



EMI TEST REPORT

Test Report No. : 31JE0034-HO-B

Applicant : Sharp Corporation, Communicatio
Type of Equipment : Cellular Phone
Model No. : CDMA SHI12
FCC ID : APYHRO00150
Test standard : FCC Part 15 Subpart B 2010 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: May 19 to 26, 2011

Representative test engineer:

Hiroshi Kukita
Engineer of WiSE Japan,
UL Verification Service

Approved by:

Mitsuru Fujimura
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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SECTION 1: Customer information

Company Name : Sharp Corporation, Communication Systems Group
Address : 2-13-1, Iida Hachihonmatsu, Higashi-Hiroshima City, Hiroshima,
739-0192 Japan
Telephone Number : +81-82-420-1630
Facsimile Number : +81-82-420-1624
Contact Person : Hachiro Hidaka

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

2.1 Identification of E.U.T.

Type of Equipment : Cellular Phone
Model No. : CDMA SHI12
Serial No. : Refer to Section 4, Clause 4.2
Receipt Date of Sample : May 18, 2011
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 : CDMA SHI12 is 1XEV-DO Hybrid CDMA Tri-Band Cellular Phone /
WiFi / Bluetooth / FeliCa / GPS enabled.
CDMA SHI12 is designed by Sharp Corporation exclusively for au, a
cellular phone carrier owned by KDDI corporation in Japan.
Clock frequencies in the system : CPU: 1401.6MHz

UL Japan, Inc.

Head Office EMC Lab.

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SECTION 3: Test specification, procedures & results

3.1 Test specification

Test Specification : FCC Part 15 Subpart B: 2010, final revised on December 6, 2010 and effective January 5, 2011

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: 2003 7. AC powerline conducted emission measurements	Class B	N/A	[QP] 14.0dB 0.20616MHz, L [AV] 9.6dB 0.93164MHz, N	Complied
Radiated emission	ANSI C63.4: 2003 8. Radiated emission measurements	Class B	N/A	4.8dB 74.250MHz, 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.

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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	3.1dB
No.2	3.3dB
No.3	3.7dB
No.4	3.2dB

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	3.5dB	5.1dB	5.2dB	4.8dB	5.1dB	4.4dB	4.3dB
No.2	4.0dB	5.1dB	5.2dB	4.8dB	5.0dB	4.3dB	4.2dB
No.3	4.2dB	4.7dB	5.2dB	4.8dB	5.0dB	4.5dB	4.2dB
No.4	4.0dB	5.0dB	5.1dB	4.8dB	5.0dB	5.1dB	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 report meets the limits unless the uncertainty is taken into consideration.

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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 8116 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	-	-	8.0 x 4.5 x 2.8m	2.0 x 2.0m	-
No.10 measurement room	-	-	2.6 x 2.8 x 2.5m	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.

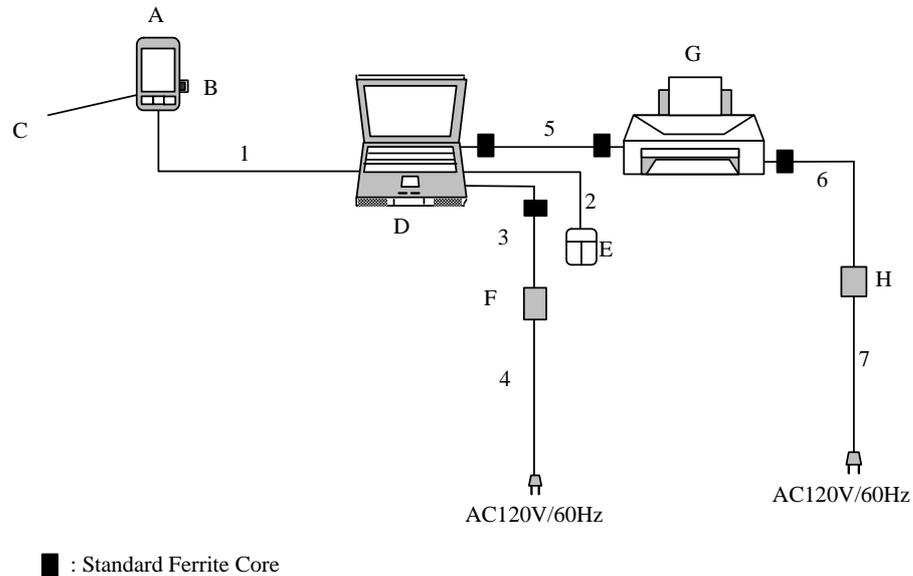
SECTION 4: Operation of E.U.T. during testing

4.1 Operating modes

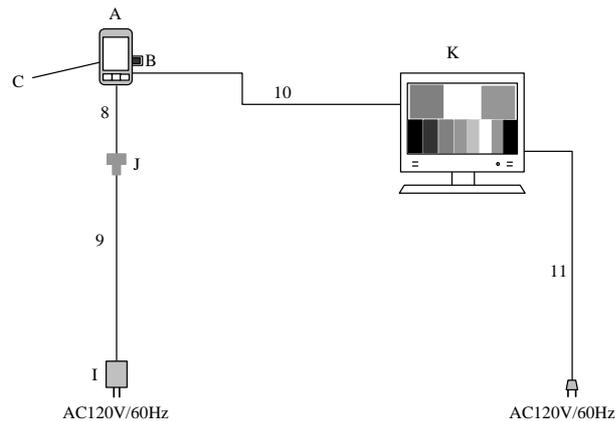
The mode(s) : 1) HDMI Data Com Mode
The HDMI data is communicated between EUT and Monitor (Pair of EUT).
2) USB Data Com Mode
The USB data is communicated between EUT and Personal computer (Pair of EUT).
3) Standby Mode
Standby state for USB communication.

