



EMI TEST REPORT

Test Report No. : 10009157H-B

Applicant : SHARP Corporation, Communication Systems Division.
Type of Equipment : Tablet Personal Computer
Model No. : SH-08E
FCC ID : APYHRO00191
Test standard : FCC Part 15 Subpart B 2012 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: June 18, 2013

**Representative
test engineer:**

Masatoshi Nishiguchi
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>

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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 : Hachiro Hidaka

SECTION 2: Equipment under test (E.U.T.)

2.1 Identification of E.U.T.

Type of Equipment : Tablet Personal Computer
Model No. : SH-08E
Serial No. : Refer to Section 4, Clause 4.2
Receipt Date of Sample : June 18, 2013
Country of Mass-production : China
Condition of EUT : Production prototype
(Not for Sale: This sample is equivalent to mass-produced items.)
Modification of EUT : No Modification by the test lab

2.2 Product description

Feature of EUT : SH-08E is Tri-band LTE(B1/B19/B21) and Quad-band W-CDMA
(FDD1/5/6/19) and Quad-band GSM(850/900/1800/1900).
Tablet Personal Computer.
The EUT has the function that Bluetooth wireless technology interface
and wireless LAN technical interface for establishing contact and
transmitting data with certain device.
Clock frequencies in the system : CPU: 1,728MHz (max)
RTC: 32.763kHz
Source oscillation: 19.2MHz / 27.00MHz (CPU)

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SECTION 3: Test specification, procedures & results

3.1 Test specification

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

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

3.2 Procedures and results

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] 5.0dB 0.16744MHz, L [AV] 10.6dB 0.16744MHz, L	Complied
Radiated emission	ANSI C63.4: 2009 8. Radiated emission measurements	Class B	N/A	8.3dB 531.340MHz, 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

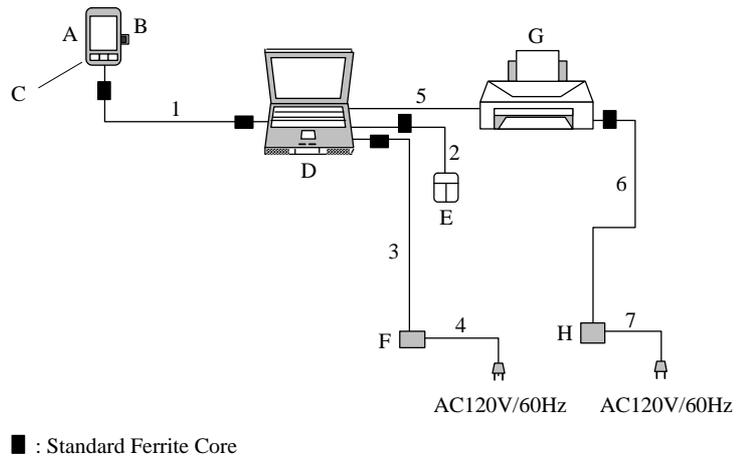
Refer to APPENDIX.

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	Tablet Personal Computer	SH-08E	004401/11/485512/1	Sharp Corporation	EUT
B	microSD Memory Card	SD-C02G	None	TOSHIBA	-
C	Lithium-Ion Battery	UBATIA227AF	WEA	Sharp Corporation	EUT
D	Personal Computer	PP11L	CN-0D4571-48643-51T-0549	Dell	-
E	Mouse	M-UAG120	LZ733B70EVV	Toshiba	-
F	AC Adapter (PC)	PA1900-02D	CN-09T215-71615-52C-1062	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: June 18, 2013

Test engineer: Masatoshi Nishiguchi

UL Japan, Inc.

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SECTION 6: Radiated Emission

6.1 Operating environment

Test place : No. 1 semi anechoic chamber
Temperature : See data
Humidity : See data

6.2 Test configuration

EUT was placed on a urethane platform of nominal size, 1.0m by 1.5m, raised 0.8m above the conducting ground plane.

