



EMI TEST REPORT

Test Report No. : 32BE0119-HO-B

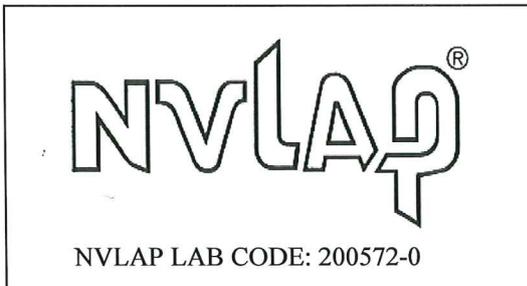
Applicant : Sharp Corporation, Communication Systems Group.
Type of Equipment : Cellular Phone
Model No. : SH-02D(JN-DC55)
FCC ID : APYHRO00160
Test regulation : FCC Part 15 Subpart B: 2011 Class B
Test Result : Complied

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 limits of the above regulation.
4. The test results in this test report are traceable to the national or international standards.
5. This test report must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

Date of test: October 17, 2011

Representative test engineer: *T. Choda*
Takeshi Choda
Engineer of WiSE Japan,
UL Verification Service

Approved by: *M. Nishiyama*
Masanori Nishiyama
Leader of WiSE Japan,
UL Verification Service



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>

CONTENTS	PAGE
SECTION 1: Customer information	3
SECTION 2: Equipment under test (E.U.T.)	3
SECTION 3: Test specification, procedures & results	4
SECTION 4: Operation of E.U.T. during testing	6
SECTION 5: Conducted Emission	7
SECTION 6: Radiated Emission	8
APPENDIX 1: Data of EMI test	9
Conducted Emission	9
Radiated Emission	11
Radiated Emission	13
APPENDIX 2: Test instruments	15
APPENDIX 3: Photographs of test setup.....	16
Conducted Emission	16
Radiated Emission	17

SECTION 1: Customer information

Company Name : Sharp Corporation, Communication Systems Group.
Address : 2-13-1 Hachihonmatsu-iida Higashihiroshima-shi Hiroshima, 739-0192 Japan
Telephone Number : +81-82-420-1825
Facsimile Number : +81-82-420-1829
Contact Person : Kazuo Sugimoto

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

2.1 Identification of E.U.T.

Type of Equipment : Cellular Phone
Model No. : SH-02D(JN-DC55)
Serial No. : Refer to Section 4, Clause 4.2
Rating : AC 230/120V / 50Hz, DC4.0V
Receipt Date of Sample : October 17, 2010
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: Tri Band WCDMA(FDD I,V,VI) and Tri-band GSM(900/1800/1900)
Dual mod Cellular Phone with Bluetooth,W-LAN,FeliCa and GPS.
- GSM (EU:900/1800M, 1900M)
- WCDMA (EU:2000M, US:850M,JPN: 800/1700/2000)

Clock frequency(ies) in the system: 48MHz (Oscillator), 1.0GHz (CPU clock).

SECTION 3: Test specification, procedures & results

3.1 Test specification

Test Specification : FCC Part 15 Subpart B: 2011, final revised on July 8, 2011 and effective August 8, 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 3.80436MHz, L [AV] 15.0dB 0.17629MHz, L	Complied
Radiated emission	ANSI C63.4: 2003 8. Radiated emission measurements	Class B	N/A	2.3dB 797.076MHz, 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	3.6dB
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	4.2dB	5.0dB	5.1dB	5.6dB	5.9dB	4.4dB	4.3dB
No.2	4.1dB	5.2dB	5.1dB	5.7dB	5.8dB	4.3dB	4.2dB
No.3	4.5dB	5.0dB	5.2dB	5.7dB	5.8dB	4.5dB	4.2dB
No.4	4.7dB	5.2dB	5.2dB	5.7dB	5.8dB	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.

UL Japan, Inc.

Head Office EMC Lab.

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

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

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 Data of EMI, Test instruments, and Test set up

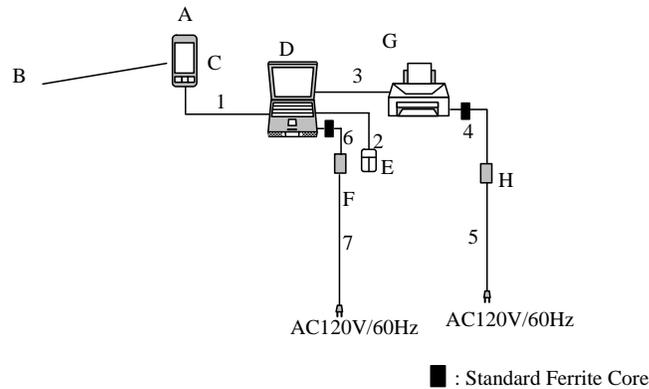
Refer to APPENDIX.