4.2 Configuration and peripherals

1) USB Data Com Mode and Standby Mode



2) HDMI Data Com Mode



*Cabling and setup were taken into consideration and test data was taken under worse case conditions.

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Description of EUT and Support equipment

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	Cellular Phone	SHI12	SSHFI00920	Sharp Corporation	EUT
B	microSD Memory Card	SD-C02G	1107CN9803G	TOSHIBA	-
C	Lithium-Ion Battery	SHI12UAA	SH-TCA	Sharp Corporation	EUT
D	Personal Computer	PP10L	CN-0H2049-48643-450-0596	Dell	-
E	Mouse	MO55UOA	G0N00FIF	Dell	-
F	AC Adapter (PC)	AA22850	CN-0T2357-16291-44T-017H	Dell	-
G	Printer	C6414A	CN0B11C1H2	Hewlett Packard	-
H	AC Adapter (Printer)	C6409-60014	0049 R0D	Hewlett Packard	-
I	AC Charger	MT-TCA	None	MITSUMI Electric Co.,Ltd	-
J	USB conversion Cable	SHI01HVA	None	SMK Corporation	-
K	Monitor	RDT23IWLM-S(BK)	04217299AJ	MITSUBISHI	-

List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	USB Data Cable	1.40	Shielded	Shielded	-
2	Mouse Cable	1.80	Shielded	Shielded	-
3	AC Adaptor Cable (PC)	1.80	Unshielded	Unshielded	-
4	AC Power Cable (PC)	0.90	Unshielded	Unshielded	-
5	Parallel Cable	2.00	Shielded	Shielded	-
6	AC Adapter Cable (printer)	1.80	Unshielded	Unshielded	-
7	AC Power Cable (printer)	1.80	Unshielded	Unshielded	-
8	USB conversion Cable	0.12	Shielded	Shielded	-
9	AC Charger Cable	1.50	Unshielded	Unshielded	-
10	HDMI Cable	1.00	Shielded	Shielded	-
11	AC Adapter Cable (Monitor)	1.80	Unshielded	Unshielded	-

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SECTION 5: Conducted Emission

5.1 Operating environment

Test place : No.1 and 4 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 1.

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: May 20, 2011
May 26, 2011

Test engineer: Hiroshi Kukita
Test engineer: Takeshi Choda

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SECTION 6: Radiated Emission

6.1 Operating environment

Test place : No.1 and 4 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 1.

6.3 Test conditions

Frequency range : 30MHz-300MHz (Biconical antenna) / 300MHz-1000MHz (Logperiodic antenna)
1 - 10GHz (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: May 19, 20 and 25, 2011

Test engineer: Takeshi Choda

UL Japan, Inc.

Head Office EMC Lab.

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APPENDIX 1: Photographs of test setup

Conducted Emission

(USB Data Com mode and Standby mode)

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Conducted Emission
(HDMI Data Com mode)

This page has been submitted for a separate exhibit.

Radiated Emission
(USB Data Com mode and Standby mode)

This page has been submitted for a separate exhibit.

Radiated Emission
(HDMI Data Com mode)

This page has been submitted for a separate exhibit.

Worst Case Position (Horizontal: X-axis/ Vertical:X-axis)

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APPENDIX 2: Data of EMI test

Conducted Emission

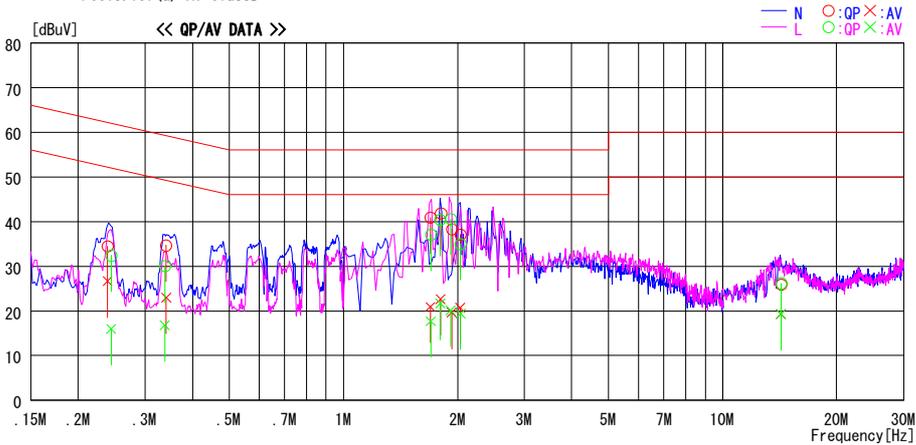
DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No. 4 Semi Anechoic Chamber
Date : 2011/05/26

