



EMI TEST REPORT

Test Report No. : 10491306H-B

Applicant : Sharp Corporation, Communication Systems Division
Type of Equipment : Smart Phone
Model No. : 401SH
FCC ID : APYHRO00211
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: September 16, 2014

**Representative
test engineer:**

Tsubasa Takayama
Engineer
Consumer Technology Division

Approved by :

Takahiro Hatakeda
Leader
Consumer Technology Division



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.

Ise EMC Lab.

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

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

13-EM-F0429

CONTENTS	PAGE
SECTION 1: Customer information	4
SECTION 2: Equipment under test (E.U.T.)	4
SECTION 3: Test specification, procedures & results	5
SECTION 4: Operation of E.U.T. during testing	8
SECTION 5: Conducted Emission	10
SECTION 6: Radiated Emission	11
APPENDIX 1: Data of EMI test	12
Conducted Emission	12
Radiated Emission	14
APPENDIX 2: Test instruments	18
APPENDIX 3: Photographs of test setup.....	19
Conducted Emission	19
Radiated Emission	20
Worst Case Position (Horizontal: X-axis/ Vertical:X-axis)	22

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 : +81-82-420-1552
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 : Smart Phone
Model No. : 401SH
Serial No. : Refer to Section 4, Clause 4.2
Receipt Date of Sample : September 16, 2014
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 : 401SH is AXGP, Tri-band (FDD 1/FDD 3/SBM Specific) FDD-LTE, Dual-band (FDD I/FDD VIII) WCDMA & Tri-band (900/1800/1900) GSM Multi-mode Smart 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: 1190.4MHz (max)
Source oscillation: 19.2MHz

UL Japan, Inc.

Ise EMC Lab.

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

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

SECTION 3: Test specification, procedures & results

3.1 Test specification

Test Specification : FCC Part 15 Subpart B: 2014, final revised on May 1, 2014 and effective June 2, 2014

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

3.2 Procedures and results

Item	Test Procedure	Limits	Deviation	Worst margin	Result
Conducted emission	ANSI C63.4: 2009 7. AC powerline conducted emission measurements	Class B	N/A	[QP] 13.5dB 0.17159MHz, L [AV] 12.4dB 0.17156MHz, N 0.17159MHz, L	Complied
Radiated emission	ANSI C63.4: 2009 8. Radiated emission measurements	Class B	N/A	11.0dB 447.366MHz, 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.

UL Japan, Inc.

Ise EMC Lab.

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

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

3.5 Test Location

UL Japan, Inc. Ise 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

	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	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	2973C-2	7.5 x 5.8 x 5.2m	4.0 x 4.0m	-
No.3 semi-anechoic chamber	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	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

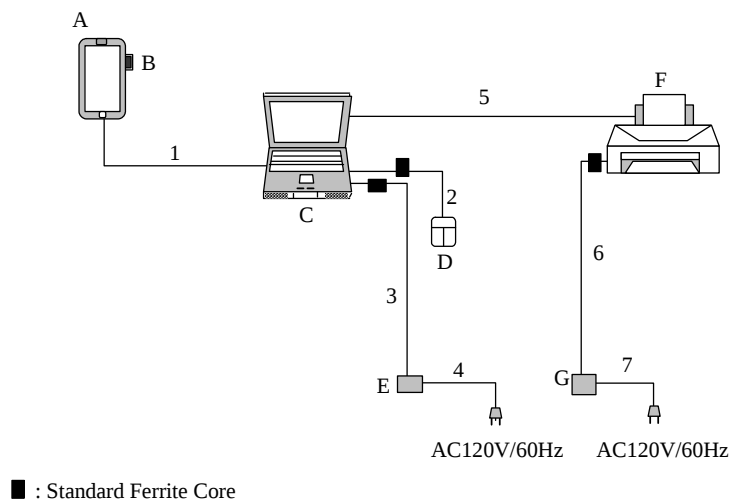
Refer to APPENDIX.

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	Smart Phone	401SH	004401/11/527019/7	Sharp Corporation	EUT
B	microSD Memory Card	SD-MD008GA	None	TOSHIBA	-
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	-

UL Japan, Inc.

Ise EMC Lab.