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) USB 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	Remark
A	Cellular Phone	SH-02D	004401113585141	SHARP	EUT
B	Lithium-Ion Battery	SH32	None	SHARP	EUT
C	microSD Memory Card	C08G	0909L36235Y	TOSHIBA	EUT
D	Personal Computer	PP11L	CN-0D4571-48643-58P-1053	Dell	
E	AC Adapter (PC)	PA-1650-05D2	CN-0F7970-71615-77H-0D63	Dell	
F	Mouse	M-UAG120	G83C0007F310	TOSHIBA	-
G	Printer	C6410A	SG8BA1W18J	Hewlett Packard	-
H	AC Adapter (Printer)	AT3018A-0101	C4557-60004	Hewlett Packard	-

List of cables used

No.	Name	Length (m)	Shield		Remark
			Cable	Connector	
1	USB Data Cable	0.70	Shielded	Shielded	-
2	Mouse Cable	0.71	Shielded	Shielded	-
3	Parallel Printer Cable	2.00	Shielded	Shielded	-
4	DC Cable (PC)	1.80	Unshielded	Unshielded	-
5	AC Cable (PC)	0.90	Unshielded	Unshielded	-
6	DC Cable (Printer)	1.80	Unshielded	Unshielded	-
7	AC Cable (Printer)	1.90	Unshielded	Unshielded	-

UL Japan, Inc.

Head Office EMC Lab.

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

Telephone : +81 596 24 8116

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 Average
IF Bandwidth : 9 kHz

5.4 Test result

Summary of the test results: Pass

Date: October 17, 2011

Test engineer: Takeshi Choda

UL Japan, Inc.

Head Office EMC Lab.

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

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

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	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 test was made on EUT at the normal use position.

6.5 Test result

Summary of the test results: Pass

Date: October 17, 2011

Test engineer: Takeshi Choda

APPENDIX 1: Data of EMI test

Conducted Emission

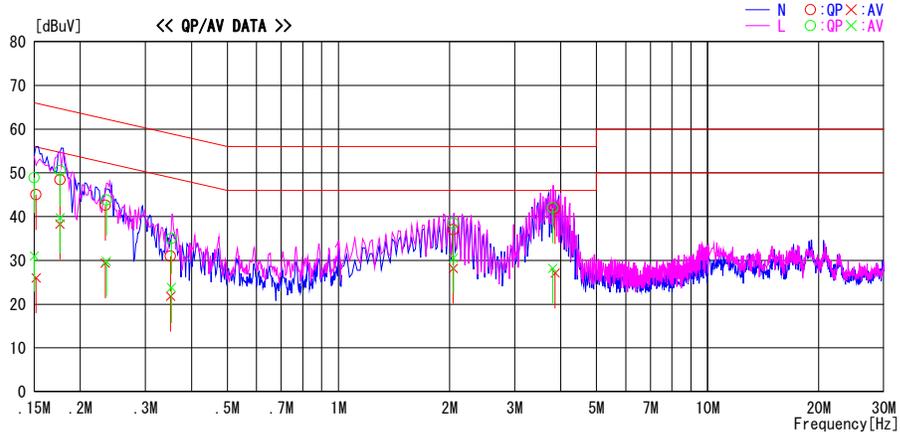
DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2011/10/17

Report No. : 32BE0119-HO
Temp./Humi. : 25deg. C / 67% RH
Engineer : Takeshi Choda

