



# EMI TEST REPORT

**Test Report No. : 10026324H-B**

**Applicant** : Sharp Corporation, Communication Systems Division.  
**Type of Equipment** : Cellular Phone  
**Model No.** : WX04SH  
**FCC ID** : APYHRO00195  
**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:**

July 1, 2013

**Representative test engineer:**

*H. Kukita*

Hiroshi Kukita

Engineer of WiSE Japan,  
UL Verification Service

**Approved by:**

*T. Hatake*

Takahiro Hatake  
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>

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**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 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. : WX04SH  
Serial No. : Refer to Section 4, Clause 4.2  
Receipt Date of Sample : June 28, 2013  
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 : WX04SH is PHS and Tri-band (FDD I/FDD VIII/FDD XI) WCDMA  
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: 1.512GHz (max)  
RTC: 32.763kHz  
Source oscillation: 19.2MHz / 27MHz (CPU) / 27.12MHz (Felica)

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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] 13.2dB 0.17089MHz, L [AV] 11.1dB 0.17089MHz, L 0.17099MHz, L	Complied
Radiated emission	ANSI C63.4: 2009 8. Radiated emission measurements	Class B	N/A	7.8dB 31.955MHz, Vertical, 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	-	-	8.8 x 4.6 x 2.8m	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

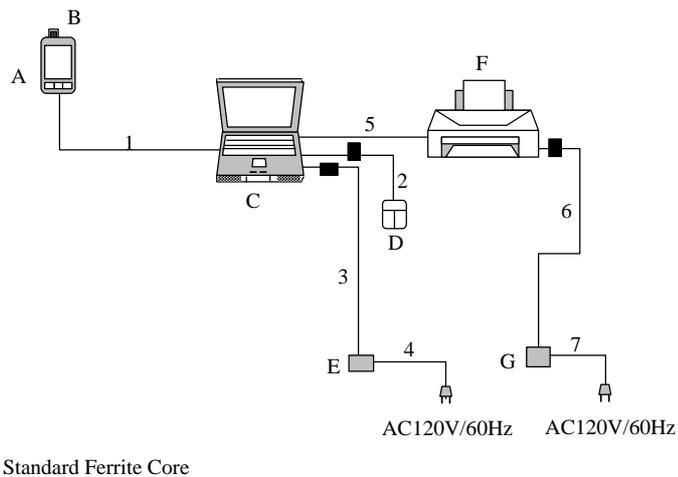
Refer to APPENDIX.

## **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**



\*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	WX04SH	004401/11/486592/2	Sharp Corporation	EUT
B	microSD Memory Card	MMAUR02G3ACA	None	Samsung	-
C	Personal Computer	PP11L	CN-0D4571-48643-55V-1651	Dell	-
D	Mouse	M-BE55	LZE21450232	Logitech	-
E	AC Adapter (PC)	PA-1650-05D2	CN-0F7970-71615-561-14A1	Dell	-
F	Printer	895Cxi	SG8BL1W16V	Hewlett Packard	-
G	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 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: July 1, 2013

Test engineer: Keisuke Kawamura

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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 Appendix3.

### **6.3 Test conditions**

Frequency range : 30MHz-300MHz (Biconical antenna) / 300MHz-1000MHz (Logperiodic antenna)  
1000MHz-8000MHz (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.

### **6.5 Test result**

Summary of the test results: Pass

Date: July 1, 2013

Test engineer: Keisuke Kawamura

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**APPENDIX 1: Data of EMI test**

**Conducted Emission**

**DATA OF CONDUCTED EMISSION TEST**

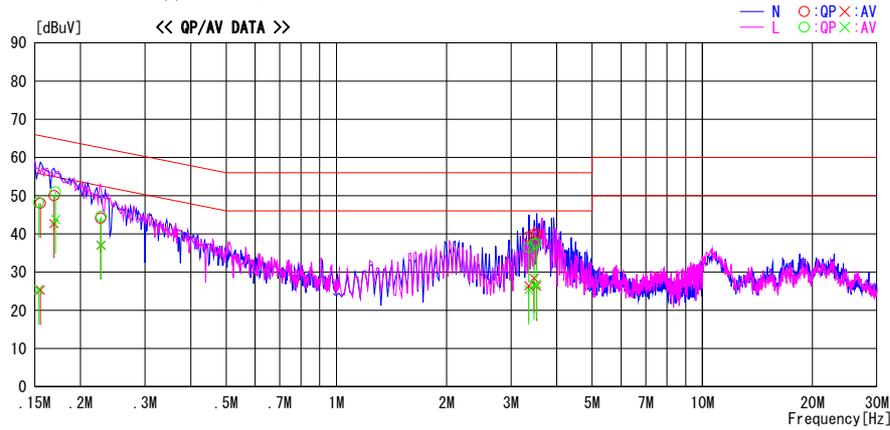
UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber  
Date : 2013/07/01