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

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

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 CISPR AV
IF Bandwidth	: 9 kHz

5.4 Test result

Summary of the test results: Pass

Date: September 16, 2014 Test engineer: Tsubasa Takayama

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-6000MHz (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	Test Receiver	
Detector Type	Quasi-peak	Peak	CISPR AV
IF Bandwidth	RBW:120kHz	BW: 1MHz	BW:1MHz

- 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: September 16, 2014 Test engineer: Tsubasa Takayama

UL Japan, Inc.

Ise EMC Lab.

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

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Conducted Emission

DATA OF CONDUCTED EMISSION TEST

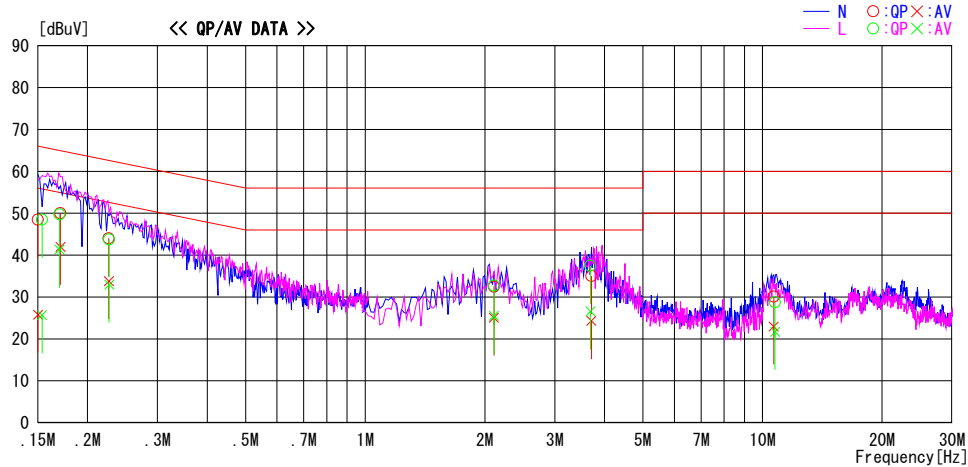
UL Japan, Inc. Ise EMC Lab. No. 1 Semi Anechoic Chamber
Date : 2014/09/16

Report No. : 10491306H

Temp./Humi. : 25deg. C / 51% RH
Engineer : Tsubasa Takayama

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]		
0.15000	35.3	12.6	13.2	48.5	25.8	66.0	56.0	17.5	30.2	N	
0.17092	36.8	28.8	13.2	50.0	42.0	64.9	54.9	14.9	12.9	N	
0.22630	30.7	20.5	13.3	44.0	33.8	62.6	52.6	18.6	18.8	N	
2.10693	18.9	11.5	13.6	32.5	25.1	56.0	46.0	23.5	20.9	N	
3.70645	21.2	10.5	13.8	35.0	24.3	56.0	46.0	21.0	21.7	N	
10.67324	15.6	8.5	14.5	30.1	23.0	60.0	50.0	29.9	27.0	N	
0.15349	35.3	12.5	13.2	48.5	25.7	65.8	55.8	17.3	30.1	L	
0.17000	36.5	28.1	13.2	49.7	41.3	65.0	55.0	15.3	13.7	L	
0.22676	30.4	19.7	13.3	43.7	33.0	62.6	52.6	18.9	19.6	L	
2.10693	19.1	11.9	13.6	32.7	25.5	56.0	46.0	23.3	20.5	L	
3.68827	23.7	12.8	13.8	37.5	26.6	56.0	46.0	18.5	19.4	L	
10.75360	14.2	7.2	14.5	28.7	21.7	60.0	50.0	31.3	28.3	L	

CHART : WITH FACTOR. Peak hold data. CALCULATION : RESULT = READING + C.F (LISN + ATTEN + CABLE)
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

