-34.9	29.1	11	100	Hori.	53.9	24.8	
1196.248	39.5	AV	24.5	-34.9	29.1	4	100	Vert.	53.9	24.8	
1196.248	61.1	PK	24.5	-34.9	50.7	4	100	Vert.	73.9	23.2	
1593.183	39.5	AV	25.6	-34.6	30.5	265	100	Vert.	53.9	23.5	
1593.183	63.1	PK	25.6	-34.6	54.1	265	100	Vert.	73.9	19.8	
1595.576	58.9	PK	25.6	-34.6	49.9	277	100	Hori.	73.9	24.0	
1595.576	39.7	AV	25.6	-34.6	30.7	277	100	Hori.	53.9	23.3	
1993.983	51.6	PK	26.8	-34.2	44.2	0	100	Hori.	73.9	29.7	
1993.983	35.0	AV	26.8	-34.2	27.6	0	100	Hori.	53.9	26.3	
1996.068	36.8	AV	26.8	-34.2	29.4	270	100	Vert.	53.9	24.5	
1996.068	57.0	PK	26.8	-34.2	49.6	270	100	Vert.	73.9	24.4	
2999.965	37.3	AV	27.3	-33.9	30.7	0	100	Vert.	53.9	23.2	
2999.965	48.7	PK	27.3	-33.9	42.1	0	100	Vert.	73.9	31.8	
3004.012	50.9	PK	27.4	-33.9	44.4	0	100	Hori.	73.9	29.5	
3004.012	34.9	AV	27.4	-33.9	28.4	0	100	Hori.	53.9	25.5	

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

*The limit is rounded down to one decimal place.

*The test result is rounded off to one or two decimal places, so some differences might be observed.

Radiated Emission

DATA OF RADIATED EMISSION TEST

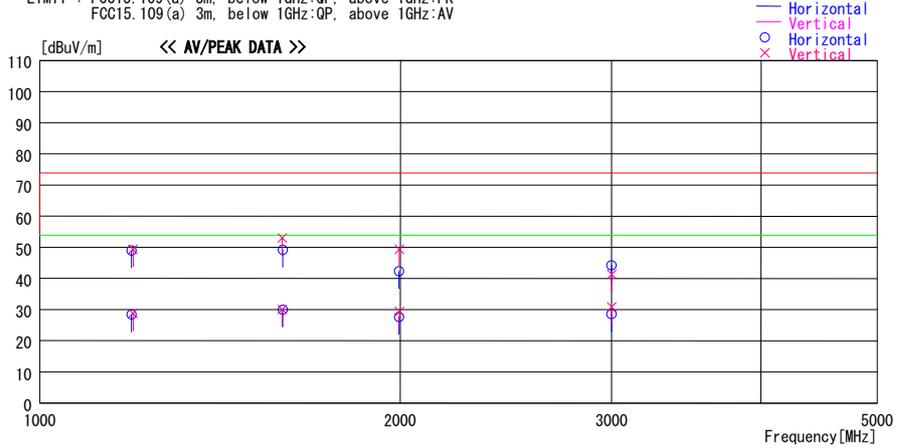
UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2010/10/15

Report No. : 31CE0024-HO

Temp./Humi. : 21deg. C / 53%
Engineer : Tomotaka Sasagawa

Mode / Remarks : Standby Mode

LIMIT : FCC15.109(a) 3m, below 1GHz:QP, above 1GHz:PK
FCC15.109(a) 3m, below 1GHz:QP, above 1GHz:AV



