



# EMI TEST REPORT

Test Report No. : 10276509H-B

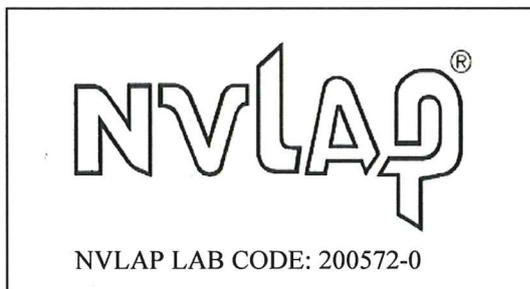
**Applicant** : Sharp Corporation, Communication Systems Division.  
**Type of Equipment** : Phablet (Handheld mini Tablet)  
**Model No.** : SH-06F  
**FCC ID** : APYHRO00208  
**Test standard** : FCC Part 15 Subpart B 2014 Class B  
**Test Result** : Complied

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 14, 2014

**Representative test engineer:** K. Yamamoto  
Koji Yamamoto  
Engineer  
Consumer Technology Division

**Approved by :** T. Hatakeda  
Takahiro Hatakeda  
Leader  
Consumer Technology Division



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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## **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 : +81-82-420-1591  
Facsimile Number : +81-82-420-1934  
Contact Person : Hachiro Hidaka

## **SECTION 2: Equipment Under Test (E.U.T.)**

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

Type of Equipment : Phablet (Handheld mini Tablet)  
Model No. : SH-06F  
Serial No. : Refer to Section 4, Clause 4.2  
Receipt Date of Sample : April 14, 2014  
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-06F is Quad-band LTE(B1/B3/B19/B21) and Quad-band W-CDMA (FDD 1/5/6/19) and Quad-band GSM(850/900/1800/1900) Phablet (Handheld mini Tablet).  
The EUT has the function that Bluetooth, ANT+ wireless technology interface and wireless LAN technical interface for establishing contact and transmitting data with certain device.  
Clock frequency(ies) in the system : CPU (inside): 2,260MHz(max)  
Source oscillation: 19.2MHz(CPU), RTC:32.763kHz, 27.0MHz(I2C), 27.12MHz(NFC), 48.0MHz(WLAN/BT)

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**UL Japan, Inc.**

**Ise HQ EMC Lab.**

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

Telephone : +81 596 24 8999

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

#### **3.1 Test specification**

Test Specification : FCC Part 15 Subpart B: 2014, final revised on March 6, 2014 and effective April 7, 2014

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] 7.2dB 0.16810MHz, L [AV] 8.9dB 2.18735MHz, L	Complied
Radiated emission	ANSI C63.4: 2009 8. Radiated emission measurements	Class B	N/A	9.8dB 749.994MHz, 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	3.5dB
No.3	3.6dB
No.4	3.5dB

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	4.0dB	5.1dB	5.0dB	5.1dB	6.0dB	4.9dB	4.3dB
No.2	3.9dB	5.2dB	5.0dB	4.9dB	5.9dB	4.7dB	4.2dB
No.3	4.3dB	5.1dB	5.2dB	5.2dB	6.0dB	4.8dB	4.2dB
No.4	4.6dB	5.2dB	5.0dB	5.2dB	6.0dB	5.7dB	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. Ise HQ 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	4.0 x 4.5 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	-	-	6.2 x 4.7 x 3.0m	4.8 x 4.6m	-

\* 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

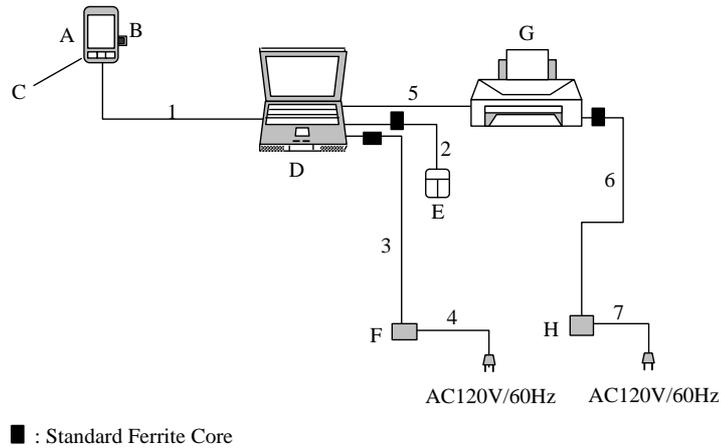
Refer to APPENDIX.