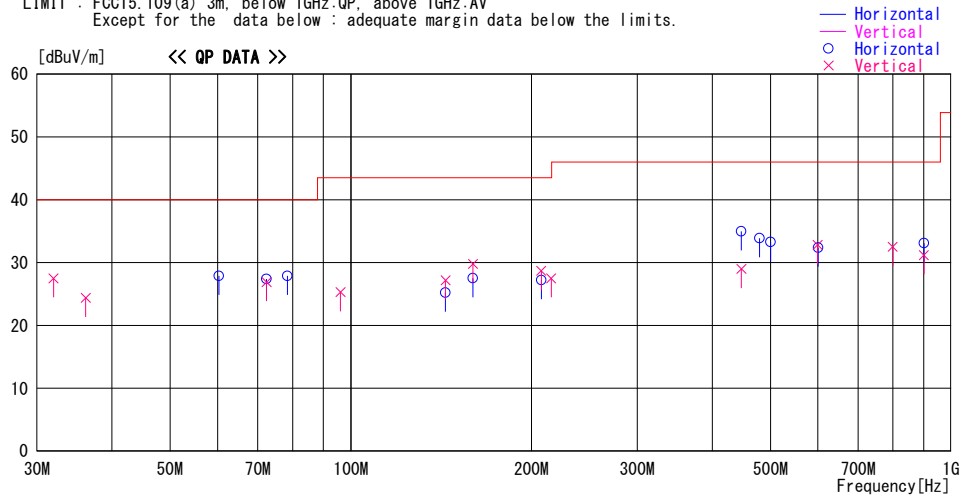
UL Japan, Inc. Ise EMC Lab. No. 1 Semi Anechoic Chamber
Date : 2014/09/16

Report No. : 10491306H

Temp./Humi. : 24deg. C / 54% RH
Engineer : Tsubasa Takayama

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

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



Frequency	Reading	DET	Antenna Factor	Loss& Gain	Level	Angle	Height	Polar.	Limit	Margin	Comment
[MHz]	[dBuV]		[dB/m]	[dB]	[dBuV/m]	[Deg]	[cm]		[dBuV/m]	[dB]	
31.975	42.0	QP	16.9	-31.4	27.5	138	100	Vert.	40.0	12.5	
36.183	39.8	QP	15.9	-31.3	24.4	214	100	Vert.	40.0	15.6	
60.315	51.4	QP	7.5	-31.0	27.9	289	384	Hori.	40.0	12.1	
72.375	51.7	QP	6.5	-30.8	27.4	124	287	Hori.	40.0	12.6	
72.385	51.2	QP	6.5	-30.8	26.9	211	100	Vert.	40.0	13.1	
78.412	51.8	QP	6.8	-30.7	27.9	158	349	Hori.	40.0	12.1	
96.120	46.0	QP	9.7	-30.4	25.3	238	100	Vert.	43.5	18.2	
143.780	40.4	QP	14.7	-29.9	25.2	12	280	Hori.	43.5	18.3	
143.791	42.4	QP	14.7	-29.9	27.2	278	100	Vert.	43.5	16.3	
159.764	41.8	QP	15.5	-29.8	27.5	348	279	Hori.	43.5	16.0	
159.770	44.1	QP	15.5	-29.8	29.8	108	100	Vert.	43.5	13.7	
207.703	41.7	QP	16.5	-29.5	28.7	10	100	Vert.	43.5	14.8	
207.705	40.2	QP	16.5	-29.5	27.2	102	227	Hori.	43.5	16.3	
215.684	40.2	QP	16.7	-29.4	27.5	211	100	Vert.	43.5	16.0	
447.358	38.1	QP	17.6	-26.7	29.0	180	100	Vert.	46.0	17.0	
447.366	44.1	QP	17.6	-26.7	35.0	112	100	Hori.	46.0	11.0	
479.307	42.5	QP	17.9	-26.5	33.9	105	208	Hori.	46.0	12.1	
500.398	41.5	QP	18.1	-26.3	33.3	359	100	Hori.	46.0	12.7	
598.940	39.1	QP	19.4	-25.7	32.8	248	101	Vert.	46.0	13.2	
600.475	38.6	QP	19.4	-25.6	32.4	45	100	Hori.	46.0	13.6	
799.379	35.2	QP	22.0	-24.7	32.5	330	101	Vert.	46.0	13.5	
900.722	34.8	QP	22.1	-23.8	33.1	278	147	Hori.	46.0	12.9	
900.730	32.9	QP	22.1	-23.8	31.2	43	101	Vert.	46.0	14.8	

