



EMI TEST REPORT

Test Report No. : 10257588H-B

Applicant : Sharp Corporation, Communication Systems Division
Type of Equipment : Cellular Phone
Model No. : 304SH
FCC ID : APYHRO00205
Test standard : FCC Part 15 Subpart B 2013 Class B
Test Result : Complied

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2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with the above regulation.
4. The test results in this report are traceable to the national or international standards.
5. This test report must not be used by the customer product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

Date of test: March 14, 2014

**Representative
test engineer:**

Ken Fujita

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

REVISION HISTORY

Original Test Report No.: 10257588H-B

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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. : 304SH
Serial No. : Refer to Section 4, Clause 4.2
Receipt Date of Sample : March 13, 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 : 304SH is AXGP, Tri-band FDD-LTE(Band 1 / 3 / SBM Specific), Dual-band WCDMA(FDD I / VIII) & Tri-band GSM(900 / 1800 / 1900) Multi-mode Cellular Phone.
The EUT has the function that NFC, Bluetooth, ANT+ and Wireless-LAN technology interface for establishing contact and transmitting data with certain device.
Clock frequencies in the system : CPU: 2.2656GHz (max)
RTC: 32.768kHz
Source oscillation: 19.2MHz / 48MHz (BT / WLAN / ANT+),
27.12MHz(NFC), 27MHz(LCDC)

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SECTION 3: Test specification, procedures & results

3.1 Test specification

Test Specification : FCC Part 15 Subpart B: 2013, final revised on September 30, 2013 and effective October 30, 2013

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] 12.9dB 0.17441MHz, L [AV] 10.5dB 0.17441MHz, L	Complied
Radiated emission	ANSI C63.4: 2009 8. Radiated emission measurements	Class B	N/A	9.1dB 72.204MHz, 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 and 10m)

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	4.0 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

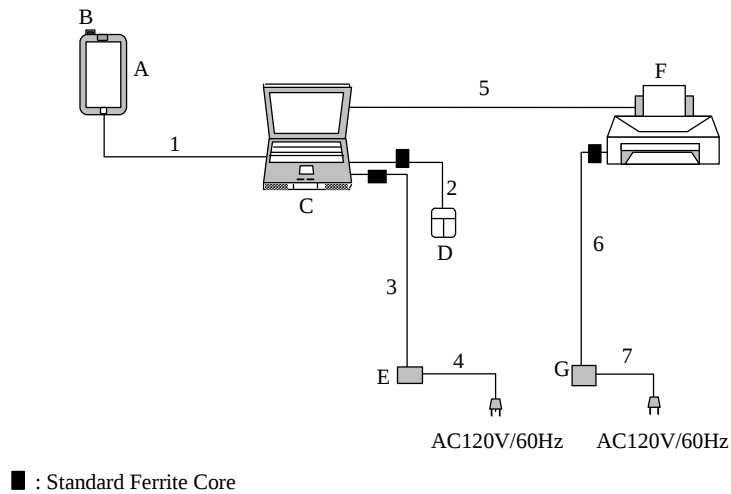
Refer to APPENDIX.

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	Cellular Phone	304SH	004401/11/507672/7	Sharp Corporation	EUT
B	microSD Memory Card	SD-MF004G	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	-

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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: March 14, 2014

Test engineer: Ken Fujita

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-13000MHz (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: March 14, 2014

Test engineer: Ken Fujita

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APPENDIX 1: Data of EMI test

Conducted Emission

DATA OF CONDUCTED EMISSION TEST

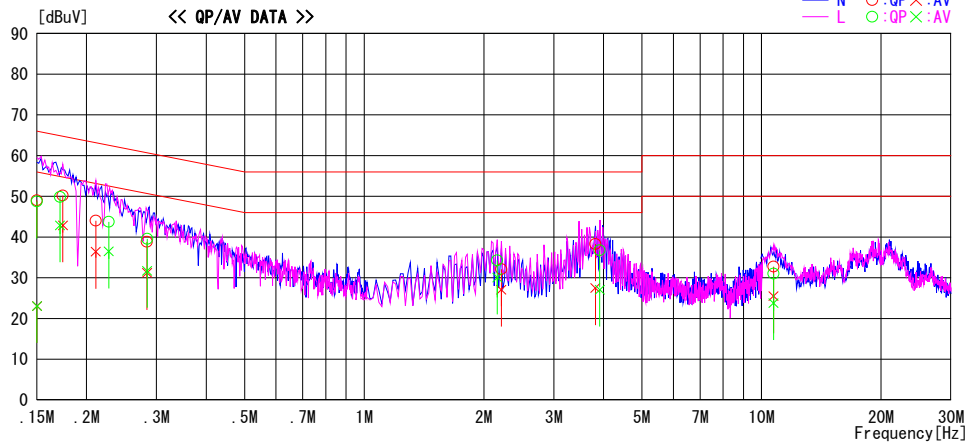
UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2014/03/14