## **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	Phablet(Handheld mini Tablet)	SH-06F	004401/11/511553/3	Sharp Corporation	EUT
B	microSD Memory Card	SD-C02G	None	Toshiba	-
C	Lithium-Ion Battery	UBATIA247AFZZ	XCA	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. 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: April 14, 2014 Test engineer: Koji Yamamoto

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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-12000MHz (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.

The radiated emission measurements were made with the following detector function of the Test Receiver.

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

Frequency	Below 1GHz	Above 1GHz
Instrument used	Test Receiver	Test Receiver
IF Bandwidth	QP: BW 120kHz	PK: BW 1MHz, CISPR AV: BW 1MHz

- 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: April 14, 2014 Test engineer: Koji Yamamoto

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**APPENDIX 1: Data of EMI test**

**Conducted Emission**

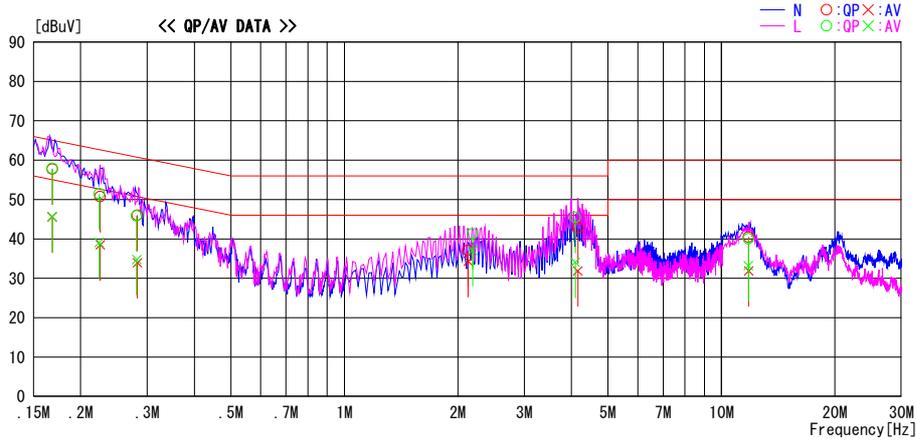
**DATA OF CONDUCTED EMISSION TEST**

UL Japan, Inc. Ise HQ EMC Lab. No.1 Semi Anechoic Chamber  
Date : 2014/04/14

Report No. : 10276509H  
Temp./Humi. : 22deg. C / 32% RH  
Engineer : Koji Yamamoto

Mode / Remarks : USB Data Com Mode

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]		
0.16813	44.5	32.4	13.2	57.7	45.6	65.1	55.1	7.4	9.5	N	
0.22516	37.4	25.2	13.3	50.7	38.5	62.6	52.6	11.9	14.1	N	
0.28251	32.7	20.7	13.3	46.0	34.0	60.7	50.7	14.7	16.7	N	
2.12840	23.5	20.7	13.6	37.1	34.3	56.0	46.0	18.9	11.7	N	
4.16086	28.9	18.0	13.9	42.8	31.9	56.0	46.0	13.2	14.1	N	
11.79829	25.7	17.1	14.8	40.5	31.9	60.0	50.0	19.5	18.1	N	
0.16810	44.7	32.5	13.2	57.9	45.7	65.1	55.1	7.2	9.4	L	
0.22388	38.2	25.8	13.3	51.5	39.1	62.7	52.7	11.2	13.6	L	
0.28130	32.5	21.5	13.3	45.8	34.8	60.8	50.8	15.0	16.0	L	
2.18735	27.7	23.5	13.6	41.3	37.1	56.0	46.0	14.7	8.9	L	
4.09577	31.6	20.2	13.9	45.5	34.1	56.0	46.0	10.5	11.9	L	
11.78862	25.2	18.4	14.8	40.0	33.2	60.0	50.0	20.0	16.8	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.