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

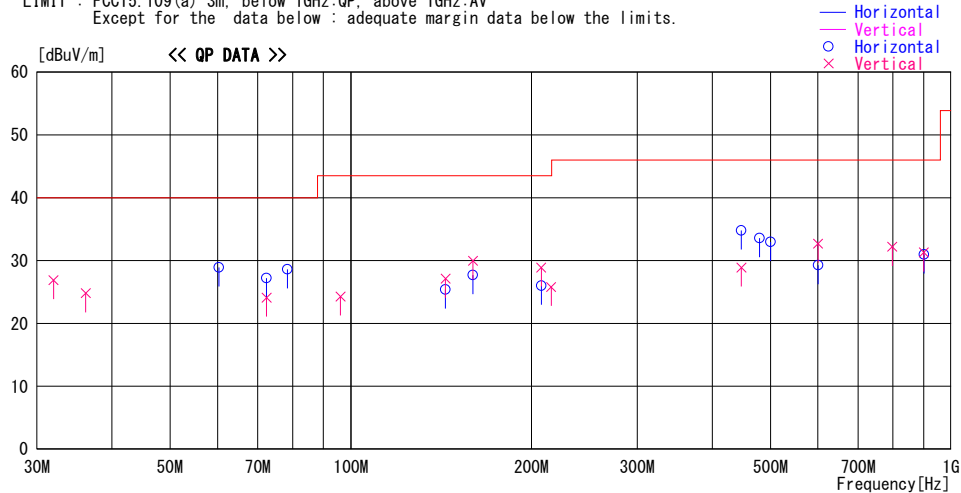
UL Japan, Inc. Ise EMC Lab. No. 1 Semi Anechoic Chamber
Date : 2014/09/16

Report No. : 10491306H

Temp./Humi. : 24deg. C / 54% RH
Engineer : Tsubasa Takayama

Mode / Remarks : Standby Mode (Worst axis Ver: Y-axis, Hori: Y-axis)

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



Frequency	Reading	DET	Antenna Factor	Loss& Gain	Level	Angle	Height	Polar.	Limit	Margin	Comment
[MHz]	[dBuV]		[dB/m]	[dB]	[dBuV/m]	[Deg]	[cm]		[dBuV/m]	[dB]	
31.975	41.4	QP	16.9	-31.4	26.9	141	100	Vert.	40.0	13.1	
36.183	40.2	QP	15.9	-31.3	24.8	202	100	Vert.	40.0	15.2	
60.315	52.4	QP	7.5	-31.0	28.9	283	379	Hori.	40.0	11.1	
72.375	51.5	QP	6.5	-30.8	27.2	147	286	Hori.	40.0	12.8	
72.385	48.4	QP	6.5	-30.8	24.1	212	100	Vert.	40.0	15.9	
78.422	52.5	QP	6.8	-30.7	28.6	303	268	Hori.	40.0	11.4	
96.120	45.0	QP	9.7	-30.4	24.3	198	100	Vert.	43.5	19.2	
143.780	40.6	QP	14.7	-29.9	25.4	10	200	Hori.	43.5	18.1	
143.791	42.3	QP	14.7	-29.9	27.1	282	100	Vert.	43.5	16.4	
159.764	42.0	QP	15.5	-29.8	27.7	158	226	Hori.	43.5	15.8	
159.770	44.3	QP	15.5	-29.8	30.0	123	100	Vert.	43.5	13.5	
207.703	41.9	QP	16.5	-29.5	28.9	13	100	Vert.	43.5	14.6	
207.705	39.0	QP	16.5	-29.5	26.0	28	200	Hori.	43.5	17.5	
215.684	38.5	QP	16.7	-29.4	25.8	209	100	Vert.	43.5	17.7	
447.358	38.0	QP	17.6	-26.7	28.9	182	100	Vert.	46.0	17.1	
447.366	43.9	QP	17.6	-26.7	34.8	33	122	Hori.	46.0	11.2	
479.307	42.2	QP	17.9	-26.5	33.6	105	208	Hori.	46.0	12.4	
500.398	41.2	QP	18.1	-26.3	33.0	292	100	Hori.	46.0	13.0	
600.413	38.9	QP	19.4	-25.6	32.7	251	100	Vert.	46.0	13.3	
600.475	35.5	QP	19.4	-25.6	29.3	86	100	Hori.	46.0	16.7	
798.019	34.9	QP	22.0	-24.7	32.2	328	100	Vert.	46.0	13.8	
900.722	32.7	QP	22.1	-23.8	31.0	192	172	Hori.	46.0	15.0	
900.620	33.1	QP	22.0	-23.8	31.3	41	103	Vert.	46.0	14.7	