The EUT was set on the edge of the tabletop.

Test was made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna was varied in height above the conducting ground plane to obtain the maximum signal strength.

Photographs of the set up are shown in Appendix 3.

6.3 Test conditions

Frequency range : 30MHz-300MHz (Biconical antenna) / 300MHz-1000MHz (Logperiodic antenna)
1000MHz-10000MHz (Horn antenna)
Test distance : 3m
EUT position : Table top
EUT operation mode : See Clause 4.1

6.4 Test procedure

The height of the measuring antenna varied between 1 and 4m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity.

The measurements were performed for both vertical and horizontal antenna polarization with the Test Receiver, or the Spectrum Analyzer.

The radiated emission measurements were made with the following detector function of the test receiver and the Spectrum analyzer.

Frequency	Below 1GHz	Above 1GHz
Instrument used	Test Receiver	Spectrum Analyzer *1)
IF Bandwidth	QP: BW 120kHz	PK: BW:1MHz AV: BW:1MHz

*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: June 18, 2013

Test engineer: Masatoshi Nishiguchi

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APPENDIX 1: Data of EMI test

Conducted Emission

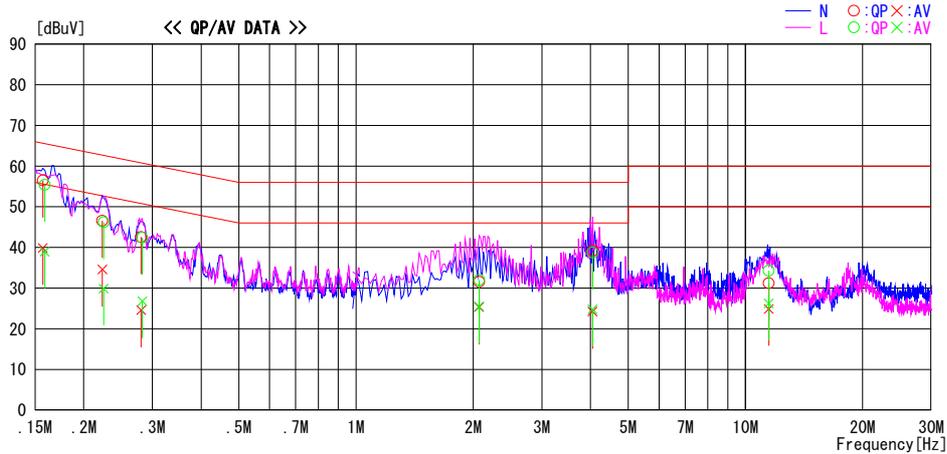
DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2013/06/18

Report No. : 10009157H
Temp./Humi. : 20deg. C / 60% RH
Engineer : Masatoshi Nishiguchi

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]		
0.15697	43.3	26.7	13.2	56.5	39.9	65.6	55.6	9.1	15.7	N	
0.22323	33.3	21.3	13.3	46.6	34.6	62.7	52.7	16.1	18.1	N	
0.28076	29.3	11.3	13.3	42.6	24.6	60.8	50.8	18.2	26.2	N	
2.07058	17.9	11.6	13.7	31.6	25.3	56.0	46.0	24.4	20.7	N	
4.05180	25.3	10.3	13.9	39.2	24.2	56.0	46.0	16.8	21.8	N	
11.47685	16.4	10.1	14.8	31.2	24.9	60.0	50.0	28.8	25.1	N	
0.15872	42.2	25.8	13.2	55.4	39.0	65.5	55.5	10.1	16.5	L	
0.22497	32.9	16.6	13.3	46.2	29.9	62.6	52.6	16.4	22.7	L	
0.28251	29.1	13.5	13.3	42.4	26.8	60.7	50.7	18.3	23.9	L	
2.07058	18.3	11.8	13.7	32.0	25.5	56.0	46.0	24.0	20.5	L	
4.05248	24.8	10.9	13.9	38.7	24.8	56.0	46.0	17.3	21.2	L	
11.47685	19.5	11.4	14.8	34.3	26.2	60.0	50.0	25.7	23.8	L	

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

*The limit is rounded down to one decimal place.