Report No. : 31JE0034-HO
Temp./Humi. : 22deg. C / 45% RH
Engineer : Takeshi Choda

Mode / Remarks : HDMI 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]		
0.23901	21.0	13.1	13.5	34.5	26.6	62.1	52.1	27.6	25.5	N	
0.34108	21.2	9.5	13.5	34.7	23.0	59.2	49.2	24.5	26.2	N	
1.69603	27.0	7.0	13.9	40.9	20.9	56.0	46.0	15.1	25.1	N	
1.80633	28.0	8.7	13.9	41.9	22.6	56.0	46.0	14.1	23.4	N	
1.92935	24.4	5.7	13.9	38.3	19.6	56.0	46.0	17.7	26.4	N	
2.03423	23.1	6.7	14.0	37.1	20.7	56.0	46.0	18.9	25.3	N	
14.24928	9.1	2.5	16.8	25.9	19.3	60.0	50.0	34.1	30.7	N	
0.24442	18.9	2.5	13.5	32.4	16.0	61.9	51.9	29.5	35.9	L	
0.33840	16.6	3.3	13.5	30.1	16.8	59.2	49.2	29.1	32.4	L	
1.70205	23.2	3.8	13.9	37.1	17.7	56.0	46.0	18.9	28.3	L	
1.80103	26.5	7.7	13.9	40.4	21.6	56.0	46.0	15.6	24.4	L	
1.91699	26.7	6.2	13.9	40.6	20.1	56.0	46.0	15.4	25.9	L	
2.03813	21.0	5.4	14.0	35.0	19.4	56.0	46.0	21.0	26.6	L	
14.24928	9.4	2.5	16.8	26.2	19.3	60.0	50.0	33.8	30.7	L	

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

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

Conducted Emission

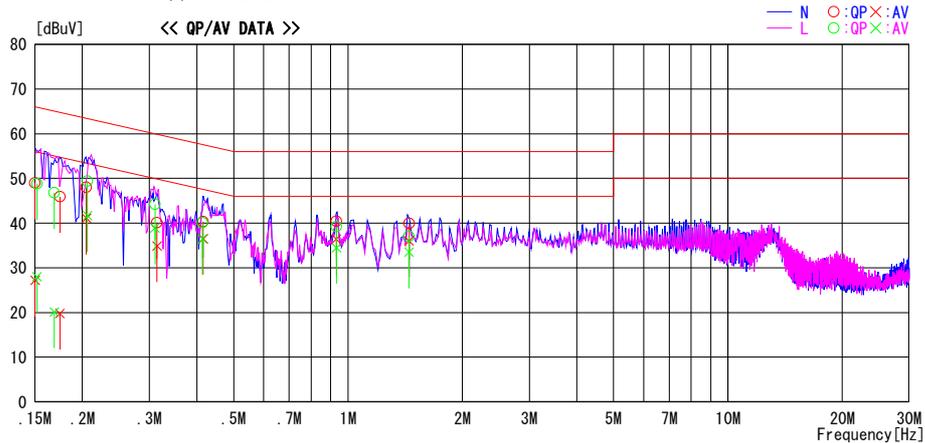
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UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2011/05/20

Report No. : 31JE0034-HO
Temp./Humi. : 22deg. C / 45% RH
Engineer : Hiroshi Kukita

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	35.8	14.0	13.2	49.0	27.2	66.0	56.0	17.0	28.8	N	
0.17451	32.7	6.6	13.2	45.9	19.8	64.7	54.7	18.8	34.9	N	
0.20482	34.8	27.9	13.2	48.0	41.1	63.4	53.4	15.4	12.3	N	
0.31429	26.8	21.6	13.3	40.1	34.9	59.9	49.9	19.8	15.0	N	
0.41581	27.0	23.2	13.3	40.3	36.5	57.5	47.5	17.2	11.0	N	
0.93164	27.0	23.0	13.4	40.4	36.4	56.0	46.0	15.6	9.6	N	
1.44866	26.4	22.5	13.5	39.9	36.0	56.0	46.0	16.1	10.0	N	
0.15194	35.6	14.8	13.2	48.8	28.0	65.9	55.9	17.1	27.9	L	
0.16857	33.6	6.9	13.2	46.8	20.1	65.0	55.0	18.2	34.9	L	
0.20616	36.2	28.5	13.2	49.4	41.7	63.4	53.4	14.0	11.7	L	
0.31036	30.9	25.6	13.3	44.2	38.9	60.0	50.0	15.8	11.1	L	
0.41384	26.8	23.2	13.3	40.1	36.5	57.6	47.6	17.5	11.1	L	
0.93230	25.8	21.1	13.4	39.2	34.5	56.0	46.0	16.8	11.5	L	
1.44688	23.5	20.0	13.5	37.0	33.5	56.0	46.0	19.0	12.5	L	

