



# EMI TEST REPORT

Test Report No. : 31AE0035-HO

**Applicant** : Sharp Corporation, Communication Systems Group  
**Type of Equipment** : Cellular Phone  
**Model No.** : CDMA SHI03  
**FCC ID** : APYHRO00131  
**Test standard** : FCC Part 15 Subpart B 2010 Class B  
**Test Result** : Complied

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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: September 10, 2010

Representative test engineer:

  
Hiroshi Kukita  
Engineer of EMC Service

Approved by:

  
Mitsuru Fujimura  
Manager of EMC Service

**NVLAP**<sup>®</sup>

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

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## **SECTION 1: Customer information**

Company Name : Sharp Corporation, Communicatoin Systems Group  
Address : 2-13-1 Iida Hachihonmatsu Higashi Hiroshima-City, Hiroshima,  
739-0192 Japan  
Telephone Number : +81-82-420-1630  
Facsimile Number : +81-82-420-1624  
Contact Person : Hachiro Hidaka

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

### **2.1 Identification of E.U.T.**

Type of Equipment : Cellular Phone  
Model No. : CDMA SHI03  
Serial No. : Refer to Section 4, Clause 4.2  
Receipt Date of Sample : September 10, 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**

Clock frequency(ies) in the system : CPU: 19.2MHz, 998.4MHz  
RTC: 32.768kHz  
Power Supply : 4.0VDC (Lithium-ion Battery Pack SHI03UAA 1020mAh)

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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 January 22, 2010 and effective March 1, 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	FCC: ANSI C63.4: 2003 7. AC powerline conducted emission measurements	Class B	N/A	[QP] 8.5dB 0.41788MHz, N (USB Data Com Stand-by mode) [AV] 4.4dB 0.41788MHz, N (USB Data Com Stand-by mode)	Complied
Radiated emission	FCC: ANSI C63.4: 2003 8. Radiated emission measurements	Class B	N/A	3.5dB 111.281MHz, Horizontal, QP (USB Data Com mode)	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 (10m*)(±dB)		
	9kHz -30MHz	30MHz -300MHz	300MHz -1GHz
No.1	2.7dB	4.8dB	5.0dB
No.2	-	-	-
No.3	-	-	-
No.4	-	-	-

\*10m = Measurement distance

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 report meets the limits unless the uncertainty is taken into consideration.

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

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

### 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

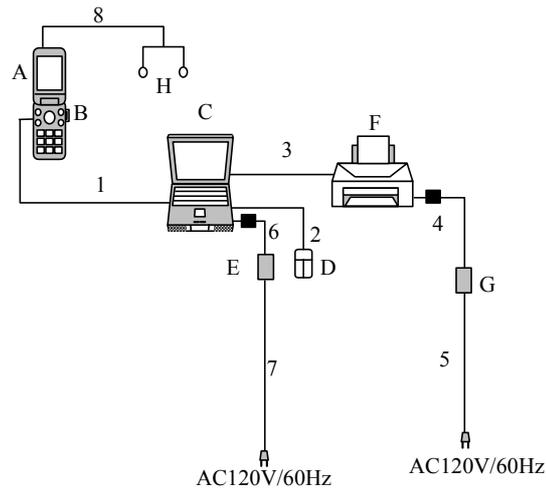
Refer to APPENDIX.

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

### 4.1 Operating modes

Mode	Remarks
USB Data Com mode	The USB data is communicated between EUT and Personal Computer (Pair of EUT).
USB Data Stand-by 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	CDMA SHI03	SSHEL000890	Sharp Corporation	EUT
B	microSD Memory Card	(64MB type)	SR7CA057962	Panasonic	-
C	Personal Computer	DELL PP10L	8LH3H1X	DELL	-
D	Mouse	0CJ339	G0N00FIF	DELL	-
E	AC Adapter (PC)	AA22850	-	DELL	-
F	Printer	C6414A	CNOB11C1H2	Hewlett-Packard	-
G	AC Adapter (Printer)	C6409-60014	AA21210	Hewlett-Packard	-
H	Earphone	-	-	Sony	-