Mode / Remarks : USB Data Com

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]		
0.15174	31.8	12.8	13.2	45.0	26.0	65.9	55.9	20.9	29.9	N	
0.17614	35.2	25.1	13.2	48.4	38.3	64.7	54.7	16.3	16.4	N	
0.23351	29.3	16.1	13.3	42.6	29.4	62.3	52.3	19.7	22.9	N	
0.35102	17.7	8.5	13.3	31.0	21.8	58.9	48.9	27.9	27.1	N	
2.04617	23.4	14.6	13.6	37.0	28.2	56.0	46.0	19.0	17.8	N	
3.86097	28.0	13.2	13.9	41.9	27.1	56.0	46.0	14.1	18.9	N	
0.15000	35.7	17.8	13.2	48.9	31.0	66.0	56.0	17.1	25.0	L	
0.17629	37.3	26.5	13.2	50.5	39.7	64.7	54.7	14.2	15.0	L	
0.23513	30.5	16.5	13.3	43.8	29.8	62.3	52.3	18.5	22.5	L	
0.35270	21.7	10.5	13.3	35.0	23.8	58.9	48.9	23.9	25.1	L	
2.04924	24.9	16.9	13.6	38.5	30.5	56.0	46.0	17.5	15.5	L	
3.80436	28.1	14.3	13.9	42.0	28.2	56.0	46.0	14.0	17.8	L	

CHART: WITH FACTOR, Peak hold data. CALCULATION: RESULT[dBuV]=READING[dBuV]+C.F[dB] (LISN LOSS+CABLE LOSS+ATTEN)
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

DATA OF CONDUCTED EMISSION TEST

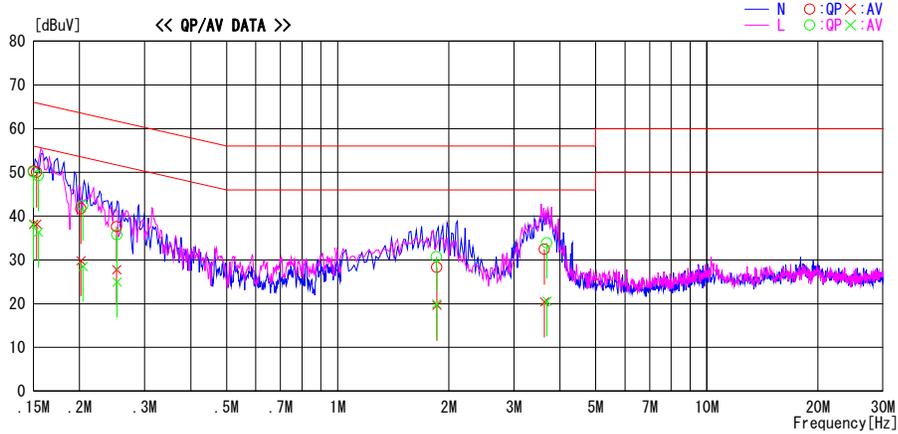
UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2011/10/17

Report No. : 32BE0119-HO

Temp./Humi. : 25deg. C / 67% RH
Engineer : Takeshi Choda

Mode / Remarks : USB Standby

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	37.1	25.0	13.2	50.3	38.2	66.0	56.0	15.7	17.8	N	
0.15303	36.8	25.0	13.2	50.0	38.2	65.8	55.8	15.8	17.6	N	
0.20166	28.5	16.6	13.2	41.7	29.8	63.5	53.5	21.8	23.7	N	
0.25197	24.3	14.5	13.3	37.6	27.8	61.7	51.7	24.1	23.9	N	
1.85710	14.7	6.0	13.6	28.3	19.6	56.0	46.0	27.7	26.4	N	
3.63029	18.6	6.6	13.8	32.4	20.4	56.0	46.0	23.6	25.6	N	
0.15000	36.8	24.8	13.2	50.0	38.0	66.0	56.0	16.0	18.0	L	
0.15482	36.0	23.1	13.2	49.2	36.3	65.7	55.7	16.5	19.4	L	
0.20428	29.2	15.3	13.2	42.4	28.5	63.4	53.4	21.0	24.9	L	
0.25250	22.4	11.6	13.3	35.7	24.9	61.7	51.7	26.0	26.8	L	
1.85282	17.1	6.3	13.6	30.7	19.9	56.0	46.0	25.3	26.1	L	
3.68961	20.0	6.7	13.9	33.9	20.6	56.0	46.0	22.1	25.4	L	

CHART: WITH FACTOR, Peak hold data. CALCULATION: RESULT [dBuV] = READING [dBuV] + C. F [dB] (LISN LOSS + CABLE LOSS + ATTEN)
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.

