



# EMI TEST REPORT

**Test Report No. : 10009155H-B**

**Applicant** : SHARP Corporation, Communication Systems Division.  
**Type of Equipment** : Cellular Phone  
**Model No.** : SH-06E  
**FCC ID** : APYHRO00189  
**Test standard** : FCC Part 15 Subpart B 2012 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:** April 20 and 21, 2013

**Representative  
test engineer:**

Hiroshi Kukita  
Engineer of WiSE Japan,  
UL Verification Service

**Approved by :**

Takahiro Hatakeda  
Leader of WiSE Japan,  
UL Verification 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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13-EM-F0429



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## **SECTION 1: Customer information**

Company Name : Sharp Corporation, Communication Systems Division.  
Address : 2-13-1 Iida Hachihonmatsu Higashi-hiroshima-city, Hiroshima,  
739-0192 Japan  
Telephone Number : +81-82-420-1827  
Facsimile Number : +81-82-420-1572  
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. : SH-06E  
Serial No. : Refer to Section 4, Clause 4.2  
Receipt Date of Sample : April 19, 2013  
Country of Mass-production : China  
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-06E is Tri-band LTE(B1/B19/B21) and Quad-band W-CDMA  
(FDD 1 / 5 / 6 / 19) and Quad-band GSM(850/900/1800/1900)  
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: 1,728MHz (max)  
RTC: 32.763kHz  
Source oscillation: 19.2MHz / 27.00MHz (CPU)

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### **SECTION 3: Test specification, procedures & results**

#### **3.1 Test specification**

Test Specification : FCC Part 15 Subpart B: 2012, final revised on December 27, 2012 and effective January 28, 2013

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

#### **3.2 Procedures and results**

<b>Item</b>	<b>Test Procedure</b>	<b>Limits</b>	<b>Deviation</b>	<b>Worst margin</b>	<b>Result</b>
Conducted emission	ANSI C63.4: 2009 7. AC powerline conducted emission measurements	Class B	N/A	[QP] 5.3dB 0.16948MHz, L [AV] 5.1dB 0.16948MHz, L	Complied
Radiated emission	ANSI C63.4: 2009 8. Radiated emission measurements	Class B	N/A	5.5dB 798.360MHz, Horizontal, QP	Complied

\*Note: UL Japan, Inc's EMI Work Procedure 13-EM-W0420.

#### **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	3.5dB
No.2	3.6dB
No.3	3.6dB
No.4	3.6dB

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	4.3dB	5.0dB	5.1dB	4.9dB	5.8dB	4.4dB	4.3dB
No.2	4.3dB	5.2dB	5.1dB	5.0dB	5.7dB	4.3dB	4.2dB
No.3	4.6dB	5.0dB	5.1dB	5.0dB	5.7dB	4.5dB	4.2dB
No.4	4.8dB	5.2dB	5.0dB	5.0dB	5.7dB	5.2dB	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 8999 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.



**Description of EUT and Support equipment**

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	Cellular Phone	SH-06E	004401/11/471535/8	Sharp Corporation	EUT
B	microSD Memory Card	SD-C02G	None	TOSHIBA	-
C	Lithium-Ion Battery	SH41	WBA	Sharp Corporation	EUT
D	Personal Computer	PP11L	CN-0D4571-48643-58P-1053	Dell	-
E	Mouse	M-UAG120	LZ733B70EVV	Toshiba	-
F	AC Adapter (PC)	LA65NS1-00	CN-0YD637-71615-64Q-2243	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	1.20	Shielded	Shielded	-
2	Mouse Cable	0.72	Unshielded	Unshielded	-
3	AC Adaptor Cable (PC)	1.76	Unshielded	Unshielded	-
4	AC Power Cable (PC)	1.20	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. 3 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 3.

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: April 21, 2013

Test engineer: Hiroshi Kukita

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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 3.