#### List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	USB Data Cable	0.9	Shielded	Shielded	-
2	Mouse Cable	4.8	Unshielded	Unshielded	-
3	Pararell Cable	3.0	Shielded	Shielded	-
4	DC Power Cable (Printer)	1.9	Unshielded	Unshielded	-
5	AC Power Cable (Printer)	2.0	Unshielded	Unshielded	-
6	DC Power Cable (PC)	1.8	Unshielded	Unshielded	-
7	AC Power Cable (PC)	0.8	Unshielded	Unshielded	-
8	Signal Cable	1.1	Unshielded	Unshielded	-

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## **SECTION 5: Conducted Emission**

### **5.1 Operating environment**

Test place : No.4 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. 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: September 10, 2010

Test engineer: Hiroshi Kukita

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## **SECTION 6: Radiated Emission**

### **6.1 Operating environment**

Test place : No.4 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 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.

### **6.5 Test result**

Summary of the test results: Pass

Date: September 10, 2010

Test engineer: Hiroshi Kukita

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**APPENDIX 1: Photographs of test setup**

**Conducted Emission**

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**Radiated Emission**

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**Worst Case Position (Horizontal: Y-axis/ Vertical:Y-axis)**

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**APPENDIX 2: Data of EMI test**

**Conducted Emission**

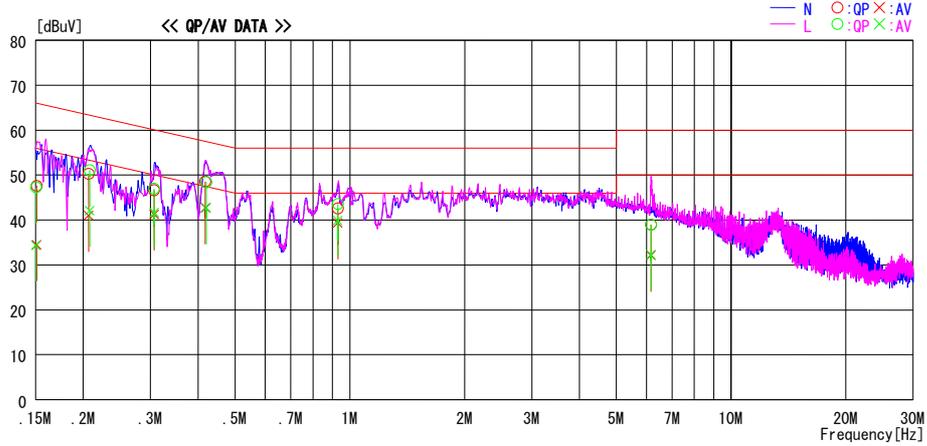
**DATA OF CONDUCTED EMISSION TEST**

UL Japan, Inc. Head Office EMC Lab. No. 4 Semi Anechoic Chamber  
Date : 2010/09/10

Report No. : 31AE0035-HO  
Temp./Humi. : 22deg. C / 51%  
Engineer : Hiroshi Kukita

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]		
0.15092	34.4	21.3	13.2	47.6	34.5	65.9	55.9	18.3	21.4	N	
0.20650	37.0	27.7	13.3	50.3	41.0	63.3	53.3	13.0	12.3	N	
0.30681	33.3	28.0	13.3	46.6	41.3	60.1	50.1	13.5	8.8	N	
0.41762	35.3	29.4	13.3	48.6	42.7	57.5	47.5	8.9	4.8	N	
0.92924	29.3	26.0	13.3	42.6	39.3	56.0	46.0	13.4	6.7	N	
6.16076	25.3	18.4	13.7	39.0	32.1	60.0	50.0	21.0	17.9	N	
0.15026	34.1	21.2	13.2	47.3	34.4	66.0	56.0	18.7	21.6	L	
0.20768	37.8	28.8	13.3	51.1	42.1	63.3	53.3	12.2	11.2	L	
0.30682	33.7	28.4	13.3	47.0	41.7	60.1	50.1	13.1	8.4	L	
0.42004	35.1	29.4	13.3	48.4	42.7	57.4	47.4	9.0	4.7	L	
0.92951	30.3	26.6	13.3	43.6	39.9	56.0	46.0	12.4	6.1	L	
6.16346	25.3	18.6	13.7	39.0	32.3	60.0	50.0	21.0	17.7	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