Report No. : 10026324H

Temp./Humi. : 23deg. C / 64% RH  
Engineer : Keisuke Kawamura

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]		
0.15523	34.8	12.1	13.2	48.0	25.3	65.7	55.7	17.7	30.4	N	
0.16918	36.8	29.5	13.2	50.0	42.7	65.0	55.0	15.0	12.3	N	
0.22707	30.8	23.8	13.3	44.1	37.1	62.6	52.6	18.5	15.5	N	
3.35403	25.4	12.6	13.8	39.2	26.4	56.0	46.0	16.8	19.6	N	
3.46628	26.0	14.6	13.8	39.8	28.4	56.0	46.0	16.2	17.6	N	
3.52589	26.0	12.5	13.8	39.8	26.3	56.0	46.0	16.2	19.7	N	
0.15349	35.0	12.2	13.2	48.2	25.4	65.8	55.8	17.6	30.4	L	
0.17099	37.8	30.6	13.2	51.0	43.8	64.9	54.9	13.9	11.1	L	
0.22769	31.3	23.8	13.3	44.6	37.1	62.5	52.5	17.9	15.4	L	
3.35261	22.7	11.6	13.8	36.5	25.4	56.0	46.0	19.5	20.6	L	
3.46701	23.6	12.8	13.8	37.4	26.6	56.0	46.0	18.6	19.4	L	
3.52129	23.7	13.1	13.8	37.5	26.9	56.0	46.0	18.5	19.1	L	

CHART: WITH FACTOR, Peak hold data. CALCULATION: RESULT=READING+C.F.(LISN LOSS+ATT 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

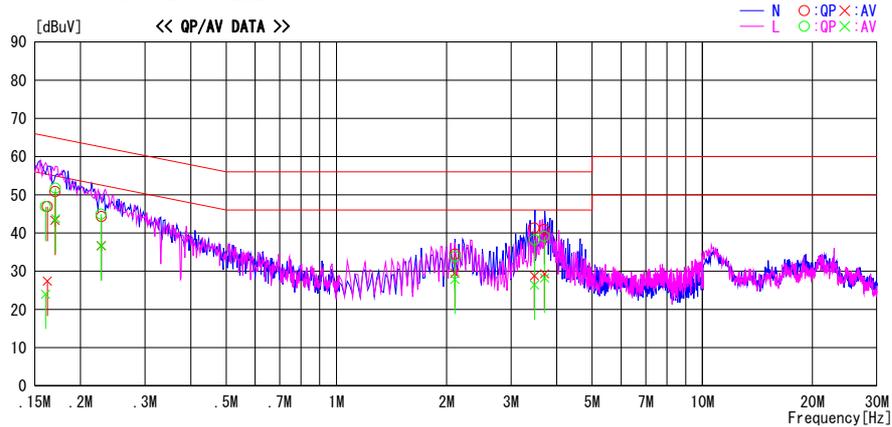
UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber  
Date : 2013/07/01