Frequency [MHz]	Reading [dBuV]	DET	Antenna	Loss&	Level	Angle	Height	Polar.	Limit	Margin	Comment
			Factor	Gain							
			[dB/m]	[dB]	[dBuV/m]	[Deg]	[cm]		[dBuV/m]	[dB]	
1192.344	59.4	PK	24.5	-34.9	49.0	33	100	Hori.	73.9	24.9	
1192.344	38.9	AV	24.5	-34.9	28.5	33	100	Hori.	53.9	25.4	
1196.421	39.2	AV	24.5	-34.9	28.8	7	100	Vert.	53.9	25.1	
1196.421	59.8	PK	24.5	-34.9	49.4	7	100	Vert.	73.9	24.5	
1593.412	39.1	AV	25.6	-34.6	30.1	255	100	Vert.	53.9	23.8	
1593.412	62.1	PK	25.6	-34.6	53.1	255	100	Vert.	73.9	20.8	
1595.774	58.2	PK	25.6	-34.6	49.2	273	100	Hori.	73.9	24.7	
1595.774	39.0	AV	25.6	-34.6	30.0	273	100	Hori.	53.9	23.9	
1994.312	49.8	PK	26.8	-34.2	42.4	0	100	Hori.	73.9	31.5	
1994.312	35.1	AV	26.8	-34.2	27.7	0	100	Hori.	53.9	26.2	
1996.213	36.8	AV	26.8	-34.2	29.4	272	100	Vert.	53.9	24.5	
1996.213	56.8	PK	26.8	-34.2	49.4	272	100	Vert.	73.9	24.5	
2999.987	37.4	AV	27.3	-33.9	30.8	0	100	Vert.	53.9	23.1	
2999.987	47.9	PK	27.3	-33.9	41.3	0	100	Vert.	73.9	32.6	
2999.993	50.8	PK	27.3	-33.9	44.2	0	100	Hori.	73.9	29.7	
2999.993	35.2	AV	27.3	-33.9	28.6	0	100	Hori.	53.9	25.3	

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

*The limit is rounded down to one decimal place.
*The test result is rounded off to one or two decimal places, so some differences might be observed.

APPENDIX 3: Test instruments

EMI Test Instruments

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
MAEC-01	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 10m	DA-06881	RE/CE	2010/07/02 * 12
MOS-01	Digital Humidity Indicator	N.T	NT-1800	MOS01	RE/CE	2010/02/09 * 12
MJM-01	Measure	KDS	ES19-55	-	RE/CE	-
COTS-MEMI	EMI measurement program	TSJ	TEPTO-DV	-	RE/CE	-
MTR-01	Test Receiver	Rohde & Schwarz	ESI40	100084	RE/CE	2009/12/17 * 12
MBA-01	Biconical Antenna	Schwarzbeck	BBA9106	VHA9103200 7	RE	2009/10/03 * 12
KLA-04	Logperiodic Antenna	Schwarzbeck	USLP9143	361	RE	2010/07/24 * 12
MAT-08	Attenuator(6dB)	Weinschel Corp	2	BK7971	RE	2009/11/13 * 12
MCC-01	Coaxial Cable 0.1-3000MHz	Suhner/storm/Agilent /TSJ	-	-	RE	2010/10/14 * 12
MPA-20	Pre Amplifier	Elena	EPA-4020YA	030801	RE	2010/03/23 * 12
MHA-05	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	253	RE	2010/06/29 * 12
MCC-58	Microwave Cable	Suhner	SUCOFLEX104	246770(1m) / 250655(5m)	RE	2010/03/03 * 12
MPA-01	Pre Amplifier	Agilent	8449B	3008A01671	RE	2010/02/12 * 12
MLS-06	LISN(AMN)	Schwarzbeck	NSLK8127	8127363	CE(EUT)	2010/02/04 * 12
MLS-03	LISN(AMN)	Schwarzbeck	NSLK8127	8127384	CE(AE)	2010/07/28 * 12
MTA-06	Terminator	MCL	BTRM-50	1 9951	CE	2010/02/02 * 12
MCC-03	Coaxial Cable	Fujikura/Suhner/TSJ	5D-2W(20m)/3D-2W(7.5m)/RG400u(1.5m)/RFM-E421(Switcher)	- /01068(Switcher)	CE	2010/01/05 * 12
MAT-64	Attenuator(13dB)	JFW Industries, Inc.	50FP-013H2 N	-	CE	2010/02/04 * 12

The expiration date of the calibration is the end of the expired month.

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

As for some calibrations performed after the tested dates, those test equipment have been controlled by means of an unbroken chains of calibrations.

Test Item:

CE: Conducted Emissions

RE: Radiated Emissions

UL Japan, Inc.

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