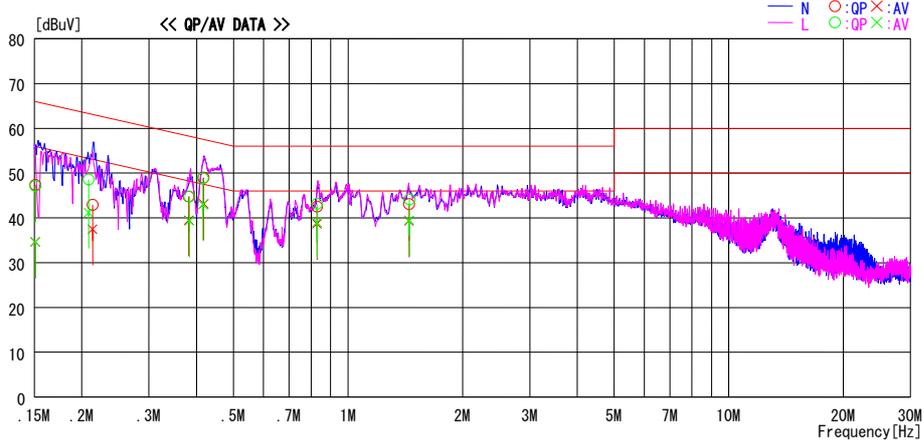
### DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No. 4 Semi Anechoic Chamber  
Date : 2010/09/10

Report No. : 31AE0035-HO  
Temp./Humi. : 22deg. C / 51%  
Engineer : Hiroshi Kukita

Mode / Remarks : USB Data Stand-by 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]		
0.15087	34.2	21.4	13.2	47.4	34.6	66.0	56.0	18.6	21.4	N	
0.21345	29.6	24.2	13.3	42.9	37.5	63.1	53.1	20.2	15.6	N	
0.38141	31.5	26.2	13.3	44.8	39.5	58.2	48.2	13.4	8.7	N	
0.41788	35.7	29.8	13.3	49.0	43.1	57.5	47.5	8.5	4.4	N	
0.82862	29.2	25.4	13.3	42.5	38.7	56.0	46.0	13.5	7.3	N	
1.44608	29.8	26.0	13.3	43.1	39.3	56.0	46.0	12.9	6.7	N	
0.15087	33.9	21.4	13.2	47.1	34.6	66.0	56.0	18.9	21.4	L	
0.20821	35.3	27.9	13.3	48.6	41.2	63.3	53.3	14.7	12.1	L	
0.38323	31.5	26.0	13.3	44.8	39.3	58.2	48.2	13.4	8.9	L	
0.41580	35.5	29.7	13.3	48.8	43.0	57.5	47.5	8.7	4.5	L	
0.82860	29.9	25.7	13.3	43.2	39.0	56.0	46.0	12.8	7.0	L	
1.44920	30.8	26.2	13.3	44.1	39.5	56.0	46.0	11.9	6.5	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

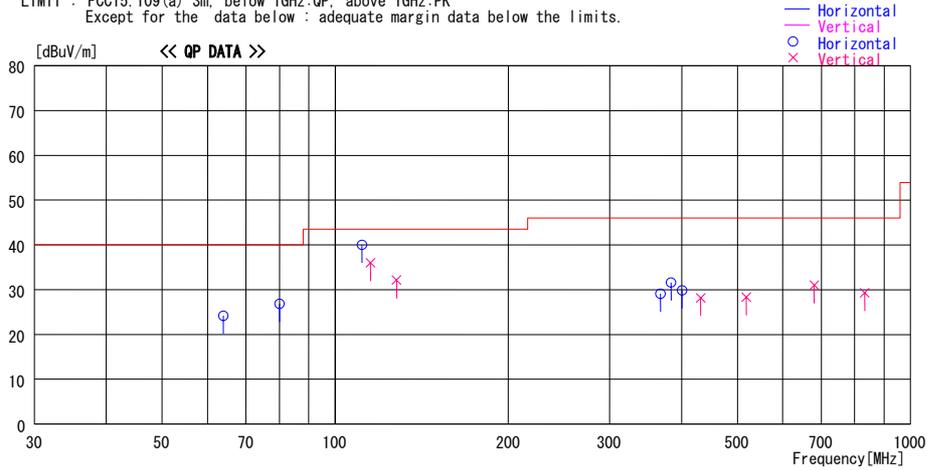
UL Japan, Inc. Head Office EMC Lab. No.4 Semi Anechoic Chamber  
Date : 2010/09/10