Report No. : 10026324H

Temp./Humi. : 23deg. C / 64% RH  
Engineer : Keisuke Kawamura

Mode / Remarks : Standby 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]		
0.16221	33.7	14.2	13.2	46.9	27.4	65.4	55.4	18.5	28.0	N	
0.17041	37.6	30.1	13.2	50.8	43.3	64.9	54.9	14.1	11.6	N	
0.22787	31.0	23.4	13.3	44.3	36.7	62.5	52.5	18.2	15.8	N	
2.10693	20.8	15.8	13.7	34.5	29.5	56.0	46.0	21.5	16.5	N	
3.47411	27.5	15.0	13.8	41.3	28.8	56.0	46.0	14.7	17.2	N	
3.70393	27.0	15.4	13.9	40.9	29.3	56.0	46.0	15.1	16.7	N	
0.16046	33.7	10.8	13.2	46.9	24.0	65.4	55.4	18.5	31.4	L	
0.17089	38.5	30.6	13.2	51.7	43.8	64.9	54.9	13.2	11.1	L	
0.22761	31.6	23.3	13.3	44.9	36.6	62.5	52.5	17.6	15.9	L	
2.10693	20.1	14.2	13.7	33.8	27.9	56.0	46.0	22.2	18.1	L	
3.47673	24.4	12.6	13.8	38.2	26.4	56.0	46.0	17.8	19.6	L	
3.70393	25.2	14.3	13.9	39.1	28.2	56.0	46.0	16.9	17.8	L	

CHART: WITH FACTOR, Peak hold data. CALCULATION: RESULT=READING+C.F(LISN LOSS+ATT 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)

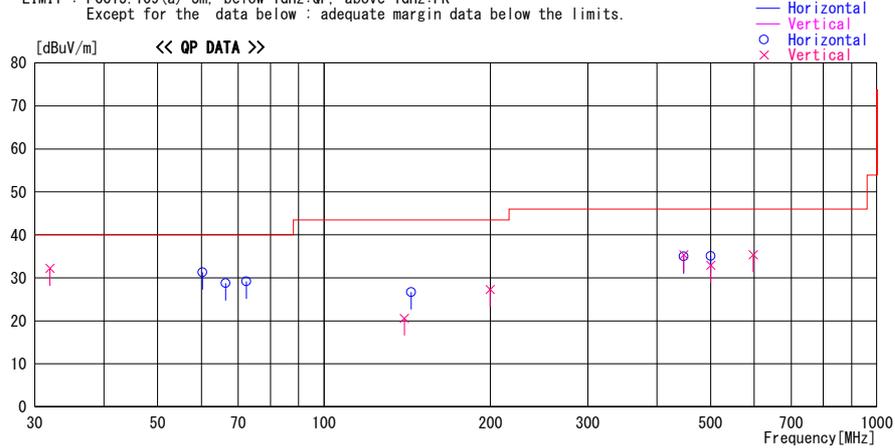
**DATA OF RADIATED EMISSION TEST**

UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber  
 Date : 2013/07/01

Report No. : 10026324H  
 Temp./Humi. : 23deg. C / 64% RH  
 Engineer : Keisuke Kawamura

Mode / Remarks : USB Data Com Mode Worst-Axis(Hori:X / Vert:X)

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]							
31.955	46.0	QP	17.6	-31.4	32.2	144	100	Vert.	40.0	7.8	
60.321	54.0	QP	8.2	-30.9	31.3	269	339	Hori.	40.0	8.7	
66.357	52.4	QP	7.2	-30.8	28.8	257	300	Hori.	40.0	11.2	
72.389	53.2	QP	6.7	-30.7	29.2	313	252	Hori.	40.0	10.8	
139.771	36.1	QP	14.6	-30.1	20.6	172	100	Vert.	43.5	22.9	
143.796	41.9	QP	14.8	-30.0	26.7	16	236	Hori.	43.5	16.8	
199.715	40.0	QP	16.9	-29.6	27.3	15	100	Vert.	43.5	16.2	
447.363	44.5	QP	17.9	-27.0	35.4	30	132	Vert.	46.0	10.6	
447.363	44.1	QP	17.9	-27.0	35.0	290	100	Hori.	46.0	11.0	
500.393	41.3	QP	18.1	-26.5	32.9	226	118	Vert.	46.0	13.1	
500.394	43.5	QP	18.1	-26.5	35.1	0	219	Hori.	46.0	10.9	
597.488	41.5	QP	19.5	-25.6	35.4	339	100	Vert.	46.0	10.6	

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)

