



EMI TEST REPORT

Test Report No. : 31DE0027-HO-B

Applicant : Sharp Corporation, Communication Systems Group.
Type of Equipment : Cellular Phone
Model No. : SH-05C
FCC ID : APYHRO00134
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:

November 8, 2010

Representative test
engineer:


Tomotaka Sasagawa
Engineer of EMC Service

Approved by:


Yutaka Yoshida
Leader 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.

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

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

MF058b (15.09.10)

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SECTION 1: Customer information

Company Name : Sharp Corporation, Communication Systems Group.
Address : 2-13-1 Iida Hachihonmatsu Higashi-Hiroshima-City, Hiroshima, 739-0192 Japan
Telephone Number : +81-82-420-1825
Facsimile Number : +81-82-420-1829
Contact Person : Kazuo Sugimoto

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

2.1 Identification of E.U.T.

Type of Equipment : Cellular Phone
Model No. : SH-05C
Serial No. : Refer to Section 4, Clause 4.2
Receipt Date of Sample : November 6, 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 : SH-05C is Tri-band (800/850/2000)WCDMA Cellular Phone / Bluetooth , Felica ,HDMI & 1.5GHz Band Satellite Receiver (GPS) enable -WCDMA (EU:2000M, USA:850, JPN: 800/2000)
Clock frequencies in the system : CPU: 500.5MHZ
Source oscillation: 48MHz

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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] 12.9dB 3.74679MHz, L [AV] 15.2dB 2.28251MHz, L	Complied
Radiated emission	ANSI C63.4: 2003 8. Radiated emission measurements	Class B	N/A	6.7dB 797.716MHz, Vertical, 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
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN
Telephone : +81 596 24 8116 Facsimile : +81 596 24 8124

	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

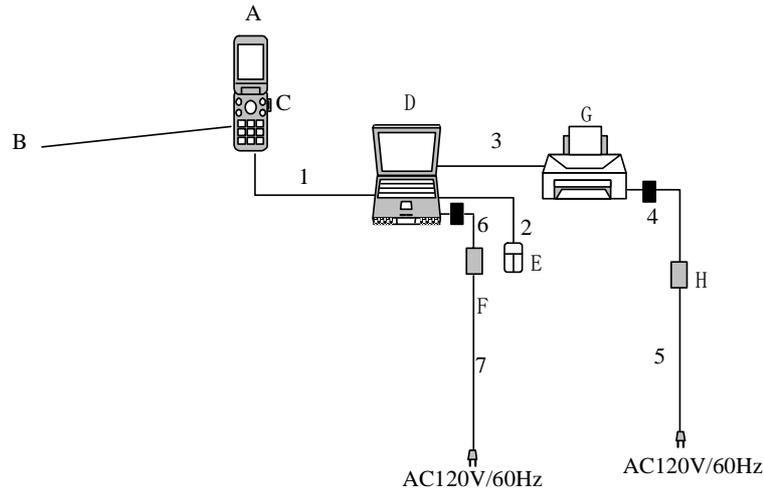
Refer to APPENDIX.

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

4.2 Configuration and peripherals



■ : Standard Ferrite Core

Description of EUT and Support equipment

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	Cellular Phone	SH-05C	004401112985284	Sharp Corporation	EUT
B	Lithium-Ion Battery	Battery Pack SH23	-	Sharp Corporation	EUT
C	microSD Memory Card	SD-C08G	0852K93900Y	Toshiba	-
D	Personal Computer	PP11L	0D4571-48643-58P-1053	DELL	-
E	Mouse	M-UAG120	G83C0007F310	Logitech	-
F	AC Adapter(PC)	PA-1650-05D2	0F7970-71615-77H-0D63	DELL	-
G	Printer	895Cxi	SG8BA1W18J	Hewlett-Packard	-
H	AC Adapter (Printer)	C4557-60004	C8L01B	Hewlett-Packard	-

List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	USB Data Cable	0.75	Shielded	Shielded	-
2	Mouse Cable	0.70	Shielded	Shielded	-
3	Printer Cable	2.00	Shielded	Shielded	-
4	DC Power Cable(Printer)	2.00	Unshielded	Unshielded	-
5	AC Power Cable(Printer)	1.75	Unshielded	Unshielded	-
6	DC Power Cable(PC)	1.85	Unshielded	Unshielded	-
7	AC Power Cable(PC)	0.90	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: November 8, 2010

Test engineer: Tomotaka Sasagawa

UL Japan, Inc.