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

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Conducted Emission

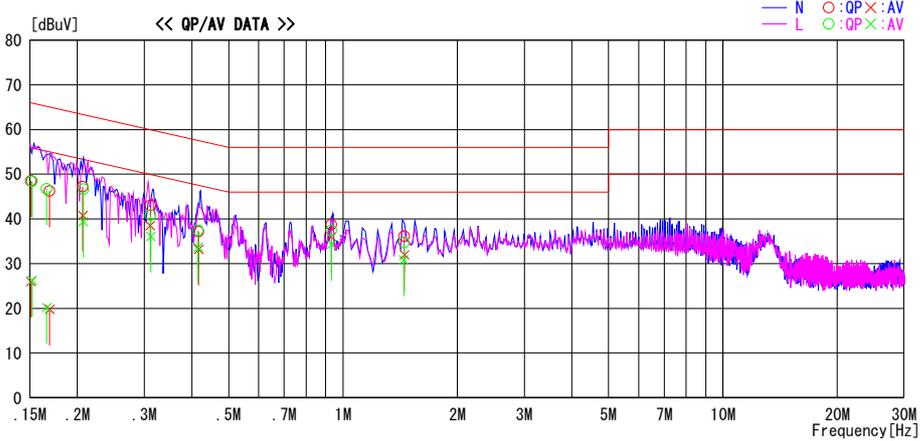
DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2011/05/20

Report No. : 31JE0034-HO
Temp./Humi. : 22deg. C / 45% RH
Engineer : Hiroshi Kukita

Mode / Remarks : Standby mode

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



Frequency [MHz]	Reading Level		Corr. Factor [dB]	Results		Limit		Margin		Phase	Comment
	QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dB]	AV [dB]		
0.15082	35.3	12.8	13.2	48.5	26.0	66.0	56.0	17.5	30.0	N	
0.16903	33.0	6.6	13.2	46.2	19.8	65.0	55.0	18.8	35.2	N	
0.20657	34.0	27.6	13.2	47.2	40.8	63.3	53.3	16.1	12.5	N	
0.31100	29.7	25.2	13.3	43.0	38.5	59.9	49.9	16.9	11.4	N	
0.41694	23.9	19.9	13.3	37.2	33.2	57.5	47.5	20.3	14.3	N	
0.93128	25.3	22.6	13.4	38.7	36.0	56.0	46.0	17.3	10.0	N	
1.45022	22.6	18.5	13.5	36.1	32.0	56.0	46.0	19.9	14.0	N	
0.15200	35.2	13.0	13.2	48.4	26.2	65.9	55.9	17.5	29.7	L	
0.16612	33.5	7.0	13.2	46.7	20.2	65.2	55.2	18.5	35.0	L	
0.20722	33.4	26.2	13.2	46.6	39.4	63.3	53.3	16.7	13.9	L	
0.31221	27.5	22.8	13.3	40.8	36.1	59.9	49.9	19.1	13.8	L	
0.41572	24.1	20.4	13.3	37.4	33.7	57.5	47.5	20.1	13.8	L	
0.93226	24.0	20.9	13.4	37.4	34.3	56.0	46.0	18.6	11.7	L	
1.44497	21.2	17.3	13.5	34.7	30.8	56.0	46.0	21.3	15.2	L	

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

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Radiated Emission

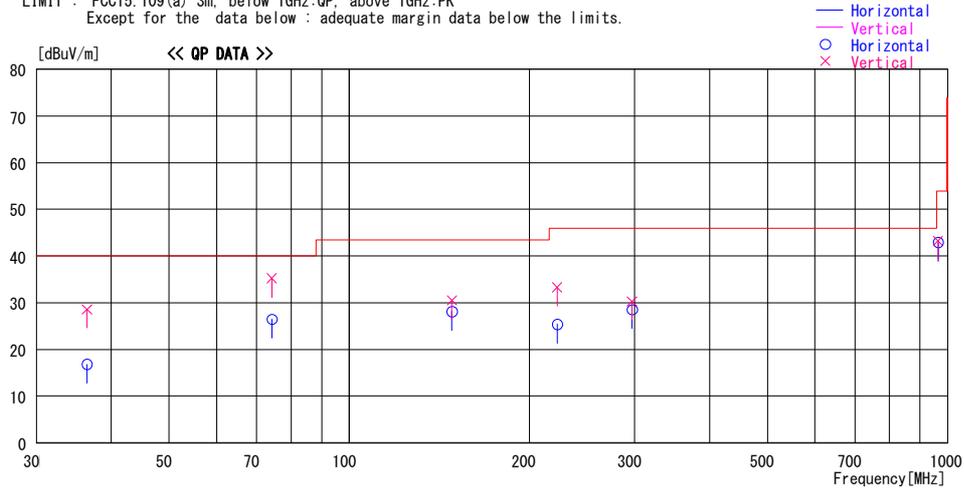
DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No. 4 Semi Anechoic Chamber
Date : 2011/05/25

Report No. : 31JE0034-HO
Temp./Humi. : 22deg. C / 47% RH
Engineer : Takeshi Choda