Report No. : 10257588H

Temp./Humi. : 21deg. C / 27% RH
Engineer : Ken Fujita

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]		
0.15000	35.7	9.8	13.3	49.0	23.1	66.0	56.0	17.0	32.9	N	
0.17441	36.9	29.6	13.3	50.2	42.9	64.7	54.7	14.5	11.8	N	
0.21102	30.6	23.0	13.4	44.0	36.4	63.2	53.2	19.2	16.8	N	
0.28377	25.4	17.8	13.4	38.8	31.2	60.7	50.7	21.9	19.5	N	
2.21346	18.3	13.3	13.8	32.1	27.1	56.0	46.0	23.9	18.9	N	
3.81551	24.1	13.3	14.2	38.3	27.5	56.0	46.0	17.7	18.5	N	
10.71342	17.3	10.1	15.4	32.7	25.5	60.0	50.0	27.3	24.5	N	
0.15000	35.4	9.8	13.3	48.7	23.1	66.0	56.0	17.3	32.9	L	
0.17142	36.5	29.6	13.3	49.8	42.9	64.9	54.9	15.1	12.0	L	
0.22753	30.3	23.1	13.4	43.7	36.5	62.5	52.5	18.8	16.0	L	
0.28425	26.2	18.3	13.4	39.6	31.7	60.7	50.7	21.1	19.0	L	
2.16146	20.5	16.3	13.8	34.3	30.1	56.0	46.0	21.7	15.9	L	
3.91551	22.4	12.8	14.3	36.7	27.1	56.0	46.0	19.3	18.9	L	
10.71342	15.6	8.4	15.4	31.0	23.8	60.0	50.0	29.0	26.2	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.

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Conducted Emission

DATA OF CONDUCTED EMISSION TEST

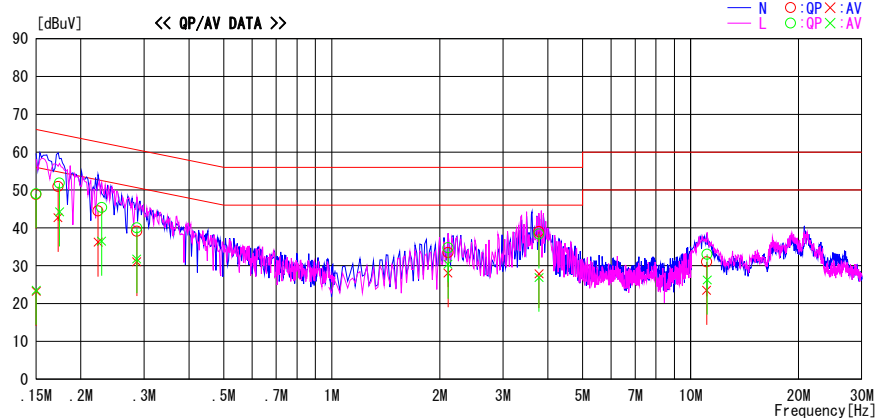
UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2014/03/14

Report No. : 10257588H

Temp./Humi. : 21deg. C / 27% RH
Engineer : Ken Fujita

Mode / Remarks : Standby mode

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



Frequency	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	35.5	9.9	13.3	48.8	23.2	66.0	56.0	17.2	32.8	N	
0.17267	37.6	29.4	13.3	50.9	42.7	64.8	54.8	13.9	12.1	N	
0.22323	31.1	22.8	13.4	44.5	36.2	62.7	52.7	18.2	16.5	N	
0.28599	25.7	17.7	13.4	39.1	31.1	60.6	50.6	21.5	19.5	N	
2.10693	19.7	14.3	13.8	33.5	28.1	56.0	46.0	22.5	17.9	N	
3.77915	24.8	13.7	14.2	39.0	27.9	56.0	46.0	17.0	18.1	N	
11.07505	15.4	7.9	15.6	31.0	23.5	60.0	50.0	29.0	26.5	N	
0.15000	35.7	10.2	13.3	49.0	23.5	66.0	56.0	17.0	32.5	L	
0.17441	38.5	30.9	13.3	51.8	44.2	64.7	54.7	12.9	10.5	L	
0.22845	32.0	23.1	13.4	45.4	36.5	62.5	52.5	17.1	16.0	L	
0.28599	26.6	18.4	13.4	40.0	31.8	60.6	50.6	20.6	18.8	L	
2.10693	20.9	16.6	13.8	34.7	30.4	56.0	46.0	21.3	15.6	L	
3.77915	24.2	12.7	14.2	38.4	26.9	56.0	46.0	17.6	19.1	L	
11.11523	17.4	10.6	15.6	33.0	26.2	60.0	50.0	27.0	23.8	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