## Conducted Emission

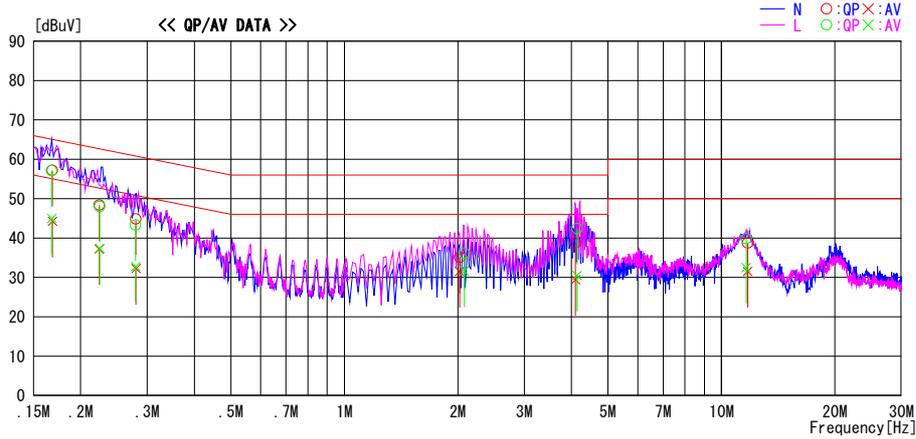
### DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Ise HQ EMC Lab. No.1 Semi Anechoic Chamber  
Date : 2014/04/14

Report No. : 10276509H  
Temp./Humi. : 22deg. C / 32% RH  
Engineer : Koji Yamamoto

Mode / Remarks : Standby Mode

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]		
0.16835	44.0	31.0	13.2	57.2	44.2	65.0	55.0	7.8	10.8	N	
0.22391	35.1	23.9	13.3	48.4	37.2	62.7	52.7	14.3	15.5	N	
0.28003	31.5	18.9	13.3	44.8	32.2	60.8	50.8	16.0	18.6	N	
2.02238	21.5	17.9	13.6	35.1	31.5	56.0	46.0	20.9	14.5	N	
4.10125	24.8	15.5	13.9	38.7	29.4	56.0	46.0	17.3	16.6	N	
11.73622	23.9	16.7	14.8	38.7	31.5	60.0	50.0	21.3	18.5	N	
0.16750	43.9	31.8	13.2	57.1	45.0	65.1	55.1	8.0	10.1	L	
0.22473	34.7	24.0	13.3	48.0	37.3	62.6	52.6	14.6	15.3	L	
0.27953	30.0	19.5	13.3	43.3	32.8	60.8	50.8	17.5	18.0	L	
2.07962	22.5	18.0	13.6	36.1	31.6	56.0	46.0	19.9	14.4	L	
4.14221	28.5	16.6	13.9	42.4	30.5	56.0	46.0	13.6	15.5	L	
11.62559	25.1	17.8	14.7	39.8	32.5	60.0	50.0	20.2	17.5	L	

CHART: WITH FACTOR, Peak hold data. CALCULATION: RESULT=READING+C.F (LISM 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**

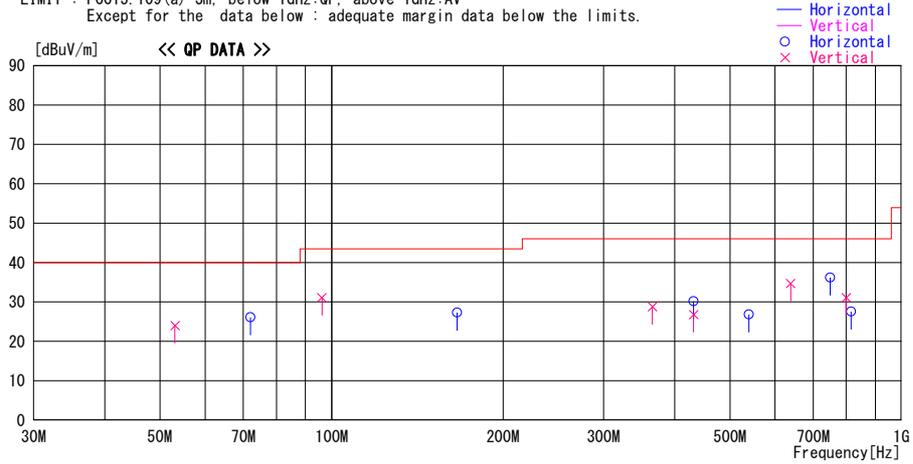
UL Japan, Inc. Ise HQ EMC Lab. No.1 Semi Anechoic Chamber  
Date : 2014/04/14