\*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)**

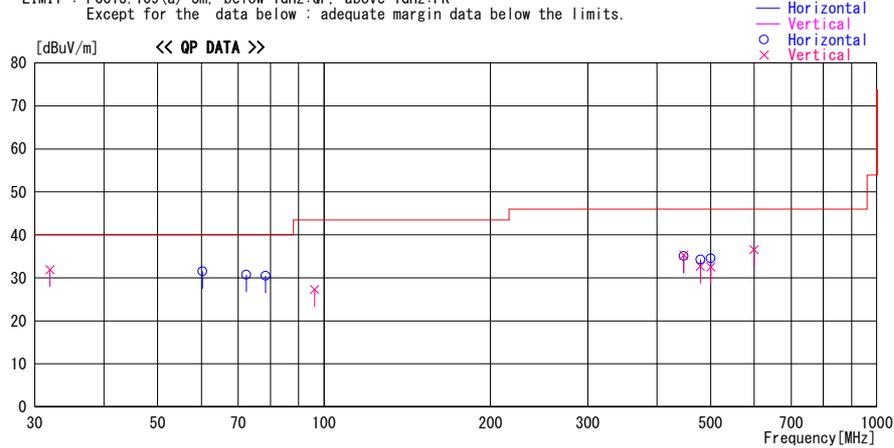
**DATA OF RADIATED EMISSION TEST**

UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber  
Date : 2013/07/01

Report No. : 10026324H  
Temp./Humi. : 23deg. C / 64% RH  
Engineer : Keisuke Kawamura

Mode / Remarks : Standby Mode Worst-Axis(Hori:X / Vert:X)

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]							
31.954	45.7	QP	17.6	-31.4	31.9	113	100	Vert.	40.0	8.1	
60.322	54.2	QP	8.2	-30.9	31.5	280	300	Hori.	40.0	8.5	
72.386	54.7	QP	6.7	-30.7	30.7	166	252	Hori.	40.0	9.3	
78.416	54.3	QP	6.8	-30.6	30.5	286	232	Hori.	40.0	9.5	
96.137	48.0	QP	9.6	-30.3	27.3	277	100	Vert.	43.5	16.2	
447.352	44.2	QP	17.9	-27.0	35.1	293	100	Hori.	46.0	10.9	
447.352	44.4	QP	17.9	-27.0	35.3	27	140	Vert.	46.0	10.7	
479.306	43.0	QP	18.0	-26.7	34.3	199	100	Hori.	46.0	11.7	
479.308	41.4	QP	18.0	-26.7	32.7	20	139	Vert.	46.0	13.3	
500.371	40.9	QP	18.1	-26.5	32.5	219	113	Vert.	46.0	13.5	
500.386	42.9	QP	18.1	-26.5	34.5	0	215	Hori.	46.0	11.5	
599.441	42.7	QP	19.5	-25.6	36.6	345	100	Vert.	46.0	9.4	

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**  
**(Above 1GHz)**

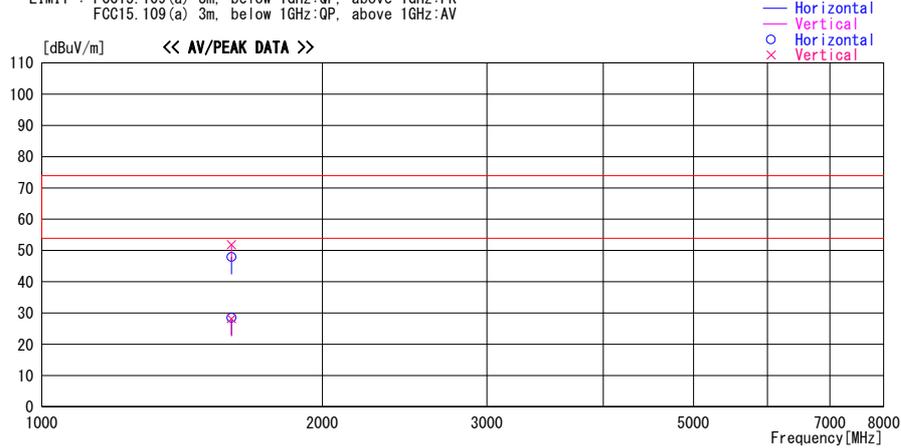
**DATA OF RADIATED EMISSION TEST**

UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber  
Date : 2013/07/01

Report No. : 10026324H  
Temp./Humi. : 23deg. C / 64% RH  
Engineer : Keisuke Kawamura

Mode / Remarks : USB Data Com Mode Worst-Axis(Hori:X / Vert:X)