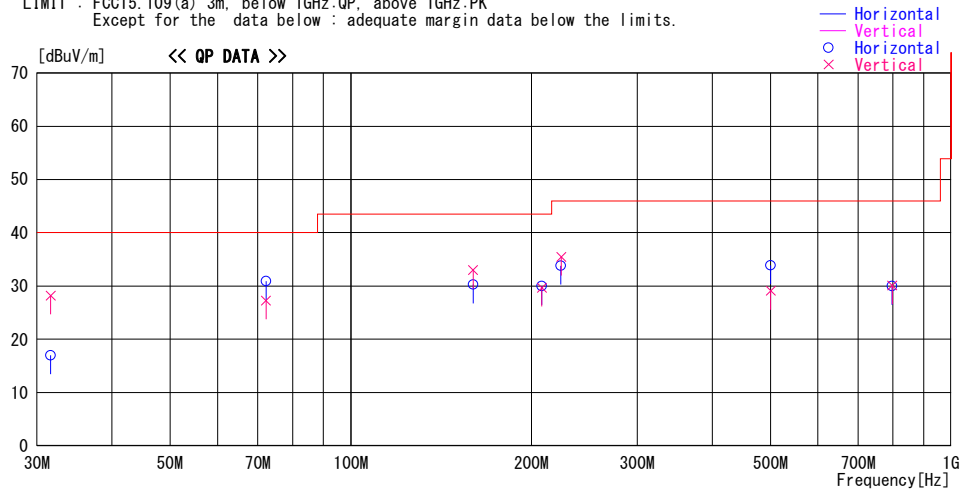
UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2014/03/14

Report No. : 10257588H

Temp./Humi. : 21deg. C / 27% RH
Engineer : Ken Fujita

Mode / Remarks : USB Data Com Mode, Worst axis Hor:X Ver: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]	Gain [dB]							
31.623	31.2	QP	17.2	-31.4	17.0	187	267	Hori.	40.0	23.0	
31.623	42.4	QP	17.2	-31.4	28.2	122	100	Vert.	40.0	11.8	
72.204	55.1	QP	6.6	-30.8	30.9	132	284	Hori.	40.0	9.1	
72.204	51.5	QP	6.6	-30.8	27.3	176	100	Vert.	40.0	12.7	
159.860	44.8	QP	15.3	-29.8	30.3	111	205	Hori.	43.5	13.2	
159.860	47.5	QP	15.3	-29.8	33.0	157	100	Vert.	43.5	10.5	
208.015	43.0	QP	16.5	-29.5	30.0	197	188	Hori.	43.5	13.5	
208.015	42.7	QP	16.5	-29.5	29.7	14	100	Vert.	43.5	13.8	
223.676	46.2	QP	16.8	-29.2	33.8	168	344	Hori.	46.0	12.2	
224.248	47.9	QP	16.8	-29.2	35.5	349	100	Vert.	46.0	10.5	
500.601	42.1	QP	18.1	-26.3	33.9	345	167	Hori.	46.0	12.1	
500.601	37.3	QP	18.1	-26.3	29.1	92	186	Vert.	46.0	16.9	
798.001	32.8	QP	22.0	-24.7	30.1	178	157	Vert.	46.0	15.9	
797.404	32.7	QP	22.0	-24.7	30.0	198	268	Hori.	46.0	16.0	