Mode / Remarks : HDMI 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	Loss&	Level	Angle	Height	Polar.	Limit	Margin	Comment
			Factor [dB/m]	Gain [dB]							
36.437	25.9	QP	16.0	-25.1	16.8	131	240	Hori.	40.0	23.2	
36.437	37.7	QP	16.0	-25.1	28.6	140	100	Vert.	40.0	11.4	
74.250	44.3	QP	6.6	-24.5	26.4	136	220	Hori.	40.0	13.6	
74.250	53.1	QP	6.6	-24.5	35.2	121	100	Vert.	40.0	4.8	
148.500	36.7	QP	15.0	-23.6	28.1	246	227	Hori.	43.5	15.4	
148.500	39.1	QP	15.0	-23.6	30.5	258	100	Vert.	43.5	13.0	
222.750	31.4	QP	17.0	-23.0	25.4	187	348	Hori.	46.0	20.6	
222.750	39.3	QP	17.0	-23.0	33.3	151	100	Vert.	46.0	12.7	
297.000	31.5	QP	19.4	-22.4	28.5	337	166	Hori.	46.0	17.5	
297.000	33.3	QP	19.4	-22.4	30.3	339	100	Vert.	46.0	15.7	
965.251	35.1	QP	25.9	-17.7	43.3	156	100	Vert.	53.9	10.6	
965.251	34.7	QP	25.9	-17.7	42.9	351	100	Hori.	53.9	11.0	

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)

*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

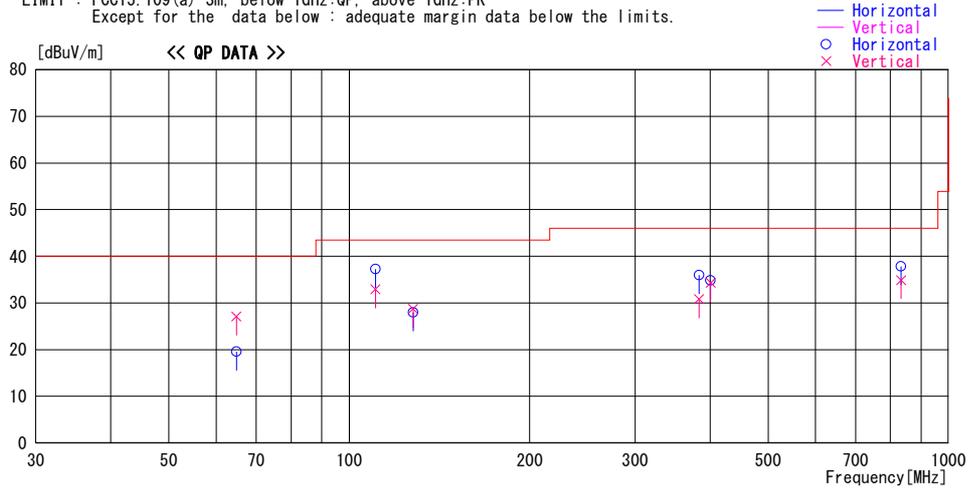
DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2011/05/19

Report No. : 31JE0034-HO
Temp./Humi. : 20deg. C / 54% RH
Engineer : Takeshi Choda

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	Loss&	Level	Angle	Height	Polar.	Limit	Margin	Comment
			Factor	Gain							
			[dB/m]	[dB]	[dBuV/m]	[Deg]	[cm]		[dBuV/m]	[dB]	
64.818	45.6	QP	7.0	-33.0	19.6	302	313	Hori.	40.0	20.4	
64.818	53.1	QP	7.0	-33.0	27.1	262	100	Vert.	40.0	12.9	
110.621	53.8	QP	11.2	-32.1	32.9	324	127	Vert.	43.5	10.6	
110.621	58.2	QP	11.2	-32.1	37.3	49	275	Hori.	43.5	6.2	
127.815	47.1	QP	12.8	-31.9	28.0	315	245	Hori.	43.5	15.5	
127.815	47.8	QP	12.8	-31.9	28.7	147	100	Vert.	43.5	14.8	
383.496	42.8	QP	17.4	-29.4	30.8	324	128	Vert.	46.0	15.2	
383.496	48.0	QP	17.4	-29.4	36.0	1	100	Hori.	46.0	10.0	
400.959	46.2	QP	17.9	-29.3	34.8	2	100	Hori.	46.0	11.2	
400.961	45.7	QP	17.9	-29.3	34.3	164	118	Vert.	46.0	11.7	
833.069	42.1	QP	22.2	-26.5	37.8	246	100	Hori.	46.0	8.2	
833.197	39.2	QP	22.2	-26.5	34.9	356	100	Vert.	46.0	11.1	

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)