Head Office EMC Lab.

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

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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: November 8, 2010

Test engineer: Tomotaka Sasagawa

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APPENDIX 1: Photographs of test setup

Conducted Emission

This page has been submitted for a separate exhibit.

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

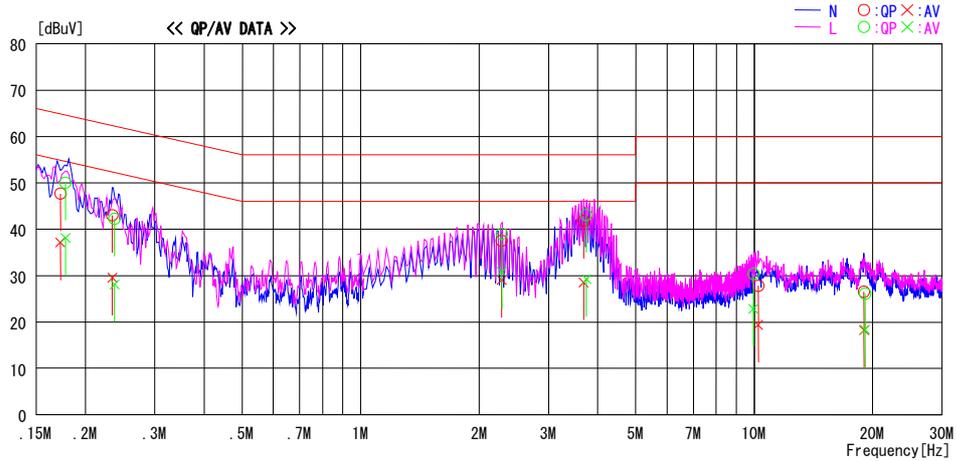
DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.1 Anechoic Chamber
Date : 2010/11/08

Report No. : 31DE0027-HO
Temp./Humi. : 23deg. C / 42%
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]		
0.17267	34.6	24.0	13.1	47.7	37.1	64.8	54.8	17.1	17.7	N	
0.23369	29.7	16.2	13.3	43.0	29.5	62.3	52.3	19.3	22.8	N	
2.28020	23.9	15.5	13.6	37.5	29.1	56.0	46.0	18.5	17.0	N	
3.68360	28.0	14.7	13.8	41.8	28.5	56.0	46.0	14.3	17.5	N	
10.23126	13.2	4.8	14.6	27.8	19.4	60.0	50.0	32.2	30.6	N	
19.00180	11.1	2.9	15.4	26.5	18.3	60.0	50.0	33.5	31.7	N	
0.17790	37.0	25.0	13.1	50.1	38.1	64.6	54.6	14.6	16.5	L	
0.23689	29.0	14.8	13.3	42.3	28.1	62.2	52.2	19.9	24.1	L	
2.28251	25.5	17.2	13.6	39.1	30.8	56.0	46.0	16.9	15.2	L	
3.74679	29.3	15.5	13.8	43.1	29.3	56.0	46.0	12.9	16.7	L	
9.94463	15.9	8.3	14.5	30.4	22.8	60.0	50.0	29.6	27.2	L	
19.11450	10.7	3.0	15.4	26.1	18.4	60.0	50.0	33.9	31.6	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

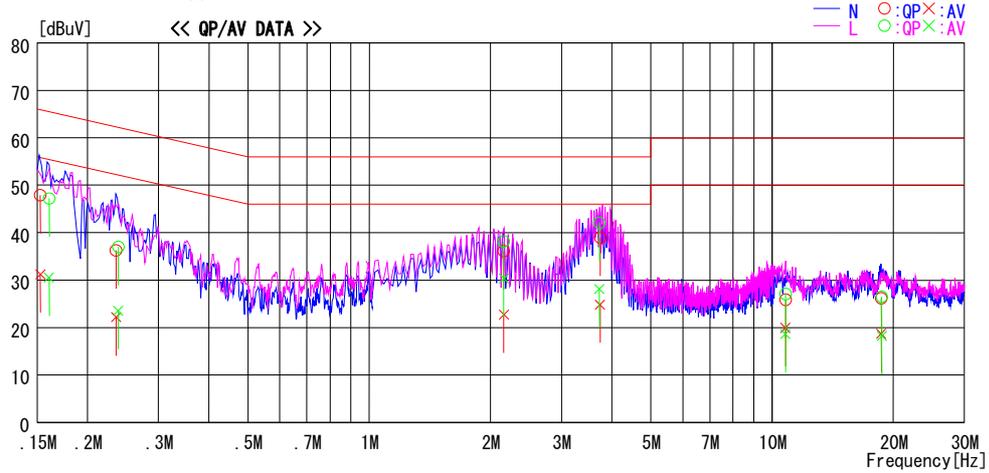
DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.1 Anechoic Chamber
Date : 2010/11/08