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

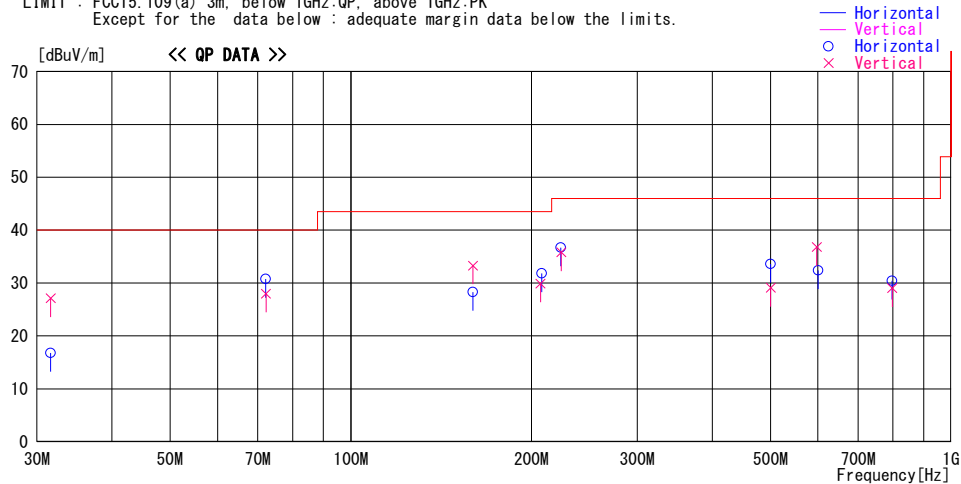
UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2014/03/14

Report No. : 10257588H

Temp./Humi. : 21deg. C / 27% RH
Engineer : Ken Fujita

Mode / Remarks : Standby Mode, Worst axis Hor:X Ver:X

LIMIT : FCC15.109(a) 3m, below 1GHz:QP, above 1GHz:PK
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]	
31.611	31.0	QP	17.2	-31.4	16.8	178	254	Hori.	40.0	23.2	
31.623	41.3	QP	17.2	-31.4	27.1	132	100	Vert.	40.0	12.9	
72.195	55.0	QP	6.6	-30.8	30.8	128	279	Hori.	40.0	9.2	
72.204	52.2	QP	6.6	-30.8	28.0	250	100	Vert.	40.0	12.0	
159.788	42.8	QP	15.3	-29.8	28.3	203	189	Hori.	43.5	15.2	
159.772	47.8	QP	15.3	-29.8	33.3	124	100	Vert.	43.5	10.2	
208.014	44.8	QP	16.5	-29.5	31.8	89	154	Hori.	43.5	11.7	
207.015	42.9	QP	16.5	-29.5	29.9	12	100	Vert.	43.5	13.6	
223.676	49.1	QP	16.8	-29.2	36.7	188	132	Hori.	46.0	9.3	
224.248	48.2	QP	16.8	-29.2	35.8	6	100	Vert.	46.0	10.2	
500.611	41.8	QP	18.1	-26.3	33.6	332	177	Hori.	46.0	12.4	
500.612	37.3	QP	18.1	-26.3	29.1	98	198	Vert.	46.0	16.9	
798.003	31.7	QP	22.0	-24.7	29.0	7	161	Vert.	46.0	17.0	
797.409	33.1	QP	22.0	-24.7	30.4	187	231	Hori.	46.0	15.6	
597.401	43.1	QP	19.4	-25.7	36.8	344	100	Vert.	46.0	9.2	
600.200	38.6	QP	19.4	-25.6	32.4	184	173	Hori.	46.0	13.6	

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

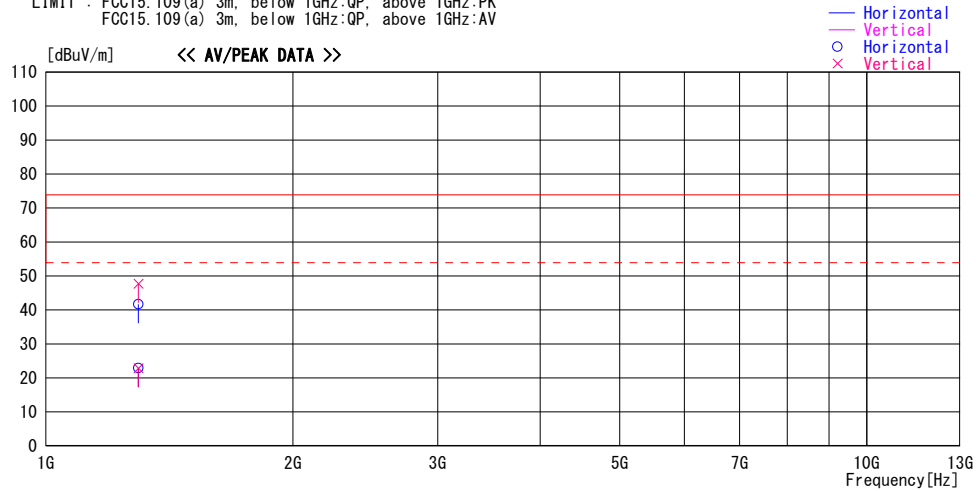
UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2014/03/14