### **6.3 Test conditions**

Frequency range : 30MHz-300MHz (Biconical antenna) / 300MHz-1000MHz (Logperiodic antenna)  
1000MHz-10000MHz (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, Y and Z 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: April 20 and 21, 2013

Test engineer: Hiroshi Kukita

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**APPENDIX 1: Data of EMI test**

**Conducted Emission**

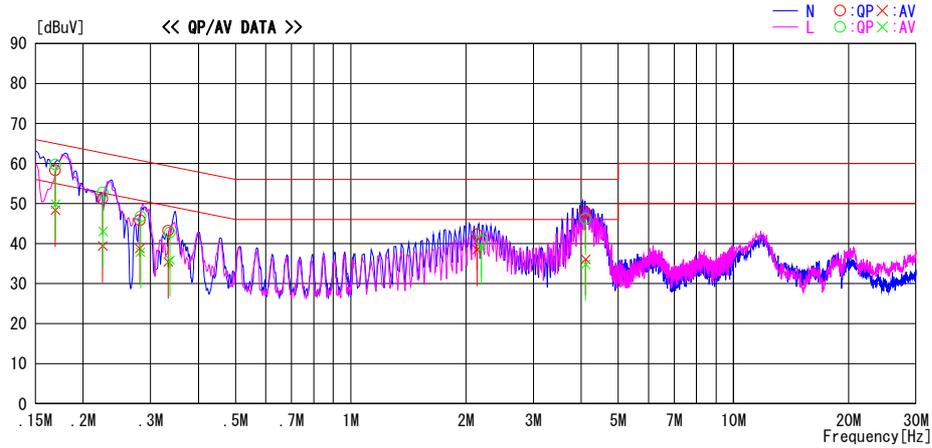
**DATA OF CONDUCTED EMISSION TEST**

UL Japan, Inc. Head Office EMC Lab. No. 3 Semi Anechoic Chamber  
Date : 2013/04/21

Report No. : 10009155H  
Temp./Humi. : 22deg. C / 39% RH  
Engineer : Hiroshi Kukita

Mode / Remarks : USB Data Com Mode

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



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]		
0.16948	46.5	36.7	13.2	59.7	49.9	65.0	55.0	5.3	5.1	L	
0.16904	45.1	35.1	13.2	58.3	48.3	65.0	55.0	6.7	6.7	N	
0.22508	39.5	29.9	13.2	52.7	43.1	62.6	52.6	9.9	9.5	L	
0.22480	38.0	26.2	13.2	51.2	39.4	62.6	52.6	11.4	13.2	N	
0.28232	33.4	24.6	13.3	46.7	37.9	60.7	50.7	14.0	12.8	L	
0.28104	32.5	25.5	13.3	45.8	38.8	60.8	50.8	15.0	12.0	N	
0.33710	29.4	22.6	13.3	42.7	35.9	59.3	49.3	16.6	13.4	L	
0.33348	29.9	22.1	13.3	43.2	35.4	59.4	49.4	16.2	14.0	N	
2.13940	28.8	25.0	13.5	42.3	38.5	56.0	46.0	13.7	7.5	N	
2.19380	27.2	25.4	13.5	40.7	38.9	56.0	46.0	15.3	7.1	L	
4.10760	34.1	22.4	13.7	47.8	36.1	56.0	46.0	8.2	9.9	N	
4.11000	32.5	21.1	13.7	46.2	34.8	56.0	46.0	9.8	11.2	L	

CHART: WITH FACTOR, Peak hold data. CALCULATION: RESULT[dBuV]=READING[dBuV]+C. F[dB] (L1SN LOSS+CABLE LOSS)  
Except for the above table : adequate margin data below the limits.

\*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.