*The test result is rounded off to one or two decimal places, so some differences might be observed.

Conducted Emission

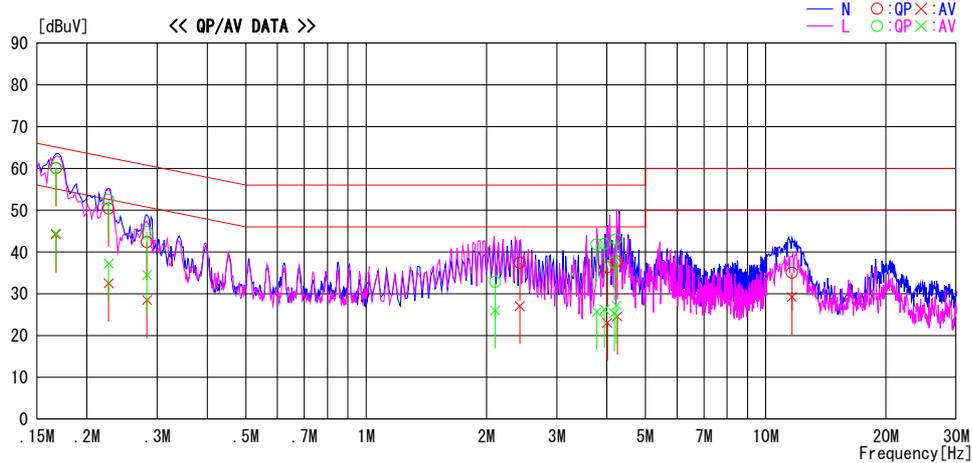
DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2013/06/18

Report No. : 10009157H
Temp./Humi. : 20deg. C / 60% RH
Engineer : Masatoshi Nishiguchi

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]		
0.16744	46.8	31.0	13.2	60.0	44.2	65.1	55.1	5.1	10.9	N	
0.16744	46.9	31.3	13.2	60.1	44.5	65.1	55.1	5.0	10.6	L	
0.22671	37.1	19.2	13.3	50.4	32.5	62.6	52.6	12.2	20.1	N	
0.22671	39.2	23.9	13.3	52.5	37.2	62.6	52.6	10.1	15.4	L	
0.28251	29.1	15.2	13.3	42.4	28.5	60.7	50.7	18.3	22.2	N	
0.28251	31.5	21.2	13.3	44.8	34.5	60.7	50.7	15.9	16.2	L	
2.10300	19.1	12.3	13.7	32.8	26.0	56.0	46.0	23.2	20.0	L	
2.42160	23.7	13.4	13.7	37.4	27.1	56.0	46.0	18.6	18.9	N	
3.77915	27.9	11.8	13.9	41.8	25.7	56.0	46.0	14.2	20.3	L	
3.94915	28.0	12.3	13.9	41.9	26.2	56.0	46.0	14.1	19.8	L	
4.01545	22.5	9.2	13.9	36.4	23.1	56.0	46.0	19.6	22.9	N	
4.17915	23.5	11.3	14.0	37.5	25.3	56.0	46.0	18.5	20.7	L	
4.22715	29.0	13.2	14.0	43.0	27.2	56.0	46.0	13.0	18.8	L	
4.25174	23.7	10.6	14.0	37.7	24.6	56.0	46.0	18.3	21.4	N	
11.63600	20.2	14.4	14.8	35.0	29.2	60.0	50.0	25.0	20.8	N	

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

*The limit is rounded down to one decimal place.

*The test result is rounded off to one or two decimal places, so some differences might be observed.