Report No. : 31DE0027-H0
Temp./Humi. : 23deg.C / 42%
Engineer : Tomotaka Sasagawa

Mode / Remarks : Standby Mode

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



Frequency [MHz]	Reading Level		Corr. Factor [dB]	Results		Limit		Margin		Phase	Comment
	QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dB]	AV [dB]		
0.15272	34.9	18.1	13.1	48.0	31.2	65.9	55.9	17.9	24.7	N	
0.23543	23.0	8.9	13.3	36.3	22.2	62.3	52.3	26.0	30.1	N	
2.15636	22.6	9.2	13.5	36.1	22.7	56.0	46.0	19.9	23.3	N	
3.74280	25.2	11.1	13.8	39.0	24.9	56.0	46.0	17.0	21.1	N	
10.79321	11.2	5.2	14.7	25.9	19.9	60.0	50.0	34.1	30.1	N	
18.64231	10.9	3.4	15.3	26.2	18.7	60.0	50.0	33.8	31.3	N	
0.16046	34.1	17.4	13.1	47.2	30.5	65.4	55.4	18.2	24.9	L	
0.23811	23.7	10.2	13.3	37.0	23.5	62.2	52.2	25.2	28.7	L	
2.15724	24.7	16.8	13.5	38.2	30.3	56.0	46.0	17.9	15.7	L	
3.72462	28.2	14.3	13.8	42.0	28.1	56.0	46.0	14.0	17.9	L	
10.79378	12.4	3.9	14.7	27.1	18.6	60.0	50.0	32.9	31.4	L	
18.70929	11.2	2.9	15.3	26.5	18.2	60.0	50.0	33.5	31.8	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.

Radiated Emission

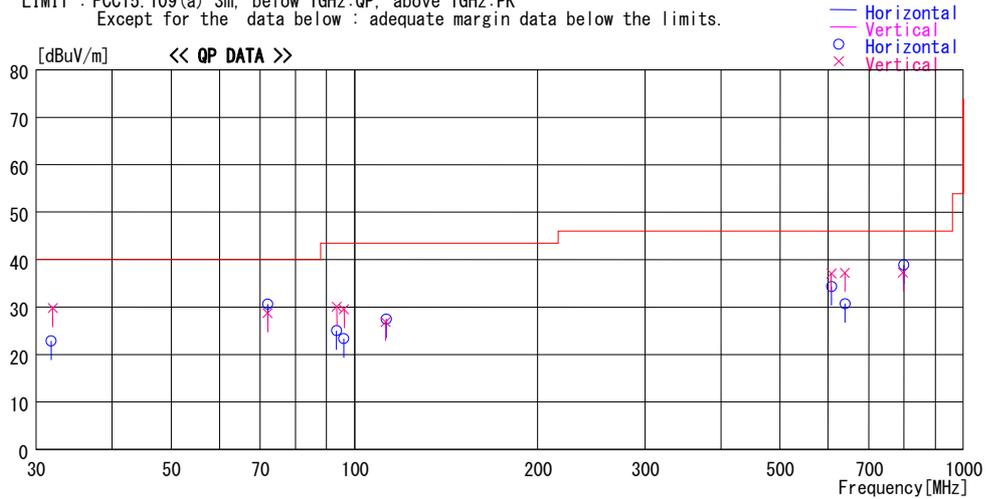
DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2010/11/08