## Conducted Emission

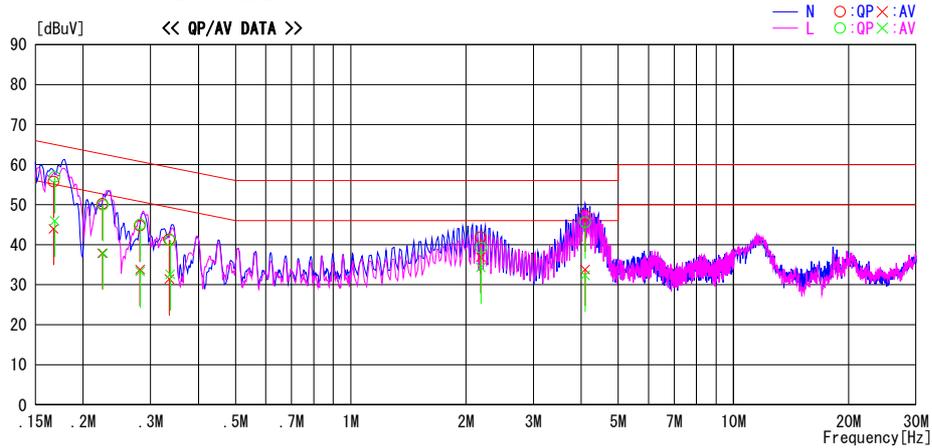
### DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.3 Semi Anechoic Chamber  
Date : 2013/04/21

Report No. : 10009155H  
Temp./Humi. : 22deg. C / 39% RH  
Engineer : Hiroshi Kukita

Mode / Remarks : Standby

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



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]		
0.16740	42.5	30.8	13.2	55.7	44.0	65.1	55.1	9.4	11.1	N	
0.22440	37.0	24.7	13.2	50.2	37.9	62.7	52.7	12.5	14.8	N	
0.28150	31.4	20.5	13.3	44.7	33.8	60.8	50.8	16.1	17.0	N	
0.33560	28.0	18.1	13.3	41.3	31.4	59.3	49.3	18.0	17.9	N	
2.18720	28.3	23.4	13.5	41.8	36.9	56.0	46.0	14.2	9.1	N	
4.09560	33.6	20.1	13.7	47.3	33.8	56.0	46.0	8.7	12.2	N	
0.16838	43.7	32.8	13.2	56.9	46.0	65.0	55.0	8.1	9.0	L	
0.22516	36.7	24.7	13.2	49.9	37.9	62.6	52.6	12.7	14.7	L	
0.28174	31.7	20.0	13.3	45.0	33.3	60.8	50.8	15.8	17.5	L	
0.33752	27.8	19.3	13.3	41.1	32.6	59.3	49.3	18.2	16.7	L	
2.18920	25.8	20.8	13.5	39.3	34.3	56.0	46.0	16.7	11.7	L	
4.09764	31.9	18.6	13.7	45.6	32.3	56.0	46.0	10.4	13.7	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 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**  
**(Below 1GHz)**

**DATA OF RADIATED EMISSION TEST**

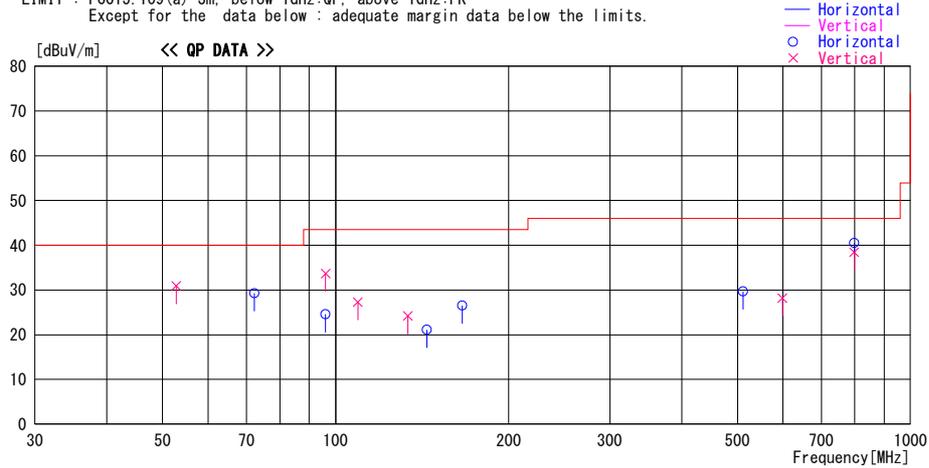
UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber  
Date : 2013/04/20

