



EMI TEST REPORT

Test Report No. : 33CE0171-HO-B

Applicant : Sharp Corporation, Communication Systems Group.
Type of Equipment : Cellular Phone
Model No. : 200SH
FCC ID : APYHRO00181
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:

October 26, 2012

Representative test engineer:

Tsubasa Takayama
Engineer of WiSE Japan,
UL Verification Service

Approved by:

Takahiro Hatakeda
Leader of WiSE Japan,
UL Verification Service



NVLAP LAB CODE: 200572-0

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UL Japan, Inc.

Head Office EMC Lab.

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13-EM-F0429

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	7
SECTION 5: Conducted Emission	9
SECTION 6: Radiated Emission	10
APPENDIX 1: Data of EMI test	11
Conducted Emission	11
Radiated Emission	13
APPENDIX 2: Test instruments	17
APPENDIX 3: Photographs of test setup.....	18
Conducted Emission	18
Radiated Emission	19
Worst Case Position (Horizontal: X-axis/ Vertical:X-axis)	21

SECTION 1: Customer information

Company Name : Sharp Corporation, Communication Systems Group.
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. : 200SH
Serial No. : Refer to Section 4, Clause 4.2
Receipt Date of Sample : October 13, 2012
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 : 200SH is AXGP, Tri-band (FDD I/FDD VIII /FDD XI) WCDMA &
Tri-band (900/1800/1900) GSM Multi-mode Cellular Phone.
The EUT has the function that Bluetooth wireless technology interface
and wireless LAN technical interface for establishing contact and
transmitting data with certain device.
Clock frequencies in the system : CPU: 1.512MHz (Max)
RTC: 32.768kHz
Source oscillation: 19.2MHz / 27MHz (CPU) / 27.12MHz (NFC)

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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 August 13, 2012
and effective September 12, 2012

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] 11.7dB 3.63374MHz, L [AV] 11.0dB 0.17490MHz, L	Complied
Radiated emission	ANSI C63.4: 2009 8. Radiated emission measurements	Class B	N/A	7.6dB 598.799MHz, 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	4.3dB	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
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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

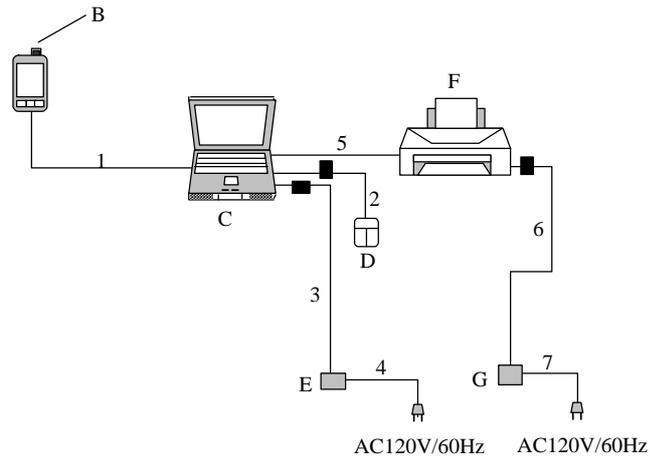
Refer to APPENDIX.

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

4.1 Operating modes

The mode(s) : 1) 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



■ : Standard Ferrite Core

*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	200SH	004401/11/441636/1	Sharp Corporation	EUT
B	microSD Memory Card	MMAUR02G3ACA-QMP	None	SAMSUNG	-
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 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: October 26, 2012 Test engineer: Tsubasa Takayama

SECTION 6: Radiated Emission

6.1 Operating environment

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

6.2 Test configuration

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

The EUT was set on the edge of the tabletop.

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

Photographs of the set up are shown in Appendix 1.