*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

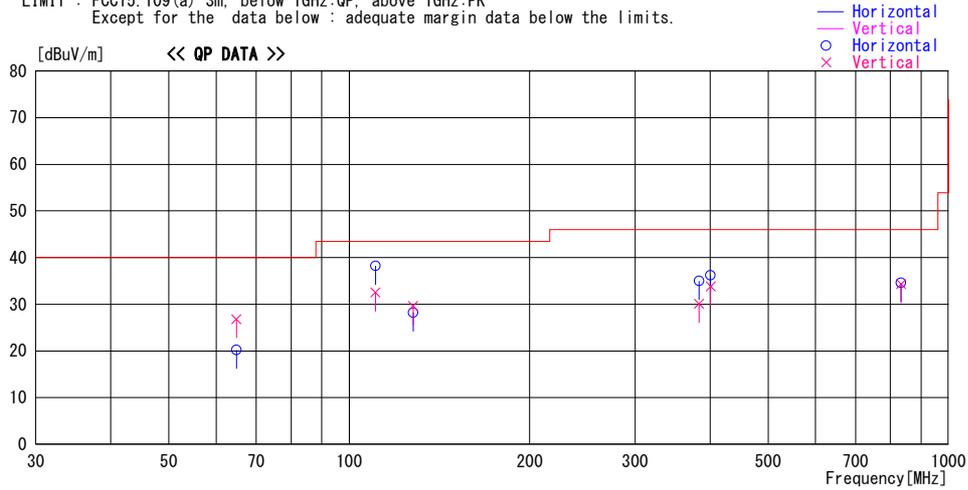
DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2011/05/20

Report No. : 31JE0034-HO
Temp./Humi. : 20deg. C / 54% RH
Engineer : Takeshi Choda

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	Loss&	Level	Angle	Height	Polar.	Limit	Margin	Comment
			Factor [dB/m]	Gain [dB]							
64.818	46.2	QP	7.0	-33.0	20.2	300	359	Hori.	40.0	19.8	
64.818	52.8	QP	7.0	-33.0	26.8	268	100	Vert.	40.0	13.2	
110.621	53.4	QP	11.2	-32.1	32.5	341	149	Vert.	43.5	11.0	
110.621	59.1	QP	11.2	-32.1	38.2	66	265	Hori.	43.5	5.3	
127.815	47.3	QP	12.8	-31.9	28.2	319	250	Hori.	43.5	15.3	
127.815	48.7	QP	12.8	-31.9	29.6	111	100	Vert.	43.5	13.9	
383.496	42.1	QP	17.4	-29.4	30.1	321	140	Vert.	46.0	15.9	
383.496	47.0	QP	17.4	-29.4	35.0	1	100	Hori.	46.0	11.0	
400.952	47.6	QP	17.9	-29.3	36.2	0	100	Hori.	46.0	9.8	
400.951	45.2	QP	17.9	-29.3	33.8	144	130	Vert.	46.0	12.2	
833.189	38.9	QP	22.2	-26.5	34.6	167	100	Hori.	46.0	11.4	
833.203	38.6	QP	22.2	-26.5	34.3	359	100	Vert.	46.0	11.7	

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

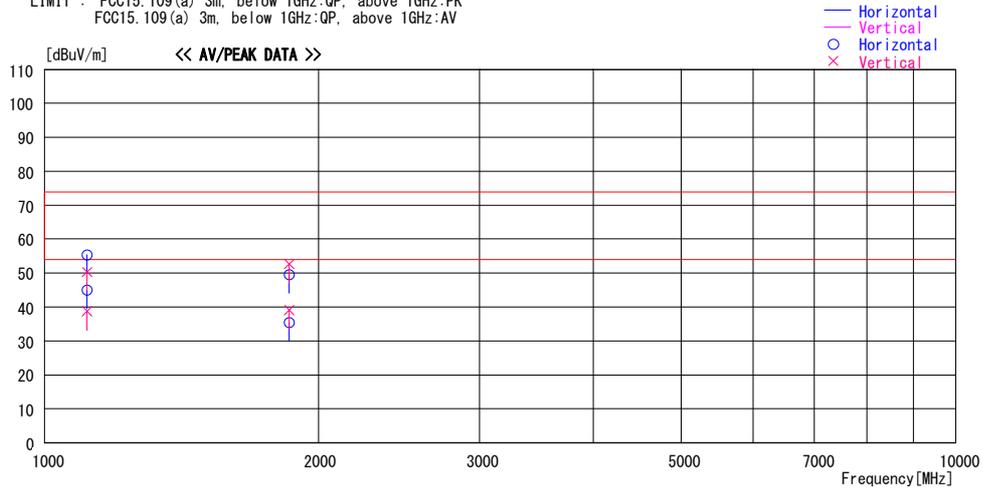
DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No. 4 Semi Anechoic Chamber
Date : 2011/05/25

Report No. : 31JE0034-H0
Temp./Humi. : 22deg. C / 47% RH
Engineer : Takeshi Choda

Mode / Remarks : HDMI 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	Loss &	Level	Angle	Height	Polar.	Limit	Margin	Comment
			Factor [dB/m]	Gain [dB]							
1113.751	47.2	AV	24.2	-32.7	38.7	214	100	Vert.	53.9	15.2	
1113.751	58.8	PK	24.2	-32.7	50.3	214	100	Vert.	73.9	23.6	
1113.751	53.5	AV	24.2	-32.7	45.0	188	125	Hori.	53.9	8.9	
1113.751	63.9	PK	24.2	-32.7	55.4	188	125	Hori.	73.9	18.5	
1856.360	42.8	AV	26.8	-30.5	39.1	163	102	Vert.	53.9	14.8	
1856.360	56.3	PK	26.8	-30.5	52.6	163	102	Vert.	73.9	21.3	
1856.360	53.3	PK	26.8	-30.5	49.6	166	100	Hori.	73.9	24.3	
1856.360	39.2	AV	26.8	-30.5	35.5	166	100	Hori.	53.9	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