Report No. : 10009155H

Temp./Humi. : 23deg. C / 35% RH  
Engineer : Hiroshi Kukita

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 [dB/m]	Gain [dB]							
52.839	51.7	QP	10.2	-31.0	30.9	211	100	Vert.	40.0	9.1	
72.204	53.3	QP	6.7	-30.7	29.3	108	400	Hori.	40.0	10.7	
96.123	54.4	QP	9.6	-30.3	33.7	163	100	Vert.	43.5	9.8	
109.320	45.6	QP	11.9	-30.2	27.3	181	100	Vert.	43.5	16.2	
96.130	45.3	QP	9.6	-30.3	24.6	216	191	Hori.	43.5	18.9	
133.627	40.0	QP	14.3	-30.1	24.2	201	100	Vert.	43.5	19.3	
144.200	36.3	QP	14.8	-30.0	21.1	162	160	Hori.	43.5	22.4	
166.200	40.4	QP	15.9	-29.8	26.5	251	206	Hori.	43.5	17.0	
511.282	37.8	QP	18.3	-26.4	29.7	332	100	Hori.	46.0	16.3	
598.640	34.3	QP	19.5	-25.6	28.2	33	117	Vert.	46.0	17.8	
798.360	42.2	QP	22.4	-24.1	40.5	125	100	Hori.	46.0	5.5	
797.880	40.2	QP	22.4	-24.2	38.4	65	100	Vert.	46.0	7.6	

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**  
**(Below 1GHz)**

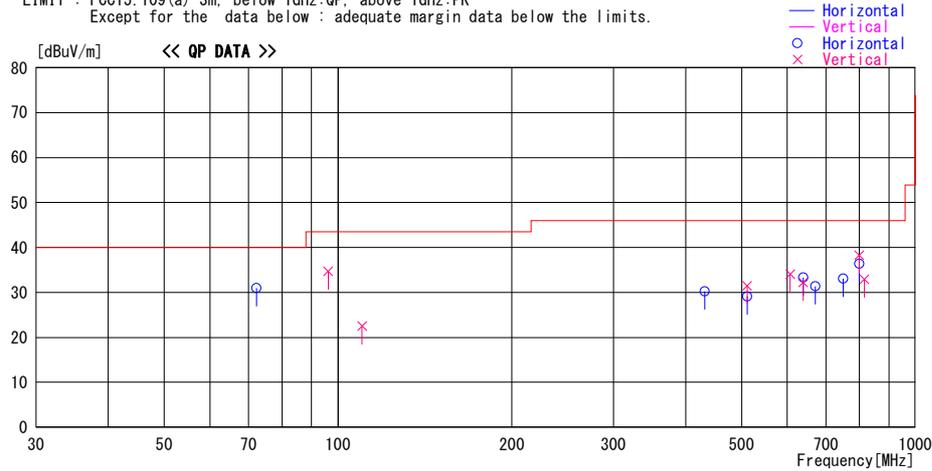
**DATA OF RADIATED EMISSION TEST**

UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber  
Date : 2013/04/20

Report No. : 10009155H  
Temp./Humi. : 23deg. C / 35% RH  
Engineer : Hiroshi Kukita

Mode / Remarks : Standby

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		Level [dBuV/m]	Angle [Deg]	Height [cm]	Polar.	Limit [dBuV/m]	Margin [dB]	Comment
			Factor [dB/m]	Loss& Gain [dB]							
72.204	55.0	QP	6.7	-30.7	31.0	103	237	Hori.	40.0	9.0	
96.134	55.4	QP	9.6	-30.3	34.7	174	122	Vert.	43.5	8.8	
110.080	40.7	QP	12.0	-30.2	22.5	102	100	Vert.	43.5	21.0	
431.987	39.5	QP	17.8	-27.1	30.2	351	100	Hori.	46.0	15.8	
511.280	37.2	QP	18.3	-26.4	29.1	350	100	Hori.	46.0	16.9	
511.281	39.6	QP	18.3	-26.4	31.5	322	121	Vert.	46.0	14.5	
607.160	40.0	QP	19.6	-25.5	34.1	332	100	Vert.	46.0	11.9	
639.160	37.7	QP	20.0	-25.5	32.2	6	100	Vert.	46.0	13.8	
639.100	38.8	QP	20.0	-25.5	33.3	150	124	Hori.	46.0	12.7	
671.044	36.3	QP	20.4	-25.3	31.4	142	115	Hori.	46.0	14.6	
749.996	36.1	QP	21.6	-24.6	33.1	64	104	Hori.	46.0	12.9	
799.200	40.0	QP	22.4	-24.1	38.3	58	100	Vert.	46.0	7.7	
800.000	38.1	QP	22.4	-24.1	36.4	123	100	Hori.	46.0	9.6	
815.981	34.6	QP	22.4	-24.1	32.9	359	100	Vert.	46.0	13.1	