Radiated Emission
(Below 1GHz)

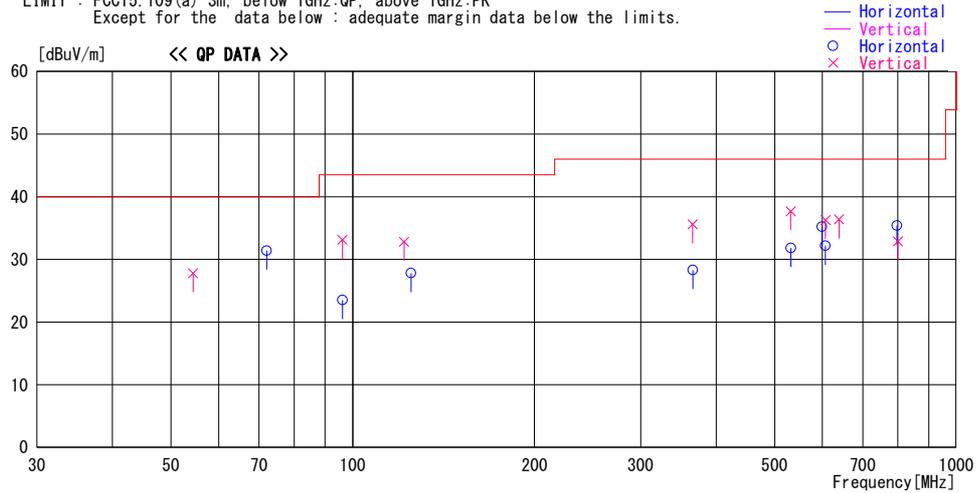
DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2013/06/18

Report No. : 10009157H
Temp./Humi. : 20deg. C / 60% RH
Engineer : Masatoshi Nishiguchi

Mode / Remarks : USB Data Com Mode

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



Frequency [MHz]	Reading [dBuV]	DET	Antenna		Level [dBuV/m]	Angle [Deg]	Height [cm]	Polar.	Limit [dBuV/m]	Margin [dB]	Comment
			Factor [dB/m]	Loss& Gain [dB]							
54.389	49.0	QP	9.8	-31.0	27.8	188	100	Vert.	40.0	12.2	
72.024	55.4	QP	6.7	-30.7	31.4	106	252	Hori.	40.0	8.6	
96.136	44.2	QP	9.6	-30.3	23.5	226	316	Hori.	43.5	20.0	
96.137	53.8	QP	9.6	-30.3	33.1	187	100	Vert.	43.5	10.4	
121.680	49.5	QP	13.5	-30.2	32.8	143	100	Vert.	43.5	10.7	
125.000	44.2	QP	13.7	-30.1	27.8	255	268	Hori.	43.5	15.7	
365.676	46.7	QP	16.6	-27.7	35.6	194	148	Vert.	46.0	10.4	
365.860	39.4	QP	16.6	-27.7	28.3	107	100	Hori.	46.0	17.7	
531.340	45.3	QP	18.6	-26.2	37.7	11	125	Vert.	46.0	8.3	
532.010	39.4	QP	18.6	-26.2	31.8	68	100	Hori.	46.0	14.2	
598.390	41.3	QP	19.5	-25.6	35.2	186	177	Hori.	46.0	10.8	
607.116	38.1	QP	19.6	-25.5	32.2	229	202	Hori.	46.0	13.8	
607.134	42.2	QP	19.6	-25.5	36.3	352	100	Vert.	46.0	9.7	
639.088	41.9	QP	20.0	-25.5	36.4	0	100	Vert.	46.0	9.6	
797.820	37.2	QP	22.4	-24.2	35.4	134	115	Hori.	46.0	10.6	
800.000	34.6	QP	22.4	-24.1	32.9	75	118	Vert.	46.0	13.1	

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

*The limit is rounded down to one decimal place.
*The test result is rounded off to one or two decimal places, so some differences might be observed.