Radiated Emission

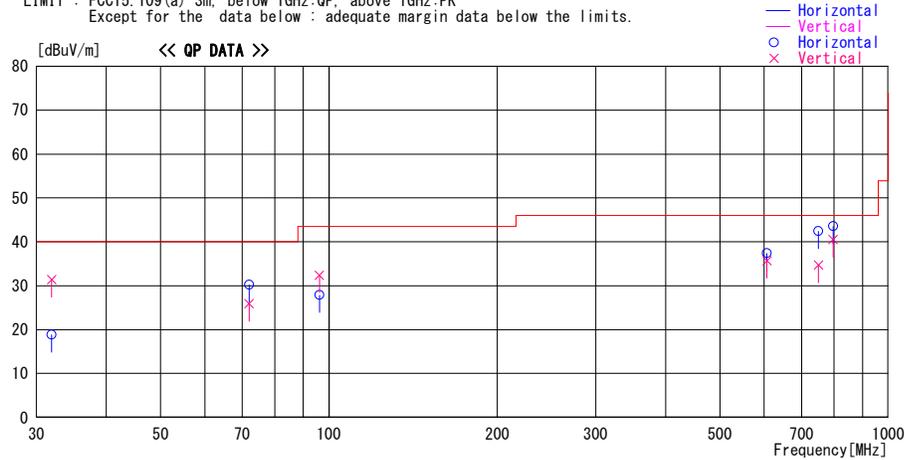
DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2011/10/17

Report No. : 32BE0119-HO
Temp./Humi. : 25deg. C / 67% RH
Engineer : Takeshi Choda

Mode / Remarks : USB Data Com

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 [dBuV/m]	Angle [Deg]	Height [cm]	Polar.	Limit [dBuV/m]	Margin [dB]	Comment
			Factor [dB/m]	Gain [dB]							
31.954	44.8	QP	17.6	-31.0	31.4	233	100	Vert.	40.0	8.6	
31.954	32.2	QP	17.6	-31.0	18.8	121	292	Hori.	40.0	21.2	
72.026	49.9	QP	6.6	-30.6	25.9	213	100	Vert.	40.0	14.1	
72.026	54.2	QP	6.6	-30.6	30.2	95	235	Hori.	40.0	9.8	
96.135	48.9	QP	9.2	-30.2	27.9	67	326	Hori.	43.5	15.6	
96.135	53.4	QP	9.2	-30.2	32.4	163	100	Vert.	43.5	11.1	
607.134	43.0	QP	19.4	-25.0	37.4	157	125	Hori.	46.0	8.6	
607.134	41.3	QP	19.4	-25.0	35.7	331	100	Vert.	46.0	10.3	
749.990	45.1	QP	21.2	-23.9	42.4	95	114	Hori.	46.0	3.6	
749.990	37.4	QP	21.2	-23.9	34.7	348	100	Vert.	46.0	11.3	
797.074	45.2	QP	22.0	-23.6	43.6	138	100	Hori.	46.0	2.4	
797.073	42.1	QP	22.0	-23.6	40.5	71	100	Vert.	46.0	5.5	

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)

*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

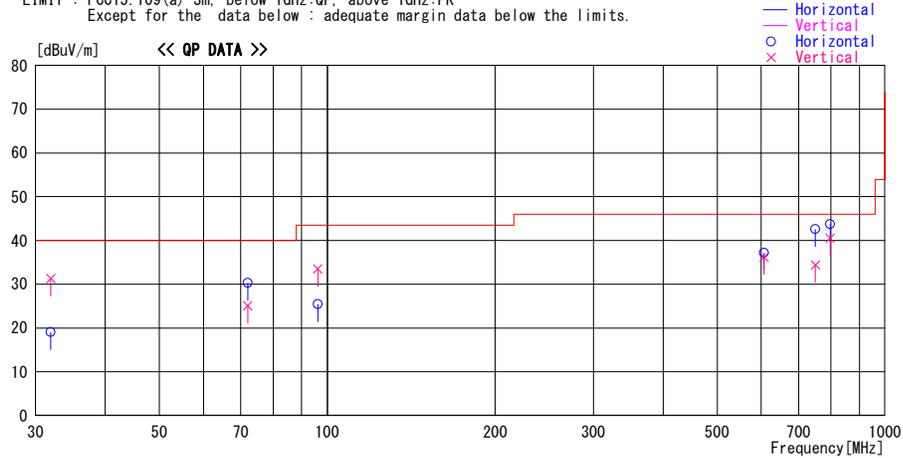
DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2011/10/17

Report No. : 32BE0119-HO
Temp./Humi. : 25deg. C / 67% RH
Engineer : Takeshi Choda