Report No. : 10276509H

Temp./Humi. : 25deg. C / 35% RH  
Engineer : Koji Yamamoto

Mode / Remarks : USB Data Com Mode Worst-Axis (Hori:Z / Ver:Z)

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



Frequency [MHz]	Reading [dBuV]	DET	Antenna	Loss&	Level [dBuV/m]	Angle [Deg]	Height [cm]	Polar.	Limit	Margin
			Factor [dB/m]	Gain [dB]					[dBuV/m]	[dB]
53.110	45.2	QP	9.8	-31.0	24.0	203	100	Vert.	40.0	16.0
72.021	50.3	QP	6.6	-30.8	26.1	182	400	Hori.	40.0	13.9
96.134	52.1	QP	9.4	-30.4	31.1	167	100	Vert.	43.5	12.4
166.218	41.5	QP	15.6	-29.8	27.3	308	300	Hori.	43.5	16.2
365.734	40.0	QP	16.3	-27.5	28.8	187	200	Vert.	46.0	17.2
431.986	39.5	QP	17.5	-26.8	30.2	0	100	Hori.	46.0	15.8
431.993	36.1	QP	17.5	-26.8	26.8	339	200	Vert.	46.0	19.2
539.814	34.2	QP	18.7	-26.1	26.8	127	100	Hori.	46.0	19.2
639.089	40.4	QP	19.7	-25.4	34.7	136	200	Vert.	46.0	11.3
749.994	39.8	QP	21.2	-24.8	36.2	80	161	Hori.	46.0	9.8
800.001	33.8	QP	22.0	-24.7	31.1	21	100	Vert.	46.0	14.9
815.971	30.1	QP	22.0	-24.5	27.6	299	200	Hori.	46.0	18.4

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**  
 (Below 1GHz)

**DATA OF RADIATED EMISSION TEST**

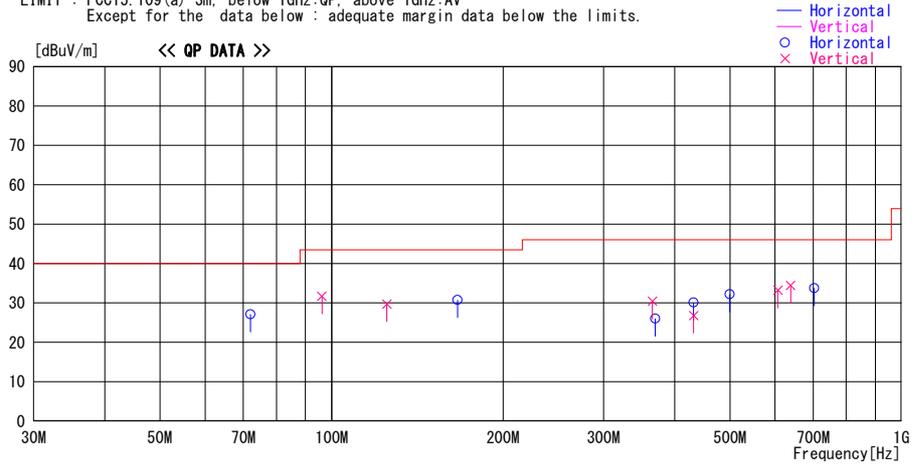
UL Japan, Inc. Ise HQ EMC Lab. No.1 Semi Anechoic Chamber  
 Date : 2014/04/14

Report No. : 10276509H

Temp./Humi. : 25deg. C / 35% RH  
 Engineer : Koji Yamamoto

Mode / Remarks : Standby Mode Worst-Axis (Hori:Z / Ver:Z)