Report No. : 31AE0035-H0

Temp./Humi. : 22deg. C / 51%  
Engineer : Hiroshi Kukita

Mode / Remarks : USB Data Com mode, Worst-axis(Hor:Y-axis,Ver:Y-axis)

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 [dBuV/m]	Polar.	Limit [dBuV/m]	Margin [dB]	Comment
			Factor [dB/m]	Gain [dB]					
63.919	41.3	QP	7.4	-24.5	24.2	Hori.	40.0	15.8	
80.005	44.7	QP	6.5	-24.4	26.8	Hori.	40.0	13.2	
111.281	51.9	QP	12.0	-23.9	40.0	Hori.	43.5	3.5	
115.160	47.3	QP	12.6	-23.9	36.0	Vert.	43.5	7.5	
127.832	42.0	QP	13.8	-23.7	32.1	Vert.	43.5	11.4	
367.480	33.8	QP	17.1	-21.8	29.1	Hori.	46.0	16.9	
383.456	36.0	QP	17.3	-21.7	31.6	Hori.	46.0	14.4	
400.960	33.9	QP	17.5	-21.6	29.8	Hori.	46.0	16.2	
431.934	31.5	QP	18.1	-21.4	28.2	Vert.	46.0	17.8	
518.386	30.0	QP	19.3	-21.0	28.3	Vert.	46.0	17.7	
680.016	29.5	QP	21.8	-20.3	31.0	Vert.	46.0	15.0	
832.520	25.0	QP	23.3	-19.0	29.3	Vert.	46.0	16.7	

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

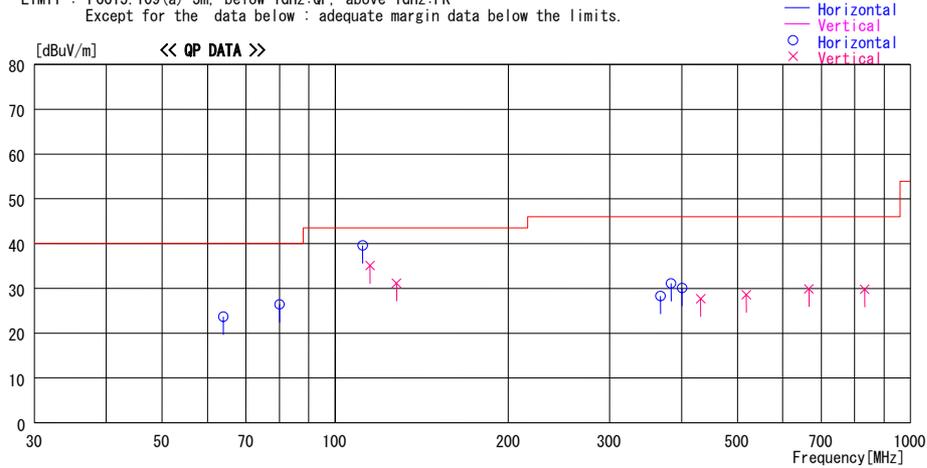
### DATA OF RADIATED EMISSION TEST

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Date : 2010/09/10

Report No. : 31AE0035-HO  
Temp./Humi. : 22deg. C / 51%  
Engineer : Hiroshi Kukita

Mode / Remarks : USB Data Stand-by mode, Worst-axis(Hor:Y-axis, Ver:Y-axis)