Mode / Remarks : USB Standby

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 [dBuV/m]	Angle [Deg]	Height [cm]	Polar.	Limit [dBuV/m]	Margin [dB]	Comment
			Factor [dB/m]	Gain [dB]							
31.954	32.5	QP	17.6	-31.0	19.1	130	314	Hori.	40.0	20.9	
31.954	44.7	QP	17.6	-31.0	31.3	209	100	Vert.	40.0	8.7	
72.026	54.3	QP	6.6	-30.6	30.3	101	249	Hori.	40.0	9.7	
72.027	49.1	QP	6.6	-30.6	25.1	216	100	Vert.	40.0	14.9	
96.135	46.5	QP	9.2	-30.2	25.5	74	348	Hori.	43.5	18.0	
96.135	54.5	QP	9.2	-30.2	33.5	167	100	Vert.	43.5	10.0	
607.134	42.8	QP	19.4	-25.0	37.2	157	128	Hori.	46.0	8.8	
607.134	41.8	QP	19.4	-25.0	36.2	340	100	Vert.	46.0	9.8	
749.990	45.3	QP	21.2	-23.9	42.6	94	114	Hori.	46.0	3.4	
749.990	37.1	QP	21.2	-23.9	34.4	350	100	Vert.	46.0	11.6	
797.076	45.3	QP	22.0	-23.6	43.7	135	105	Hori.	46.0	2.3	
797.076	42.1	QP	22.0	-23.6	40.5	68	100	Vert.	46.0	5.5	

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)

*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

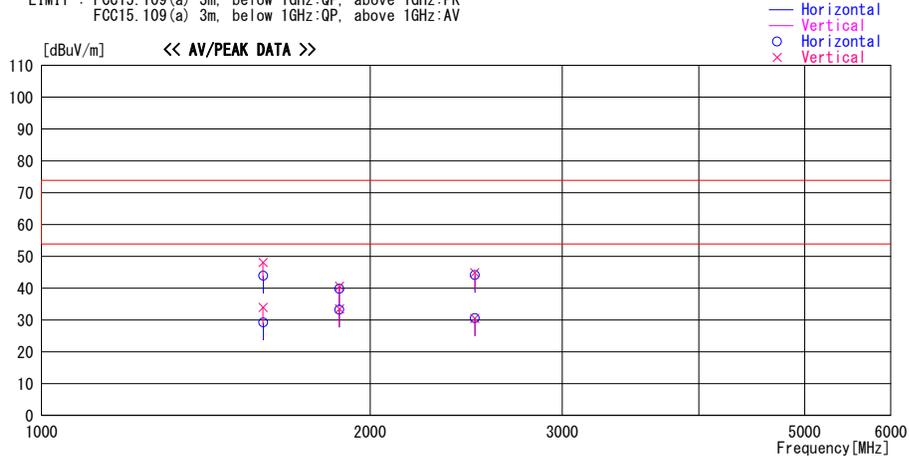
DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2011/10/17

Report No. : 32BE0119-HO
Temp./Humi. : 25deg. C / 67% RH
Engineer : Takeshi Choda

Mode / Remarks : USB Data Com

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]							
1595.650	42.6	AV	26.2	-34.8	34.0	69	108	Vert.	53.9	19.9	
1595.650	56.7	PK	26.2	-34.8	48.1	69	108	Vert.	73.9	25.8	
1595.990	37.8	AV	26.2	-34.8	29.2	249	100	Hori.	53.9	24.7	
1595.990	52.5	PK	26.2	-34.8	43.9	249	100	Hori.	73.9	30.0	
1874.981	41.3	AV	26.6	-34.4	33.5	313	106	Vert.	53.9	20.4	
1874.981	48.4	PK	26.6	-34.4	40.6	313	106	Vert.	73.9	33.3	
1874.981	47.6	PK	26.6	-34.4	39.8	87	102	Hori.	73.9	34.1	
1874.981	41.0	AV	26.6	-34.4	33.2	87	102	Hori.	53.9	20.7	
2494.440	38.2	AV	26.5	-34.1	30.6	190	100	Hori.	53.9	23.3	
2494.440	51.7	PK	26.5	-34.1	44.1	190	100	Hori.	73.9	29.8	
2494.440	38.1	AV	26.5	-34.1	30.5	222	100	Vert.	53.9	23.4	
2494.440	52.4	PK	26.5	-34.1	44.8	222	100	Vert.	73.9	29.1	