LIMIT : FCC15.109(a) 3m, below 1GHz:QP, above 1GHz:AV  
 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]
			Factor [dB/m]	Loss& Gain [dB]						
72.027	51.3	QP	6.6	-30.8	27.1	110	300	Hori.	40.0	12.9
96.134	52.7	QP	9.4	-30.4	31.7	232	100	Vert.	43.5	11.8
125.000	46.5	QP	13.3	-30.1	29.7	38	100	Vert.	43.5	13.8
166.336	44.9	QP	15.6	-29.8	30.7	139	300	Hori.	43.5	12.8
365.694	41.6	QP	16.3	-27.5	30.4	194	168	Vert.	46.0	15.6
369.694	37.0	QP	16.4	-27.4	26.0	338	100	Hori.	46.0	20.0
431.995	39.4	QP	17.5	-26.8	30.1	341	100	Hori.	46.0	15.9
431.984	36.1	QP	17.5	-26.8	26.8	335	200	Vert.	46.0	19.2
499.826	40.4	QP	18.1	-26.3	32.2	78	100	Hori.	46.0	13.8
607.134	39.3	QP	19.5	-25.6	33.2	178	200	Vert.	46.0	12.8
703.003	38.3	QP	20.3	-24.9	33.7	226	100	Hori.	46.0	12.3
639.080	40.1	QP	19.7	-25.4	34.4	135	200	Vert.	46.0	11.6

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**  
**(Above 1GHz)**

**DATA OF RADIATED EMISSION TEST**

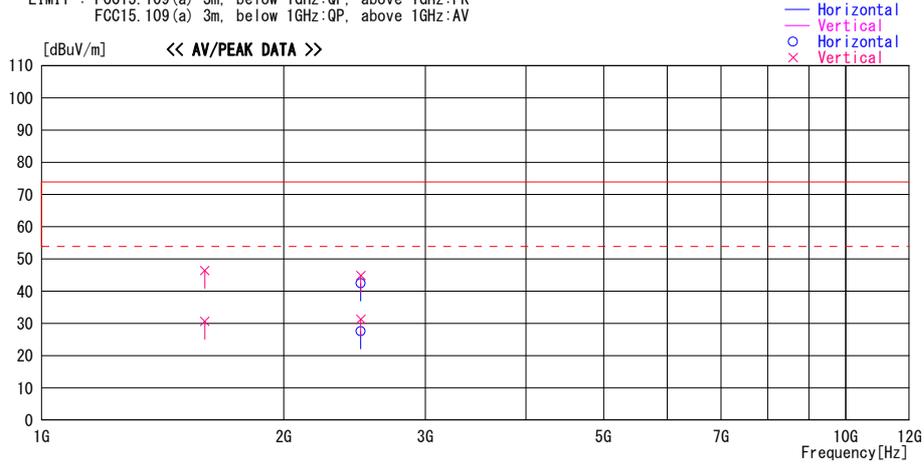
UL Japan, Inc. Ise HQ EMC Lab. No.1 Semi Anechoic Chamber  
Date : 2014/04/14

Report No. : 10276509H

Temp./Humi. : 25deg. C / 35% RH  
Engineer : Koji Yamamoto

Mode / Remarks : USB Data Com Mode Worst-Axis (Hori:Z / Ver:Z)

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]
			Factor [dB/m]	Gain [dB]						
1595.739	56.2	PK	24.9	-34.7	46.4	186	100	Vert.	73.9	27.5
1595.739	40.4	AV	24.9	-34.7	30.6	186	100	Vert.	53.9	23.3
2494.102	38.9	AV	26.5	-34.1	31.3	322	100	Vert.	53.9	22.6
2494.102	50.1	PK	26.5	-34.1	42.5	193	100	Hori.	73.9	31.4
2494.102	52.5	PK	26.5	-34.1	44.9	322	100	Vert.	73.9	29.0
2494.102	35.2	AV	26.5	-34.1	27.6	193	100	Hori.	53.9	26.3