DATA OF RADIATED EMISSION TEST

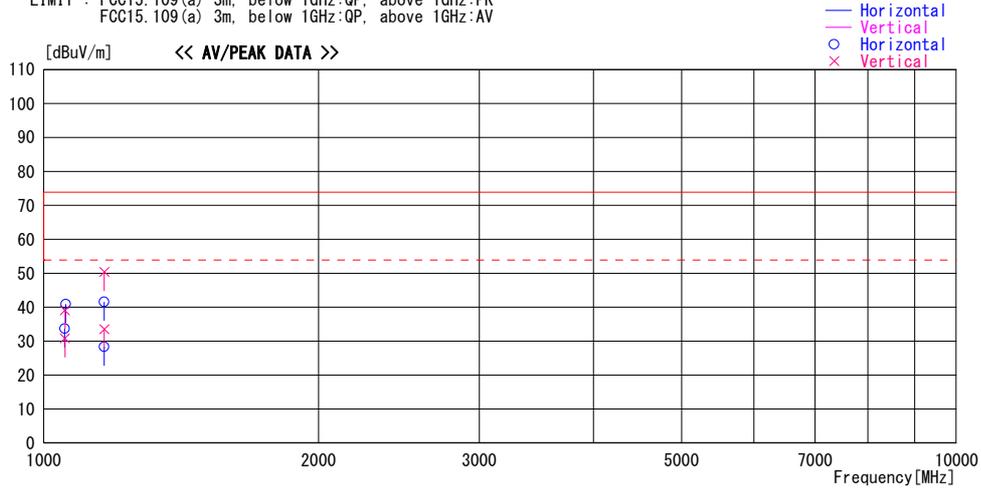
UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2011/05/20

Report No. : 31JE0034-H0

Temp./Humi. : 20deg. C / 54% RH
Engineer : Takeshi Choda

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	Loss&	Level	Angle	Height	Polar.	Limit	Margin	Comment
			Factor	Gain							
			[dB/m]	[dB]	[dBuV/m]	[Deg]	[cm]		[dBuV/m]	[dB]	
1054.550	42.3	AV	24.1	-35.6	30.8	181	100	Vert.	53.9	23.1	
1054.550	50.6	PK	24.1	-35.6	39.1	181	100	Vert.	73.9	34.8	
1054.526	45.2	AV	24.1	-35.6	33.7	143	100	Hori.	53.9	20.2	
1057.306	52.4	PK	24.1	-35.6	40.9	143	100	Hori.	73.9	33.0	
1165.100	52.5	PK	24.4	-35.3	41.6	257	100	Hori.	73.9	32.3	
1165.100	39.3	AV	24.4	-35.3	28.4	257	100	Hori.	53.9	25.5	
1164.667	61.3	PK	24.4	-35.3	50.4	274	100	Vert.	73.9	23.5	
1164.667	44.4	AV	24.4	-35.3	33.5	274	100	Vert.	53.9	20.4	

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

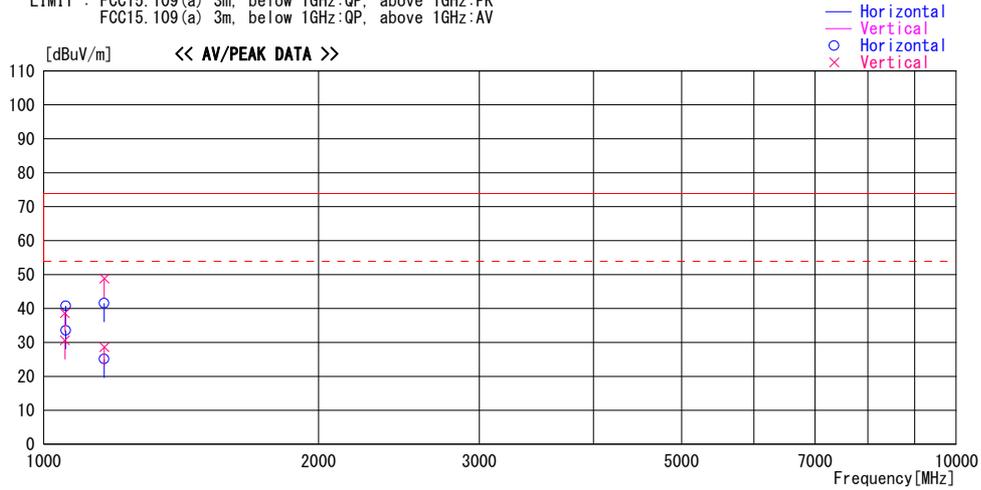
DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2011/05/19

Report No. : 31JE0034-HO
Temp./Humi. : 20deg. C / 54% RH
Engineer : Takeshi Choda

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	Loss&	Level	Angle	Height	Polar.	Limit	Margin	Comment
			Factor [dB/m]	Gain [dB]							
1054.550	42.1	AV	24.1	-35.6	30.6	184	100	Vert.	53.9	23.3	
1054.550	50.1	PK	24.1	-35.6	38.6	184	100	Vert.	73.9	35.3	
1057.306	45.1	AV	24.1	-35.6	33.6	163	100	Hori.	53.9	20.3	
1057.306	52.3	PK	24.1	-35.6	40.8	163	100	Hori.	73.9	33.1	
1164.667	52.5	PK	24.4	-35.3	41.6	197	100	Hori.	73.9	32.3	
1164.667	36.0	AV	24.4	-35.3	25.1	197	100	Hori.	53.9	28.8	
1164.667	59.7	PK	24.4	-35.3	48.8	265	100	Vert.	73.9	25.1	
1164.667	39.5	AV	24.4	-35.3	28.6	265	100	Vert.	53.9	25.3	

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.