Report No. : 31DE0027-HO
Temp./Humi. : 23deg. C / 42%
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					[dBuV/m]	[dB]	
			[dB/m]	[dB]		[Deg]	[cm]		[dBuV/m]	[dB]	
31.756	39.2	QP	17.7	-34.0	22.9	0	100	Hori.	40.0	17.1	
31.959	46.2	QP	17.6	-34.0	29.8	194	100	Vert.	40.0	10.2	
72.023	57.2	QP	6.6	-33.2	30.6	138	312	Hori.	40.0	9.4	
72.019	55.3	QP	6.6	-33.2	28.7	44	100	Vert.	40.0	11.3	
93.475	48.9	QP	8.9	-32.7	25.1	74	199	Hori.	43.5	18.4	
93.521	53.9	QP	8.9	-32.7	30.1	105	100	Vert.	43.5	13.4	
96.012	46.5	QP	9.4	-32.6	23.3	228	309	Hori.	43.5	20.2	
96.136	52.8	QP	9.4	-32.6	29.6	170	100	Vert.	43.5	13.9	
112.555	47.6	QP	11.6	-32.3	26.9	350	100	Vert.	43.5	16.6	
112.786	48.2	QP	11.6	-32.3	27.5	351	165	Hori.	43.5	16.0	
607.216	42.2	QP	20.3	-28.2	34.3	157	100	Hori.	46.0	11.7	
607.129	45.0	QP	20.3	-28.2	37.1	347	100	Vert.	46.0	8.9	
639.481	38.2	QP	20.5	-28.0	30.7	94	100	Hori.	46.0	15.3	
639.481	44.8	QP	20.5	-28.0	37.3	352	100	Vert.	46.0	8.8	
798.001	43.7	QP	22.1	-26.9	38.9	137	224	Hori.	46.0	7.1	
797.031	42.1	QP	22.1	-26.9	37.3	135	100	Vert.	46.0	8.7	

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)

*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

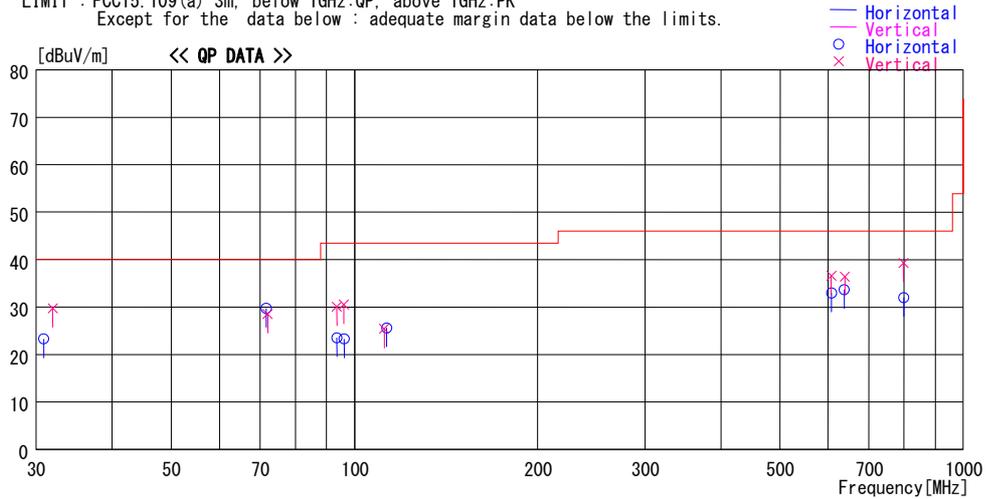
DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2010/11/08

Report No. : 31DE0027-HO
Temp./Humi. : 23deg. C / 42%
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	Height	Polar.	Limit	Margin	Comment
			Factor	Gain							
			[dB/m]	[dB]	[dBuV/m]	[Deg]	[cm]		[dBuV/m]	[dB]	
30.864	39.4	QP	17.9	-34.0	23.3	288	100	Hori.	40.0	16.7	
31.953	46.1	QP	17.6	-34.0	29.7	178	100	Vert.	40.0	10.3	
71.663	56.3	QP	6.6	-33.2	29.7	164	376	Hori.	40.0	10.3	
72.021	55.1	QP	6.6	-33.2	28.5	45	100	Vert.	40.0	11.5	
93.512	47.3	QP	8.9	-32.7	23.5	108	282	Hori.	43.5	20.0	
93.539	53.9	QP	8.9	-32.7	30.1	108	100	Vert.	43.5	13.4	
96.140	46.5	QP	9.4	-32.6	23.3	265	343	Hori.	43.5	20.2	
96.131	53.7	QP	9.4	-32.6	30.5	9	100	Vert.	43.5	13.0	
112.934	46.3	QP	11.6	-32.3	25.6	349	301	Hori.	43.5	17.9	
111.969	46.2	QP	11.5	-32.3	25.4	133	100	Vert.	43.5	18.1	
607.216	40.9	QP	20.3	-28.2	33.0	347	100	Hori.	46.0	13.0	
607.145	44.5	QP	20.3	-28.2	36.6	15	100	Vert.	46.0	9.4	
638.078	41.2	QP	20.5	-28.0	33.7	350	100	Hori.	46.0	12.3	
639.214	43.9	QP	20.5	-28.0	36.4	11	100	Vert.	46.0	9.6	
798.001	36.8	QP	22.1	-26.9	32.0	137	100	Hori.	46.0	14.0	
797.716	44.1	QP	22.1	-26.9	39.3	27	100	Vert.	46.0	6.7	