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) + 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**  
**(Above 1GHz)**

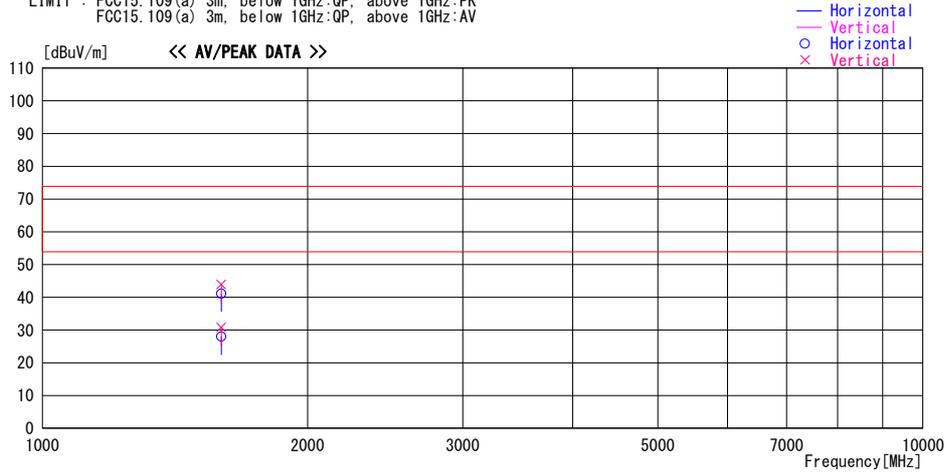
**DATA OF RADIATED EMISSION TEST**

UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber  
Date : 2013/04/21

Report No. : 10009155H  
Temp./Humi. : 22deg. C / 39% RH  
Engineer : Hiroshi Kukita

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]							
1596.579	50.2	PK	25.4	-31.6	44.0	0	100	Vert.	73.9	29.9	
1596.579	47.3	PK	25.4	-31.6	41.1	89	100	Hori.	73.9	32.8	
1596.579	34.2	AV	25.4	-31.6	28.0	89	100	Hori.	53.9	25.9	
1596.579	37.0	AV	25.4	-31.6	30.8	0	100	Vert.	53.9	23.1	

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) + 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**  
**(Above 1GHz)**

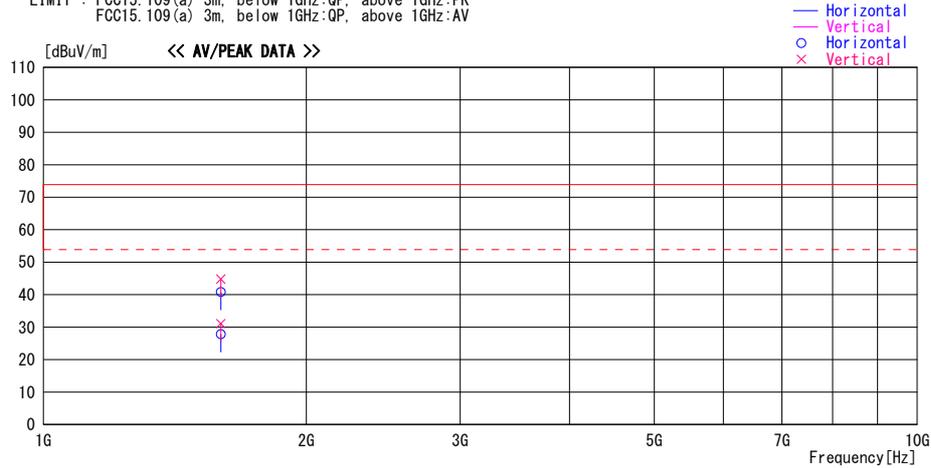
**DATA OF RADIATED EMISSION TEST**

UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber  
Date : 2013/04/21

Report No. : 10009155H  
Temp./Humi. : 22deg. C / 39% RH  
Engineer : Hiroshi Kukita