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 [dBuV/m]	Polar.	Limit [dBuV/m]	Margin [dB]	Comment
			Factor [dB/m]	Gain [dB]					
63.907	40.8	QP	7.4	-24.5	23.7	Hori.	40.0	16.3	
80.011	44.3	QP	6.5	-24.4	26.4	Hori.	40.0	13.6	
111.682	51.4	QP	12.1	-23.9	39.6	Hori.	43.5	3.9	
115.041	46.4	QP	12.6	-23.9	35.1	Vert.	43.5	8.4	
127.808	41.1	QP	13.8	-23.7	31.2	Vert.	43.5	12.3	
367.478	33.0	QP	17.1	-21.8	28.3	Hori.	46.0	17.7	
383.460	35.5	QP	17.3	-21.7	31.1	Hori.	46.0	14.9	
400.955	34.2	QP	17.5	-21.6	30.1	Hori.	46.0	15.9	
431.939	31.0	QP	18.1	-21.4	27.7	Vert.	46.0	18.3	
518.391	30.3	QP	19.3	-21.0	28.6	Vert.	46.0	17.4	
666.010	28.8	QP	21.5	-20.4	29.9	Vert.	46.0	16.1	
832.515	25.5	QP	23.3	-19.0	29.8	Vert.	46.0	16.2	

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**

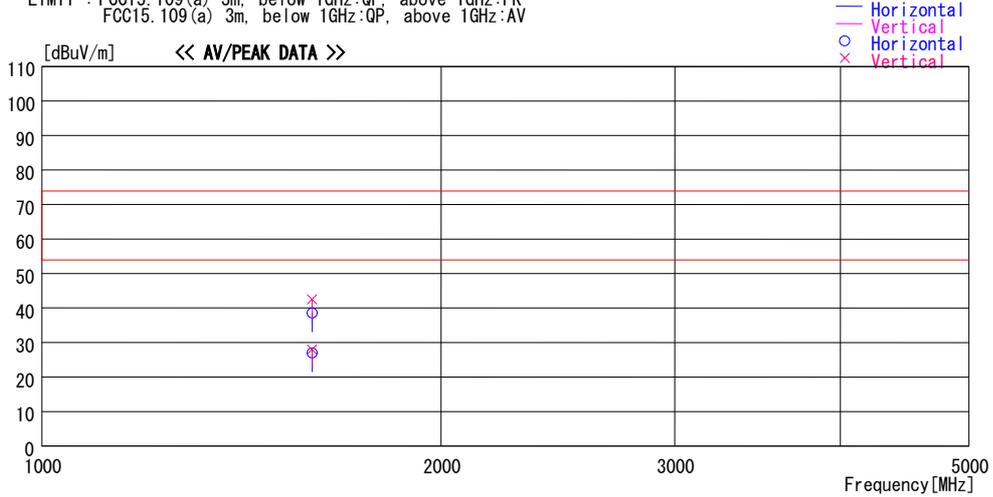
**DATA OF RADIATED EMISSION TEST**

UL Japan, Inc. Head Office EMC Lab. No. 4 Semi Anechoic Chamber  
Date : 2010/09/10

Report No. : 31AE0035-HO  
Temp./Humi. : 22deg. C / 51%  
Engineer : Hiroshi Kukita

Mode / Remarks : USB Data Com mode, Worst-axis(Hor:Y-axis, Ver:Y-axis)

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]	Polar.	Limit [dBuV/m]	Margin [dB]	Comment
			Factor [dB/m]	Gain [dB]					
1598.352	43.1	PK	26.1	-30.6	38.6	Hori.	73.9	35.3	
1598.352	31.5	AV	26.1	-30.6	27.0	Hori.	53.9	26.9	
1598.583	32.5	AV	26.1	-30.6	28.0	Vert.	53.9	25.9	
1598.583	47.0	PK	26.1	-30.6	42.5	Vert.	73.9	31.4	

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.