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)

*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

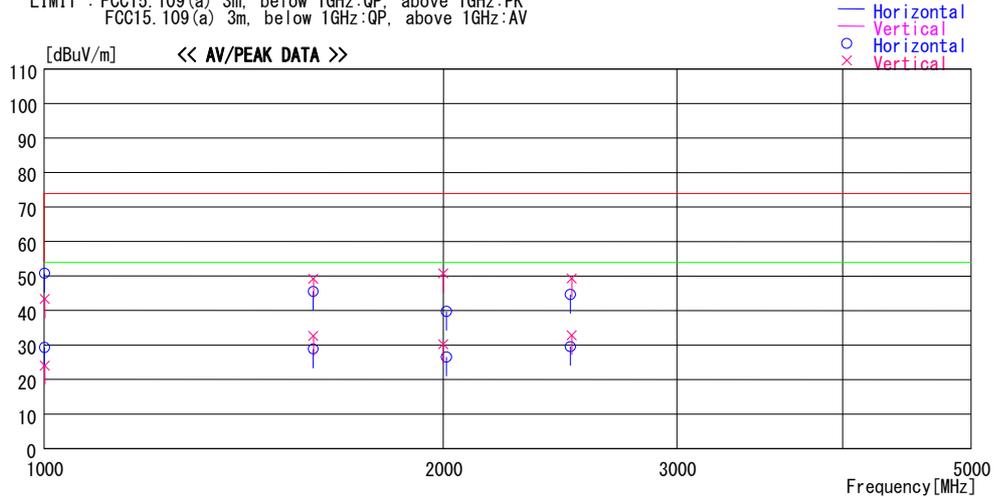
DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2010/11/08

Report No. : 31DE0027-HO
Temp./Humi. : 23deg. C / 42%
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 [dBuV/m]	Angle [Deg]	Height [cm]	Polar.	Limit [dBuV/m]	Margin [dB]	Comment
			Factor [dB/m]	Gain [dB]							
1000.832	62.3	PK	24.0	-35.5	50.8	15	100	Hori.	73.9	23.1	
1000.832	40.8	AV	24.0	-35.5	29.3	15	100	Hori.	53.9	24.6	
1000.933	35.6	AV	24.0	-35.5	24.1	12	100	Vert.	53.9	29.8	
1000.933	54.9	PK	24.0	-35.5	43.4	12	100	Vert.	73.9	30.5	
1595.321	54.5	PK	25.6	-34.5	45.6	228	100	Hori.	73.9	28.3	
1595.321	37.8	AV	25.6	-34.5	28.9	228	100	Hori.	53.9	25.0	
1596.231	58.1	PK	25.6	-34.5	49.2	39	100	Vert.	73.9	24.7	
1596.231	41.5	AV	25.6	-34.5	32.6	39	100	Vert.	53.9	21.3	
1999.321	57.8	PK	26.8	-33.9	50.7	229	100	Vert.	73.9	23.2	
1999.321	37.4	AV	26.8	-33.9	30.3	229	100	Vert.	53.9	23.6	
2010.031	46.9	PK	26.8	-33.9	39.8	178	100	Hori.	73.9	34.1	
2010.031	33.7	AV	26.8	-33.9	26.6	178	100	Hori.	53.9	27.3	
2493.321	51.3	PK	27.0	-33.6	44.7	97	100	Hori.	73.9	29.2	
2493.321	36.2	AV	27.0	-33.6	29.6	97	100	Hori.	53.9	24.3	
2499.313	55.9	PK	27.0	-33.6	49.3	0	100	Vert.	73.9	24.6	
2499.313	39.4	AV	27.0	-33.6	32.8	0	100	Vert.	53.9	21.1	

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)