Radiated Emission
(Below 1GHz)

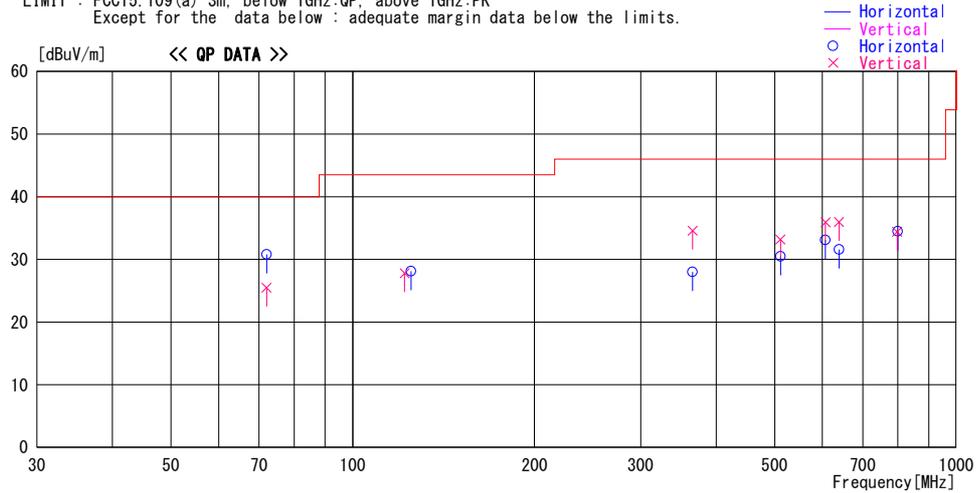
DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2013/06/18

Report No. : 10009157H
Temp./Humi. : 20deg. C / 60% RH
Engineer : Masatoshi Nishiguchi

Mode / Remarks : Standby Mode

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



Frequency [MHz]	Reading [dBuV]	DET	Antenna		Level [dBuV/m]	Angle [Deg]	Height [cm]	Polar.	Limit [dBuV/m]	Margin [dB]	Comment
			Factor [dB/m]	Loss& Gain [dB]							
72.021	49.5	QP	6.7	-30.7	25.5	28	237	Vert.	40.0	14.5	
72.032	54.8	QP	6.7	-30.7	30.8	110	278	Hori.	40.0	9.2	
121.918	44.5	QP	13.5	-30.2	27.8	155	100	Vert.	43.5	15.7	
125.000	44.5	QP	13.7	-30.1	28.1	270	296	Hori.	43.5	15.4	
365.648	45.7	QP	16.6	-27.7	34.6	188	139	Vert.	46.0	11.4	
365.665	39.1	QP	16.6	-27.7	28.0	76	100	Hori.	46.0	18.0	
511.272	38.6	QP	18.3	-26.4	30.5	49	194	Hori.	46.0	15.5	
511.281	41.3	QP	18.3	-26.4	33.2	321	129	Vert.	46.0	12.8	
607.133	39.0	QP	19.6	-25.5	33.1	231	100	Hori.	46.0	12.9	
607.138	41.8	QP	19.6	-25.5	35.9	333	100	Vert.	46.0	10.1	
639.092	41.5	QP	20.0	-25.5	36.0	0	100	Vert.	46.0	10.0	
639.093	37.1	QP	20.0	-25.5	31.6	138	228	Hori.	46.0	14.4	
798.290	36.1	QP	22.4	-24.1	34.4	265	100	Vert.	46.0	11.6	
800.004	36.2	QP	22.4	-24.1	34.5	116	100	Hori.	46.0	11.5	

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

*The limit is rounded down to one decimal place.

*The test result is rounded off to one or two decimal places, so some differences might be observed.