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

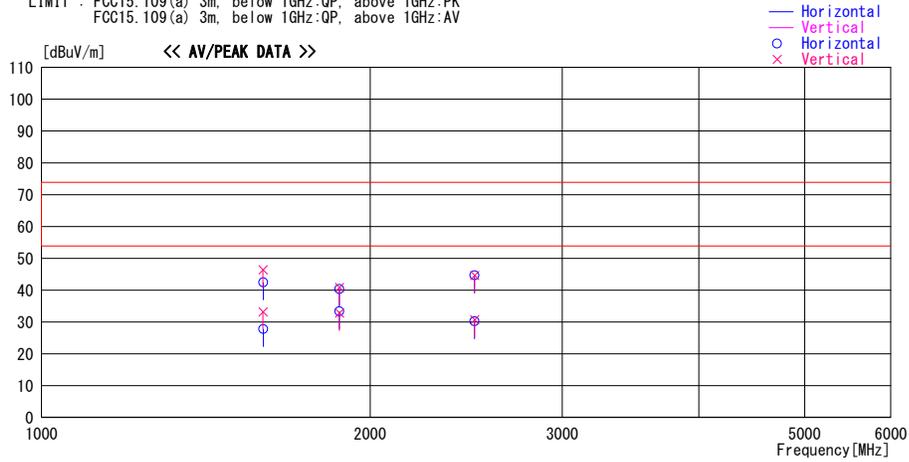
DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2011/10/17

Report No. : 32BE0119-HO
Temp./Humi. : 25deg. C / 67% RH
Engineer : Takeshi Choda

Mode / Remarks : USB Standby

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]							
1595.800	55.0	PK	26.2	-34.8	46.4	111	157	Vert.	73.9	27.5	
1595.800	41.8	AV	26.2	-34.8	33.2	111	157	Vert.	53.9	20.7	
1596.673	51.1	PK	26.2	-34.8	42.5	255	109	Hori.	73.9	31.4	
1596.673	36.4	AV	26.2	-34.8	27.8	255	109	Hori.	53.9	26.1	
1874.981	40.6	AV	26.6	-34.4	32.8	318	104	Vert.	53.9	21.1	
1874.981	48.6	PK	26.6	-34.4	40.8	318	104	Vert.	73.9	33.1	
1874.981	48.1	PK	26.6	-34.4	40.3	88	100	Hori.	73.9	33.6	
1874.981	41.1	AV	26.6	-34.4	33.3	88	100	Hori.	53.9	20.6	
2493.340	52.2	PK	26.5	-34.1	44.6	224	100	Vert.	73.9	29.3	
2493.340	38.3	AV	26.5	-34.1	30.7	224	100	Vert.	53.9	23.2	
2493.468	52.3	PK	26.5	-34.1	44.7	190	100	Hori.	73.9	29.2	
2493.468	37.8	AV	26.5	-34.1	30.2	190	100	Hori.	53.9	23.7	

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.

APPENDIX 2: Test instruments

EMI test equipment

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	2011/07/10 * 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	2011/09/10 * 12
KLA-04	Logperiodic Antenna	Schwarzbeck	USLP9143	361	RE	2011/08/17 * 12
MAT-08	Attenuator(6dB)	Weinschel Corp	2	BK7971	RE	2010/11/05 * 12
MCC-02	Coaxial Cable	Suhner/storm/Agilent/TSJ	-	-	RE	2011/09/17 * 12
MPA-19	Pre Amplifier	MITEQ	MLA-10K01-B01-35	1237616	RE	2011/02/28 * 12
MHA-05	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	253	RE	2011/06/19 * 12
MCC-134	Microwave Cable	HUBER+SUHNER	SUCOFLEX104	336167/4(1m) / 340641(5m)	RE	2011/09/07 * 12
MPA-01	Pre Amplifier	Agilent	8449B	3008A01671	RE	2011/02/24 * 12
MSA-03	Spectrum Analyzer	Agilent	E4448A	MY44020357	RE	2010/11/30 * 12
MLS-02	LISN(AMN)	Schwarzbeck	NSLK8127	8127383	CE(EUT)	2011/07/11 * 12
MLS-03	LISN(AMN)	Schwarzbeck	NSLK8127	8127384	CE(AE)	2011/07/11 * 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

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 emission

RE: Radiated emission

UL Japan, Inc.

Head Office EMC Lab.

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

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124