*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

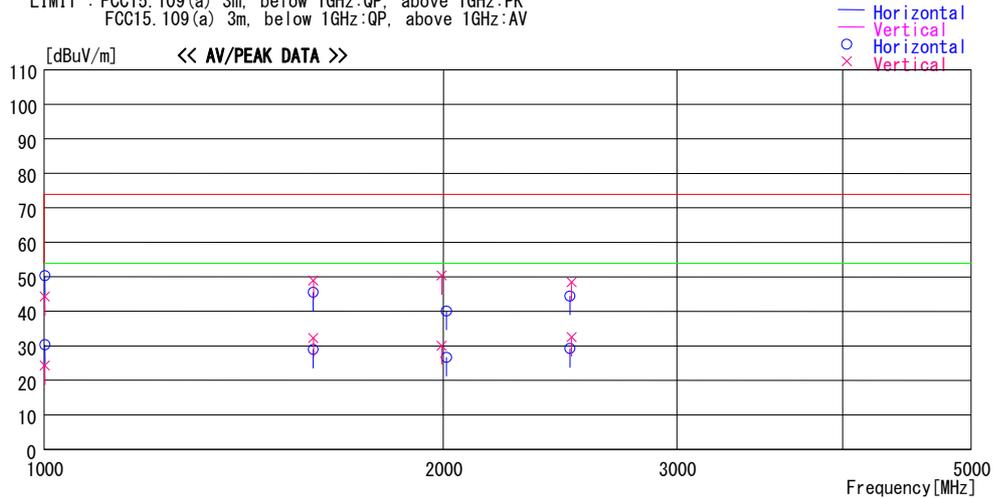
DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No. 1 Semi Anechoic Chamber
Date : 2010/11/08

Report No. : 31DE0027-HO
Temp./Humi. : 23deg. C / 42%
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		Level [dBuV/m]	Angle [Deg]	Height [cm]	Polar.	Limit [dBuV/m]	Margin [dB]	Comment
			Factor [dB/m]	Loss & Gain [dB]							
1000.983	61.9	PK	24.0	-35.5	50.4	11	100	Hori.	73.9	23.5	
1000.983	41.9	AV	24.0	-35.5	30.4	11	100	Hori.	53.9	23.5	
1000.983	35.8	AV	24.0	-35.5	24.3	8	100	Vert.	53.9	29.6	
1000.983	55.8	PK	24.0	-35.5	44.3	8	100	Vert.	73.9	29.6	
1595.144	54.4	PK	25.6	-34.5	45.5	246	100	Hori.	73.9	28.4	
1595.144	37.9	AV	25.6	-34.5	29.0	246	100	Hori.	53.9	24.9	
1596.243	57.9	PK	25.6	-34.5	49.0	43	100	Vert.	73.9	24.9	
1596.243	41.2	AV	25.6	-34.5	32.3	43	100	Vert.	53.9	21.6	
1993.983	57.5	PK	26.8	-33.9	50.4	272	100	Vert.	73.9	23.5	
1993.983	37.2	AV	26.8	-33.9	30.1	272	100	Vert.	53.9	23.8	
2010.015	47.2	PK	26.8	-33.9	40.1	172	100	Hori.	73.9	33.8	
2010.015	33.8	AV	26.8	-33.9	26.7	172	100	Hori.	53.9	27.2	
2491.758	51.1	PK	27.0	-33.6	44.5	87	100	Hori.	73.9	29.4	
2491.758	35.9	AV	27.0	-33.6	29.3	87	100	Hori.	53.9	24.7	
2498.997	55.2	PK	27.0	-33.6	48.6	0	100	Vert.	73.9	25.3	
2498.997	39.1	AV	27.0	-33.6	32.5	0	100	Vert.	53.9	21.4	

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)

*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	2010/10/16 * 12
KLA-04	Logperiodic Antenna	Schwarzbeck	USLP9143	361	RE	2010/10/16 * 12
MAT-08	Attenuator(6dB)	Weinschel Corp	2	BK7971	RE	2010/11/05 * 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-18	Microwave Cable 1G-26.5GHz	Suhner	SUCOFLEX 104	148048- 143(1m) / 292410(5m)	RE	2010/09/30 * 12
MPA-01	Pre Amplifier	Agilent	8449B	3008A01671	RE	2010/02/12 * 12
MLS-02	LISN(AMN)	Schwarzbeck	NSLK8127	8127383	CE(EUT)	2010/07/04 * 12
MLS-03	LISN(AMN)	Schwarzbeck	NSLK8127	8127384	CE(AE)	2010/07/28 * 12
MTA-31	Terminator	TME	CT-01	-	CE	2010/01/20 * 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.

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