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	Comment
			Factor [dB/m]	Gain [dB]					[dBuV/m]	[dB]	
1597.211	56.7	PK	25.9	-34.7	47.9	290	100	Hori.	73.9	26.0	
1597.211	60.6	PK	25.9	-34.7	51.8	232	100	Vert.	73.9	22.1	
1597.211	36.9	AV	25.9	-34.7	28.1	232	100	Vert.	53.9	25.8	
1597.211	37.3	AV	25.9	-34.7	28.5	290	100	Hori.	53.9	25.4	

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**  
**(Above 1GHz)**

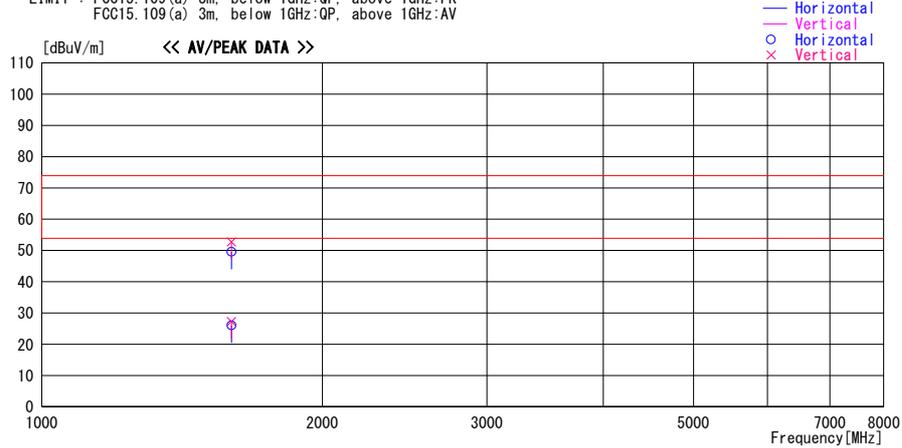
**DATA OF RADIATED EMISSION TEST**

UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber  
Date : 2013/07/01

Report No. : 10026324H  
Temp./Humi. : 23deg. C / 64% RH  
Engineer : Keisuke Kawamura

Mode / Remarks : Standby Mode Worst-Axis(Hori:X / Vert:X)

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	Comment
			Factor [dB/m]	Gain [dB]					[dBuV/m]	[dB]	
1597.211	58.4	PK	25.9	-34.7	49.6	290	100	Hori.	73.9	24.4	
1597.211	61.6	PK	25.9	-34.7	52.8	232	100	Vert.	73.9	21.2	
1597.211	36.1	AV	25.9	-34.7	27.3	232	100	Vert.	53.9	26.6	
1597.211	34.8	AV	25.9	-34.7	26.0	290	100	Hori.	53.9	27.9	

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 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-01	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 10m	DA-06881	RE/CE	2012/08/01 * 12
MOS-27	Thermo-Hygrometer	CUSTOM	CTH-201	A08Q26	RE/CE	2013/02/26 * 12
MJM-01	Measure	KDS	ES19-55	-	RE/CE	-
COTS-MEMI	EMI measurement program	TSJ	TEPTO-DV	-	RE/CE	-
MTR-09	EMI Test Receiver	Rohde & Schwarz	ESU26	100412	RE/CE	2013/06/07 * 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
MHA-21	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	9120D-557	RE	2012/08/17 * 12
MCC-142	Microwave Cable	Junkosha	MWX221	1203S213(1m) / 1204S063(5m)	RE	2013/04/19 * 12
MPA-01	Pre Amplifier	Agilent	8449B	3008A01671	RE	2013/02/22 * 12
MLS-02	LISN(AMN)	Schwarzbeck	NSLK8127	8127383	CE(AE)	2012/07/17 * 12
MLS-07	LISN(AMN)	Schwarzbeck	NSLK8127	8127364	CE(EUT)	2013/01/07 * 12
MTA-30	Terminator	TME	CT-01	-	CE	2013/01/10 * 12
MCC-03	Coaxial Cable	Fujikura/Suhner/TSJ	5D-2W(20m)/3D-2W(7.5m)/RG400u(1.5m)/RFM-E421(Switcher)	-/01068(Switcher)	CE	2013/01/23 * 12
MAT-64	Attenuator(13dB)	JFW Industries, Inc.	50FP-013H2 N	-	CE	2013/01/09 * 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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