Radiated Emission
(Above 1GHz)

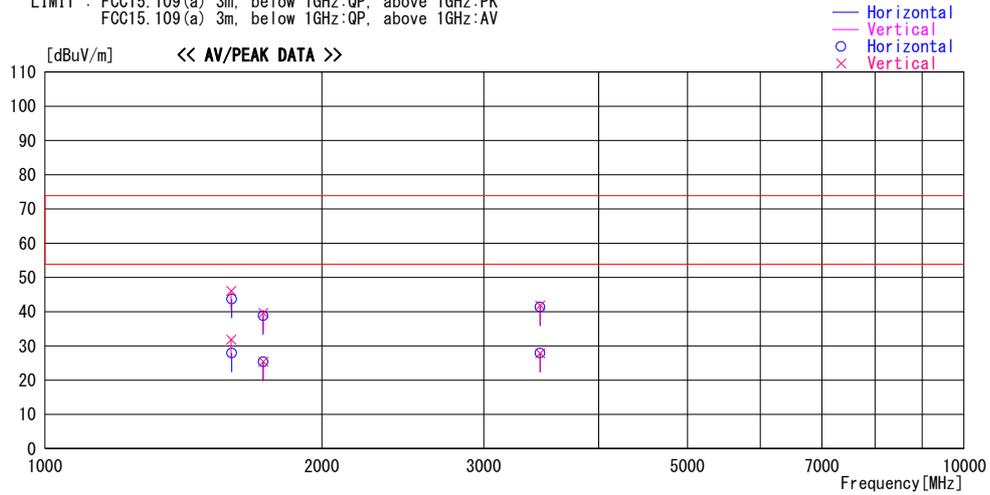
DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2013/06/18

Report No. : 10009157H
Temp./Humi. : 20deg. C / 60% RH
Engineer : Masatoshi Nishiguchi

Mode / Remarks : USB Data Com Mode

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



Frequency [MHz]	Reading [dBuV]	DET	Antenna		Level [dBuV/m]	Angle [Deg]	Height [cm]	Polar.	Limit [dBuV/m]	Margin [dB]	Comment
			Factor [dB/m]	Loss& Gain [dB]							
1596.100	52.6	PK	25.8	-34.7	43.7	101	247	Hori.	73.9	30.2	
1593.988	55.0	PK	25.8	-34.7	46.1	52	256	Vert.	73.9	27.8	
1593.988	40.8	AV	25.8	-34.7	31.9	52	256	Vert.	53.9	22.0	
1596.100	36.8	AV	25.8	-34.7	27.9	101	247	Hori.	53.9	26.0	
1728.000	47.0	PK	26.3	-34.5	38.8	0	100	Hori.	73.9	35.1	
1728.000	33.6	AV	26.3	-34.5	25.4	0	100	Vert.	53.9	28.5	
1728.000	47.8	PK	26.3	-34.5	39.6	0	100	Vert.	73.9	34.3	
1728.000	33.5	AV	26.3	-34.5	25.3	0	100	Hori.	53.9	28.6	
3456.000	32.4	AV	29.0	-33.5	27.9	0	100	Vert.	53.9	26.0	
3456.000	45.9	PK	29.0	-33.5	41.4	0	100	Hori.	73.9	32.5	
3456.000	46.3	PK	29.0	-33.5	41.8	0	100	Vert.	73.9	32.1	
3456.000	32.4	AV	29.0	-33.5	27.9	0	100	Hori.	53.9	26.0	

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

*The limit is rounded down to one decimal place.
*The test result is rounded off to one or two decimal places, so some differences might be observed.