Report No. : 10257588H

Temp./Humi. : 25deg. C / 43% RH
Engineer : Ken Fujita

Mode / Remarks : USB Data Com Mode, Worst axis Hor:X Ver:X

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]	
1296.592	52.6	PK	24.2	-35.1	41.7	123	112	Hori.	73.9	32.2	
1296.592	58.6	PK	24.2	-35.1	47.7	143	132	Vert.	73.9	26.2	
1296.592	33.8	AV	24.2	-35.1	22.9	123	112	Hori.	53.9	31.0	
1296.592	33.7	AV	24.2	-35.1	22.8	143	132	Vert.	53.9	31.1	

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

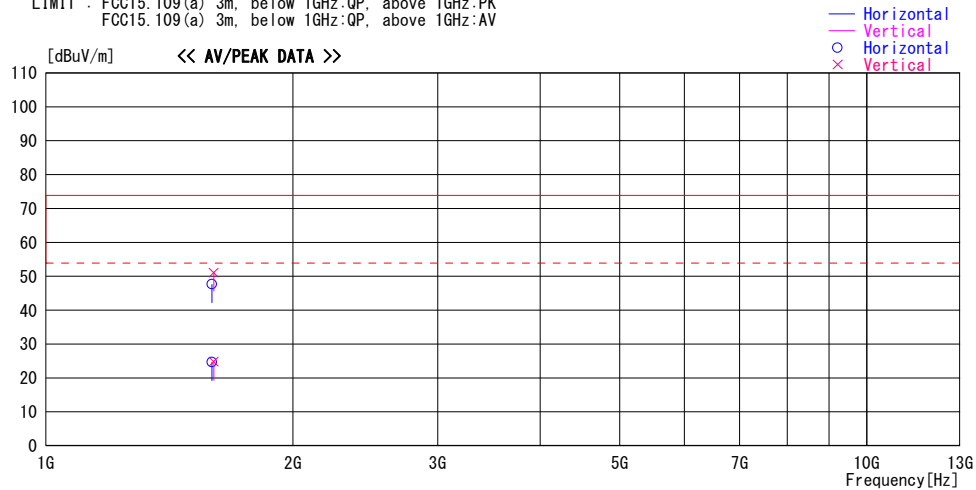
UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2014/03/14

Report No. : 10257588H

Temp./Humi. : 25deg. C / 43% RH
Engineer : Ken Fujita

Mode / Remarks : Standby Mode, Worst axis Hor:X Ver: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		Level [dBuV/m]	Angle [Deg]	Height [cm]	Polar.	Limit [dBuV/m]	Margin [dB]	Comment
			Factor [dB/m]	Gain [dB]							
1593.183	57.5	PK	24.9	-34.7	47.7	146	272	Hori.	73.9	26.2	
1593.183	34.5	AV	24.9	-34.7	24.7	146	272	Hori.	53.9	29.2	
1601.199	60.9	PK	24.9	-34.7	51.1	189	121	Vert.	73.9	22.8	
1601.199	34.6	AV	24.9	-34.7	24.8	189	121	Vert.	53.9	29.1	

CHART:WITH FACTOR ANT TYPE: -30MHz:LOOP, 30-300MHz:BICONICAL, 300MHz-1000MHz:LOGPERIODIC, 1000MHz-:HORN
CALCULATION:RESULT = READING + ANT FACTOR + LOSS(ATT+CABLE) - 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/CE	2013/08/01 * 12
MOS-27	Thermo-Hygrometer	CUSTOM	CTH-201	A08Q26	RE/CE	2014/02/20 * 12
MJM-21	Measure	KOMELON	KMC-36	-	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	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
MLS-06	LISN(AMN)	Schwarzbeck	NSLK8127	8127363	CE(AE)	2014/01/27 * 12
MLS-07	LISN(AMN)	Schwarzbeck	NSLK8127	8127364	CE(EUT)	2014/01/27 * 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
MAJ-01	Antenna Tilt Jig	Intelligent System Engineering Co., Ltd	Antenna Tilt Jig	T-0001	RE	Pre Check

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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