Mode / Remarks : Standby

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	Margin
			Factor	Gain					[dBuV/m]	[dB]
1596.572	51.0	PK	25.4	-31.6	44.8	0	100	Vert.	73.9	29.1
1596.572	37.3	AV	25.4	-31.6	31.1	0	100	Vert.	53.9	22.8
1596.581	47.0	PK	25.4	-31.6	40.8	94	100	Hori.	73.9	33.1
1596.581	34.0	AV	25.4	-31.6	27.8	94	100	Hori.	53.9	26.1

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) + 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 2: Test instruments**

### **EMI Test Instruments**

<b>Control No.</b>	<b>Instrument</b>	<b>Manufacturer</b>	<b>Model No</b>	<b>Serial No</b>	<b>Test Item</b>	<b>Calibration Date * Interval(month)</b>
MAEC-03	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	CE	2013/02/28 * 12
MOS-13	Thermo-Hygrometer	Custom	CTH-180	-	CE	2013/02/26 * 12
MJM-16	Measure	KOMELON	KMC-36	-	CE	-
COTS-MEMI	EMI measurement program	TSJ	TEPTO-DV	-	CE	-
MTR-08	Test Receiver	Rohde & Schwarz	ESCI	100767	CE	2012/08/23 * 12
MLS-06	LISN(AMN)	Schwarzbeck	NSLK8127	8127363	CE(EUT)	2013/01/07 * 12
MLS-07	LISN(AMN)	Schwarzbeck	NSLK8127	8127364	CE(AE)	2013/01/07 * 12
MTA-31	Terminator	TME	CT-01	-	CE	2013/01/21 * 12
MCC-112	Coaxial cable	Fujikura/Suhner/TSJ	5D-2W(10m)/ SFM141(3m)/ suoform141-PE(1m)/ 421-010(1.5m)/ RFM-E321(Switcher)	-/00640	CE	2012/07/12 * 12
MAT-66	Attenuator(13dB)	JFW Industries, Inc.	50FP-013H2 N	-	CE	2013/01/22 * 12
MHA-20	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	258	RE	2012/05/25 * 12
MCC-133	Microwave Cable	HUBER+SUHNER	SUCOFLEX104	336164/4(1m)/ 340640(5m)	RE	2012/09/05 * 12
MPA-11	MicroWave System Amplifier	Agilent	83017A	MY39500779	RE	2013/03/12 * 12
MAEC-01	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 10m	DA-06881	RE	2012/08/01 * 12
MOS-27	Thermo-Hygrometer	CUSTOM	CTH-201	A08Q26	RE	2013/02/26 * 12
MJM-01	Measure	KDS	ES19-55	-	RE	-
MTR-09	EMI Test Receiver	Rohde & Schwarz	ESU26	100412	RE	2012/06/14 * 12
KBA-05	Biconical Antenna	Schwarzbeck	BBA9106	2513	RE	2012/11/18 * 12
KLA-04	Logperiodic Antenna	Schwarzbeck	USLP9143	361	RE	2012/11/18 * 12
MAT-08	Attenuator(6dB)	Weinschel Corp	2	BK7971	RE	2012/11/06 * 12
MCC-02	Coaxial Cable	Suhner/storm/Agilent/ TSJ	-	-	RE	2012/09/13 * 12
MPA-19	Pre Amplifier	MITEQ	MLA-10K01-B01-35	1237616	RE	2013/02/07 * 12
MSA-06	Spectrum Analyzer	Agilent	E4407B	MY45107638	RE	2013/04/05 * 12

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

**All equipment is calibrated with valid calibrations. Each measurement data 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**

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