Radiated Emission
(Above 1GHz)

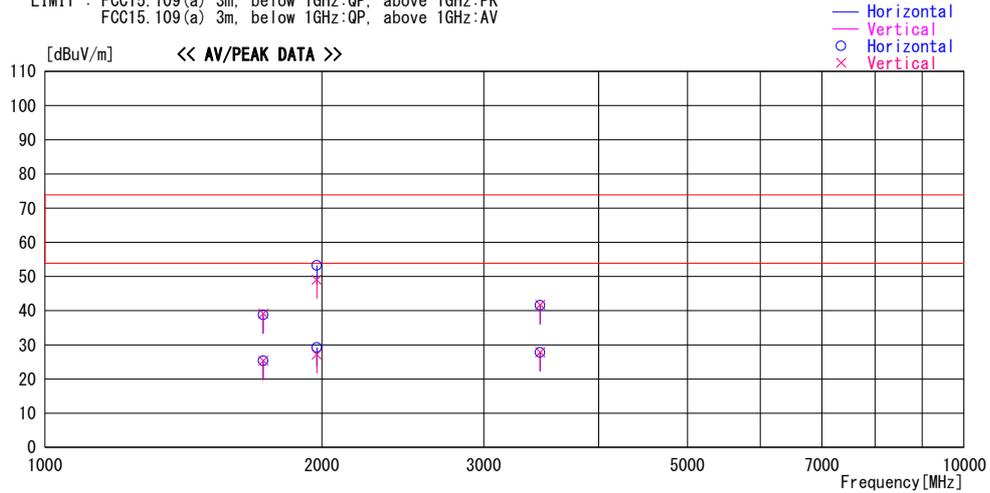
DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2013/06/18

Report No. : 10009157H
Temp./Humi. : 20deg. C / 60% RH
Engineer : Masatoshi Nishiguchi

Mode / Remarks : Standby Mode

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



Frequency [MHz]	Reading [dBuV]	DET	Antenna		Level [dBuV/m]	Angle [Deg]	Height [cm]	Polar.	Limit [dBuV/m]	Margin [dB]	Comment
			Factor [dB/m]	Loss& Gain [dB]							
1728.000	47.0	PK	26.3	-34.5	38.8	0	100	Hori.	73.9	35.1	
1728.000	47.4	PK	26.3	-34.5	39.2	0	100	Vert.	73.9	34.7	
1728.000	33.6	AV	26.3	-34.5	25.4	0	100	Vert.	53.9	28.5	
1728.000	33.5	AV	26.3	-34.5	25.3	0	100	Hori.	53.9	28.6	
1974.750	60.5	PK	27.0	-34.3	53.2	0	153	Hori.	73.9	20.7	
1974.750	34.5	AV	27.0	-34.3	27.2	0	259	Vert.	53.9	26.7	
1974.750	56.4	PK	27.0	-34.3	49.1	0	259	Vert.	73.9	24.8	
1974.750	36.5	AV	27.0	-34.3	29.2	0	153	Hori.	53.9	24.7	
3456.000	32.4	AV	29.0	-33.5	27.9	0	100	Vert.	53.9	26.0	
3456.000	46.1	PK	29.0	-33.5	41.6	0	100	Hori.	73.9	32.3	
3456.000	46.2	PK	29.0	-33.5	41.7	0	100	Vert.	73.9	32.2	
3456.000	32.3	AV	29.0	-33.5	27.8	0	100	Hori.	53.9	26.1	

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

*The limit is rounded down to one decimal place.
*The test result is rounded off to one or two decimal places, so some differences might be observed.

APPENDIX 2: Test instruments

EMI Test Instruments

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	CE/RE	2012/08/01 * 12
MOS-27	Thermo-Hygrometer	CUSTOM	CTH-201	A08Q26	CE/RE	2013/02/26 * 12
MJM-01	Measure	KDS	ES19-55	-	CE/RE	-
COTS-MEMI	EMI measurement program	TSJ	TEPTO-DV	-	CE/RE	-
MTR-09	EMI Test Receiver	Rohde & Schwarz	ESU26	100412	CE/RE	2012/06/14 * 12
MLS-02	LISN(AMN)	Schwarzbeck	NSLK8127	8127383	CE(AE)	2012/07/17 * 12
MLS-03	LISN(AMN)	Schwarzbeck	NSLK8127	8127384	CE(EUT)	2013/03/18 * 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
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-05	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	253	RE	2013/05/13 * 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

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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