## Radiated Emission

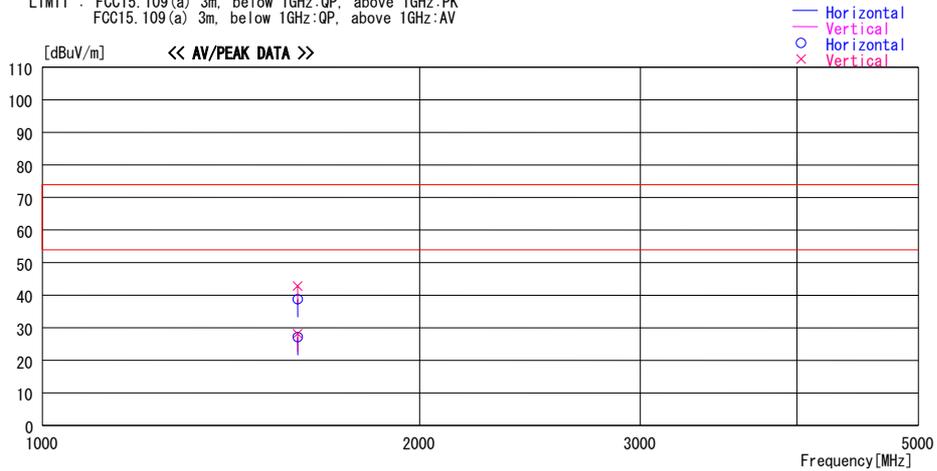
### DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No. 4 Semi Anechoic Chamber  
Date : 2010/09/10

Report No. : 31AE0035-H0  
Temp. /Humi. : 22deg. C / 51%  
Engineer : Hiroshi Kukita

Mode / Remarks : USB Data Stand-by mode, Worst-axis(Hor:Y-axis, Ver:Y-axis)

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]	Polar.	Limit [dBuV/m]	Margin [dB]	Comment
			Factor [dB/m]	Gain [dB]					
1598.330	43.3	PK	26.1	-30.6	38.8	Hori.	73.9	35.1	
1598.330	31.6	AV	26.1	-30.6	27.1	Hori.	53.9	26.8	
1598.583	32.7	AV	26.1	-30.6	28.2	Vert.	53.9	25.7	
1598.583	47.3	PK	26.1	-30.6	42.8	Vert.	73.9	31.1	

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.

### **APPENDIX 3: Test instruments**

#### **EMI test equipment**

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
MAEC-04	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	RE/CE	2010/02/02 * 12
MOS-15	Thermo-Hygrometer	Custom	CTH-180	-	RE/CE	2010/02/09 * 12
MJM-07	Measure	PROMART	SEN1955	-	RE/CE	-
COTS-MEMI	EMI measurement program	TSJ	TEPTO-DV	-	RE/CE	-
MSA-05	Spectrum Analyzer	Advantest	R3273	160400285	RE/CE	2009/12/15 * 12
MTR-07	Test Receiver	Rohde & Schwarz	ESCI	100635	RE/CE	2009/10/23 * 12
MBA-05	Biconical Antenna	Schwarzbeck	BBA9106	1302	RE	2010/03/22 * 12
MLA-08	Logperiodic Antenna	Schwarzbeck	UKLP9140-A	N/A	RE	2010/01/23 * 12
MCC-50	Coaxial cable	UL Japan	-	-	RE	2010/03/18 * 12
MAT-51	Attenuator(6dB)	Weinschel	2	AS3557	RE	2010/01/20 * 12
MPA-14	Pre Amplifier	SONOMA INSTRUMENT	310	260833	RE	2010/03/05 * 12
MHA-21	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	9120D-557	RE	2010/08/08 * 12
MCC-57	Microwave Cable	Suhner	SUCOFLEX104	246769(1m) / 292411(5m)	RE	2009/11/17 * 12
MPA-12	MicroWave System Amplifier	Agilent	83017A	MY39500780	RE	2010/03/16 * 12
MLS-06	LISN(AMN)	Schwarzbeck	NSLK8127	8127363	CE(EUT )	2010/02/04 * 12
MLS-07	LISN(AMN)	Schwarzbeck	NSLK8127	8127364	CE(AE)	2010/02/05 * 12
MTA-31	Terminator	TME	CT-01	-	CE	2010/01/20 * 12
MAT-67	Attenuator(13dB)	JFW Industries, Inc.	50FP-013H2 N	-	CE	2010/02/04 * 12
MCC-113	Coaxial cable	Fujikura/Suhner/TSJ	5D-2W(10m)/ SFM141(5m)/421- 010(1m)/sucoform141- PE(1m)/RFM- E121(Switcher)	-/04178	CE	2010/07/21 * 12
MSA-03	Spectrum Analyzer	Agilent	E4448A	MY44020357	RE	2009/11/20 * 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 emission**

**RE: Radiated emission**

**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