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 (Above 1GHz)

DATA OF RADIATED EMISSION TEST

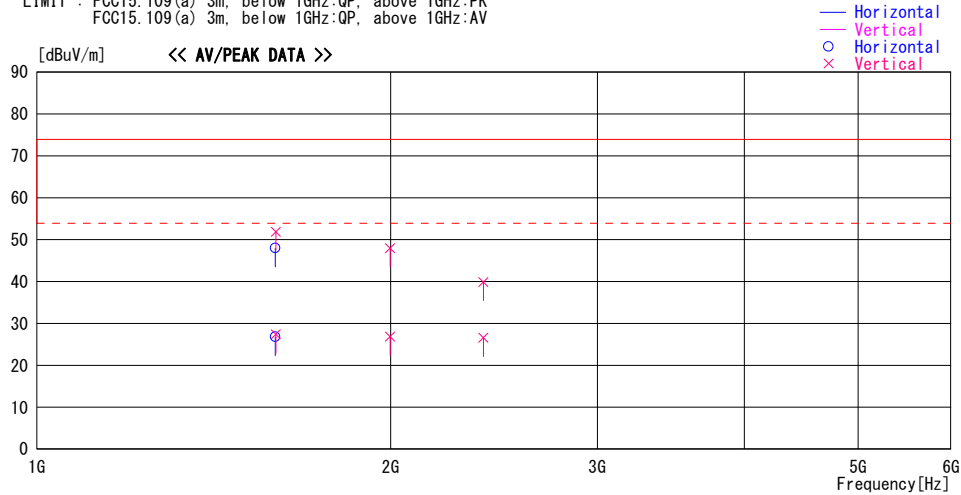
UL Japan, Inc. Ise EMC Lab. No. 1 Semi Anechoic Chamber
Date : 2014/09/16

Report No. : 10491306H

Temp./Humi. : 24deg. C / 54% RH
Engineer : Tsubasa Takayama

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

LIMIT : FCC15.109(a) 3m, below 1GHz:QP, above 1GHz:PK
FCC15.109(a) 3m, below 1GHz:QP, above 1GHz:AV



Frequency	Reading	DET	Antenna Factor	Loss& Gain	Level	Angle	Height	Polar.	Limit	Margin	Comment
[MHz]	[dBuV]		[dB/m]	[dB]	[dBuV/m]	[Deg]	[cm]		[dBuV/m]	[dB]	
1597.200	35.8	AV	26.3	-34.7	27.4	41	100	Vert.	53.9	26.5	
1597.200	60.3	PK	26.3	-34.7	51.9	41	100	Vert.	73.9	22.0	
1594.720	56.5	PK	26.2	-34.7	48.0	275	100	Hori.	73.9	25.9	
1594.720	35.3	AV	26.2	-34.7	26.8	275	100	Hori.	53.9	27.1	
1998.006	33.8	AV	27.4	-34.3	26.9	81	112	Vert.	53.9	27.0	
1998.006	54.9	PK	27.4	-34.3	48.0	81	112	Vert.	73.9	25.9	
2399.450	32.6	AV	28.2	-34.2	26.6	0	100	Vert.	53.9	27.3	
2399.450	45.9	PK	28.2	-34.2	39.9	0	100	Vert.	73.9	34.0	

CHART:WITH FACTOR ANT TYPE: -30MHz:LOOP, 30-300MHz:BICONICAL 300MHz-1000MHz:10GPFRT10D1C 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