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

\*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**

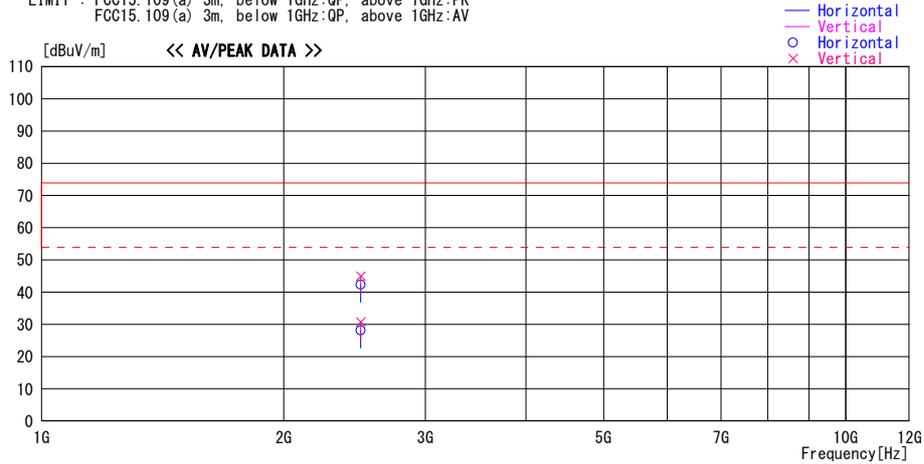
UL Japan, Inc. Ise HQ EMC Lab. No.1 Semi Anechoic Chamber  
Date : 2014/04/14

Report No. : 10276509H

Temp./Humi. : 25deg. C / 35% RH  
Engineer : Koji Yamamoto

Mode / Remarks : Standby Mode Worst-Axis (Hori:Z / Ver:Z)

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]
			Factor [dB/m]	Loss& Gain [dB]						
2494.102	49.9	PK	26.5	-34.1	42.3	177	100	Hori.	73.9	31.6
2494.102	52.6	PK	26.5	-34.1	45.0	311	100	Vert.	73.9	28.9
2494.102	35.7	AV	26.5	-34.1	28.1	177	100	Hori.	53.9	25.8
2494.102	38.3	AV	26.5	-34.1	30.7	311	100	Vert.	53.9	23.2

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.

## **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	CE/RE	2013/08/01 * 12
MOS-27	Thermo-Hygrometer	CUSTOM	CTH-201	A08Q26	CE/RE	2014/02/20 * 12
MJM-21	Measure	KOMELON	KMC-36	-	CE/RE	-
COTS-MEMI	EMI measurement program	TSJ	TEPTO-DV	-	CE/RE	-
MTR-09	EMI Test Receiver	Rohde & Schwarz	ESU26	100412	CE/RE	2013/06/07 * 12
MLS-07	LISN(AMN)	Schwarzbeck	NSLK8127	8127364	CE(EUT)	2014/01/27 * 12
MLS-03	LISN(AMN)	Schwarzbeck	NSLK8127	8127384	CE(AE)	2014/03/10 * 12
MTA-30	Terminator	TME	CT-01	-	CE	2014/01/20 * 12
MCC-03	Coaxial Cable	Fujikura/Suhner/TSJ	5D-2W(20m)/ 3D-2W(7.5m)/ RG400u(1.5m)/ RFM-E421(Switcher)	-/01068(Switcher)	CE	2013/09/12 * 12
MAT-64	Attenuator(13dB)	JFW Industries, Inc.	50FP-013H2 N	-	CE	2014/01/29 * 12
KBA-05	Biconical Antenna	Schwarzbeck	BBA9106	2513	RE	2013/11/24 * 12
KLA-04	Logperiodic Antenna	Schwarzbeck	USLP9143	361	RE	2013/11/24 * 12
MAT-08	Attenuator(6dB)	Weinschel Corp	2	BK7971	RE	2013/11/26 * 12
MCC-02	Coaxial Cable	Suhner/storm/Agilent/ TSJ	-	-	RE	2013/09/12 * 12
MPA-19	Pre Amplifier	MITEQ	MLA-10K01-B01-35	1237616	RE	2014/02/17 * 12
MHA-05	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	253	RE	2013/05/13 * 12
MPA-01	Pre Amplifier	Agilent	8449B	3008A01671	RE	2014/02/05 * 12
MCC-165	Microwave Cable	Junkosha	MWX221	1203S213(1m) / 1311S166(5m)	RE	2013/11/27 * 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**

**UL Japan, Inc.**

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