APPENDIX 3: Test instruments

EMI Test Instruments(1/1)

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	2010/07/02 * 12
MOS-01	Digital Humidity Indicator	N.T	NT-1800	MOS01	RE/CE	2011/02/23 * 12
MJM-01	Measure	KDS	ES19-55	-	RE/CE	-
COTS-MEMI	EMI measurement program	TSJ	TEPTO-DV	-	RE/CE	-
MTR-01	Test Receiver	Rohde & Schwarz	ES140	100084	RE/CE	2010/12/07 * 12
KBA-05	Biconical Antenna	Schwarzbeck	BBA9106	2513	RE	2010/10/15 * 12
KLA-04	Logperiodic Antenna	Schwarzbeck	USLP9143	361	RE	2010/10/16 * 12
MAT-08	Attenuator(6dB)	Weinschel Corp	2	BK7971	RE	2010/11/05 * 12
MCC-01	Coaxial Cable 0.1-3000MHz	Suhner/storm/Agilent/TSJ	-	-	RE	2010/10/14 * 12
MPA-20	Pre Amplifier	Elena	EPA-4020YA	030801	RE	2011/03/27 * 12
MHA-05	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	253	RE	2010/06/29 * 12
MCC-18	Microwave Cable 1G-26.5GHz	Suhner	SUCOFLEX 104	148048-143(1m) / 292410(5m)	RE	2010/09/30 * 12
MPA-01	Pre Amplifier	Agilent	8449B	3008A01671	RE	2011/02/24 * 12
MLS-02	LISN(AMN)	Schwarzbeck	NSLK8127	8127383	CE(EUT)	2010/07/04 * 12
MLS-03	LISN(AMN)	Schwarzbeck	NSLK8127	8127384	CE(AE)	2010/07/28 * 12
MTA-30	Terminator	TME	CT-01	-	CE	2011/01/05 * 12
MCC-03	Coaxial Cable	Fujikura/Suhner/TSJ	5D-2W(20m) /3D-2W(7.5m) /RG400u(1.5m) /RFM-E421(Switcher)	-/01068(Switcher)	CE	2011/01/16 * 12
MAT-64	Attenuator(13dB)	JFW Industries, Inc.	50FP-013H2 N	-	CE	2011/02/22 * 12
MSA-10	Spectrum Analyzer	Agilent	E4448A	MY46180655	RE	2011/02/15 * 12
MAEC-04	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	CE/RE	2011/03/01 * 12
MOS-15	Thermo-Hygrometer	Custom	CTH-180	-	CE/RE	2011/02/23 * 12
MJM-07	Measure	PROMART	SEN1955	-	CE/RE	-
MTR-07	Test Receiver	Rohde & Schwarz	ESCI	100635	CE/RE	2010/10/27 * 12
MLS-06	LISN(AMN)	Schwarzbeck	NSLK8127	8127363	CE(AE)	2011/02/20 * 12
MLS-07	LISN(AMN)	Schwarzbeck	NSLK8127	8127364	CE(EUT)	2011/02/22 * 12
MTA-31	Terminator	TME	CT-01	-	CE	2011/01/05 * 12
MAT-67	Attenuator(13dB)	JFW Industries, Inc.	50FP-013H2 N	-	CE	2011/02/22 * 12
MCC-113	Coaxial cable	Fujikura/Suhner/TSJ	5D-2W(10m) /SFM141(5m) /421-010(1m) /sucoform141-PE(1m) /RFM-E121(Switcher)	-/04178	CE	2010/07/21 * 12

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EMI Test Instruments(2/2)

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
MBA-05	Biconical Antenna	Schwarzbeck	BBA9106	1302	RE	2010/10/11 * 12
MLA-08	Logperiodic Antenna	Schwarzbeck	UKLP9140-A	N/A	RE	2010/10/11 * 12
MCC-50	Coaxial Cable	UL Japan	-	-	RE	2011/03/25 * 12
MAT-51	Attenuator(6dB)	Weinschel	2	AS3557	RE	2011/01/14 * 12
MPA-14	Pre Amplifier	SONOMA INSTRUMENT	310	260833	RE	2011/03/04 * 12
MHA-21	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	9120D-557	RE	2010/08/08 * 12
MCC-56	Microwave Cable	Suhner	SUCOFLEX104	270875/4(1m) / 284655(5m)	RE	2011/03/02 * 12
MPA-12	MicroWave System Amplifier	Agilent	83017A	MY39500780	RE	2011/03/10 * 12

The expiration date of the calibration is the end of the expired month.

All equipment is calibrated with traceable calibrations. Each calibration 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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