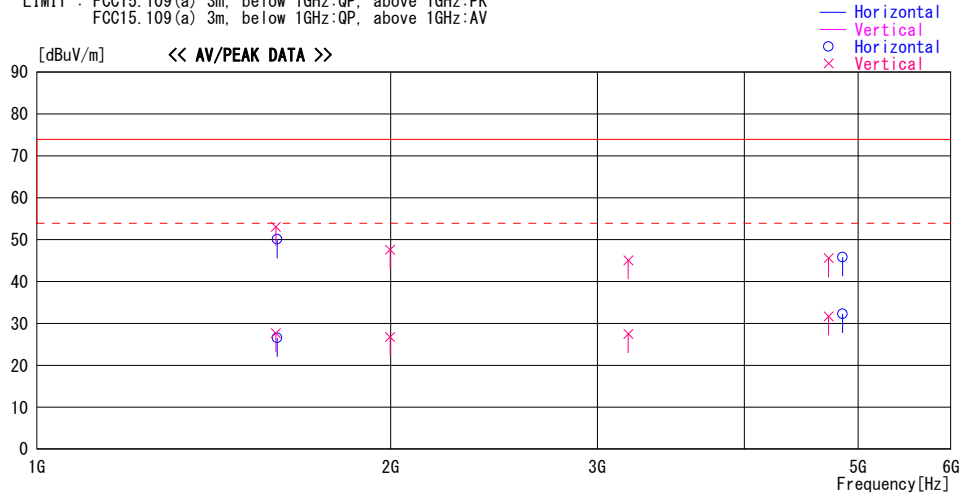
UL Japan, Inc. Ise EMC Lab. No.1 Semi Anechoic Chamber
Date : 2014/09/16

Report No. : 10491306H

Temp./Humi. : 24deg. C / 54% RH
Engineer : Tsubasa Takayama

Mode / Remarks : Standby Mode (Worst axis Ver: Y-axis, Hori: Y-axis)

LIMIT : FCC15.109(a) 3m, below 1GHz:QP, above 1GHz:PK
FCC15.109(a) 3m, below 1GHz:QP, above 1GHz:AV



Frequency	Reading	DET	Antenna	Loss&	Level	Angle	Height	Polar.	Limit	Margin	Comment
[MHz]	[dBuV]		Factor	Gain	[dBuV/m]	[Deg]	[cm]		[dBuV/m]	[dB]	
1597.200	36.1	AV	26.3	-34.7	27.7	37	100	Vert.	53.9	26.2	
1597.200	61.5	PK	26.3	-34.7	53.1	37	100	Vert.	73.9	20.8	
1601.208	58.5	PK	26.3	-34.7	50.1	282	100	Hori.	73.9	23.8	
1601.208	35.0	AV	26.3	-34.7	26.6	282	100	Hori.	53.9	27.3	
1998.006	33.7	AV	27.4	-34.3	26.8	82	100	Vert.	53.9	27.1	
1998.006	54.5	PK	27.4	-34.3	47.6	82	100	Vert.	73.9	26.3	
3186.371	32.7	AV	28.6	-33.8	27.5	0	112	Vert.	53.9	26.4	
3186.371	50.3	PK	28.6	-33.8	45.1	0	112	Vert.	73.9	28.8	
4719.447	32.4	AV	31.8	-32.5	31.7	212	100	Vert.	53.9	22.2	
4719.447	46.3	PK	31.8	-32.5	45.6	212	100	Vert.	73.9	28.3	
4851.715	46.1	AV	32.2	-32.5	45.8	0	112	Hori.	53.9	8.1	
4851.715	32.6	PK	32.2	-32.5	32.3	0	112	Hori.	73.9	41.6	

CHART:WITH FACTOR ANT TYPE: <30MHz>:LOOP, <30-300MHz>:BICONICAL, <300MHz-1000MHz>:1/2WAVELENGTH, <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

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
MAEC-01	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 10m	DA-06881	RE	2014/09/01 * 12
MOS-27	Thermo-Hygrometer	CUSTOM	CTH-201	A08Q26	RE	2014/02/20 * 12
MJM-21	Measure	KOMELON	KMC-36	-	RE	-
COTS-MEMI	EMI measurement program	TSJ	TEPTO-DV	-	RE	-
MTR-09	EMI Test Receiver	Rohde & Schwarz	ESU26	100412	RE	2014/06/06 * 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	2014/05/16 * 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
MAEC-01	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 10m	DA-06881	CE	2014/09/01 * 12
MLS-24	LISN(AMN)	Schwarzbeck	NSLK8127	8127-730	CE(EUT)	2014/07/10 * 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
MLS-25	LISN(AMN)	Schwarzbeck	NSLK8127	8127-731	CE(AE)	2014/07/09 * 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

UL Japan, Inc.

Ise EMC Lab.

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

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124