6.3 Test conditions

Frequency range : 30MHz-300MHz (Biconical antenna) / 300MHz-1000MHz (Logperiodic antenna)
1000MHz-8000MHz (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: October 26, 2012

Test engineer: Tsubasa Takayama

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APPENDIX 1: Data of EMI test

Conducted Emission

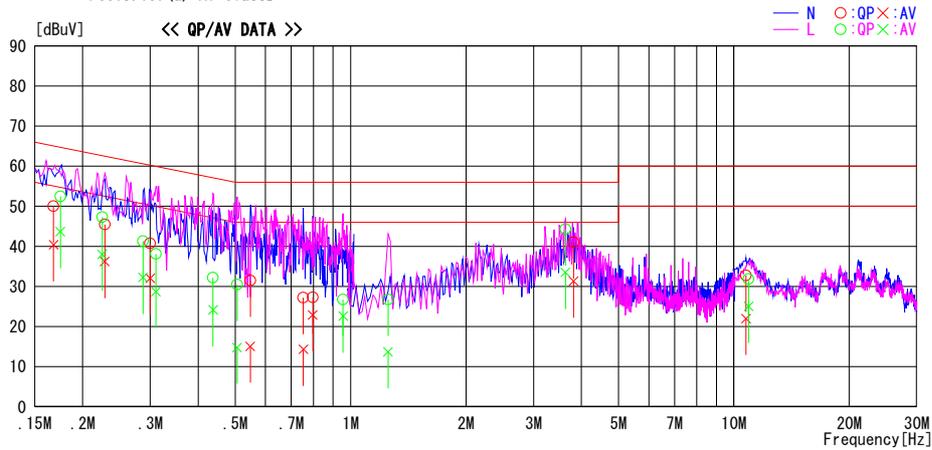
DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2012/10/26

Report No. : 33CE0171-HO
Temp./Humi. : 22deg. C / 48% RH
Engineer : Tsubasa Takayama

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
	QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dB]	AV [dB]	
0.16785	36.9	27.2	13.2	50.1	40.4	65.1	55.1	15.1	14.7	N
0.22846	32.3	23.0	13.2	45.5	36.2	62.5	52.5	17.0	16.3	N
0.29994	27.4	18.8	13.3	40.7	32.1	60.2	50.2	19.5	18.1	N
0.54752	18.2	1.8	13.3	31.5	15.1	56.0	46.0	24.5	30.9	N
0.75325	13.8	0.9	13.4	27.2	14.3	56.0	46.0	28.8	31.7	N
0.79684	13.9	9.5	13.4	27.3	22.9	56.0	46.0	28.7	23.1	N
3.81551	27.2	17.5	13.8	41.0	31.3	56.0	46.0	15.0	14.7	N
10.75360	18.1	7.4	14.6	32.7	22.0	60.0	50.0	27.3	28.0	N
0.17490	39.2	30.5	13.2	52.4	43.7	64.7	54.7	12.3	11.0	L
0.22497	34.1	24.8	13.2	47.3	38.0	62.6	52.6	15.3	14.6	L
0.28726	28.0	18.9	13.3	41.3	32.2	60.6	50.6	19.3	18.4	L
0.31040	24.8	15.4	13.3	38.1	28.7	60.0	50.0	21.9	21.3	L
0.43768	18.9	10.8	13.3	32.2	24.1	57.1	47.1	24.9	23.0	L
0.50567	17.1	1.5	13.3	30.4	14.8	56.0	46.0	25.6	31.2	L
0.95549	13.3	9.2	13.4	26.7	22.6	56.0	46.0	29.3	23.4	L
1.25265	13.4	0.3	13.4	26.8	13.7	56.0	46.0	29.2	32.3	L
3.63374	30.5	19.7	13.8	44.3	33.5	56.0	46.0	11.7	12.5	L
10.92541	17.2	10.4	14.6	31.8	25.0	60.0	50.0	28.2	25.0	L

CHART:WITH FACTOR, Peak hold data. CALCULATION:RESULT=READING+C.F (L1SN 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.

Conducted Emission

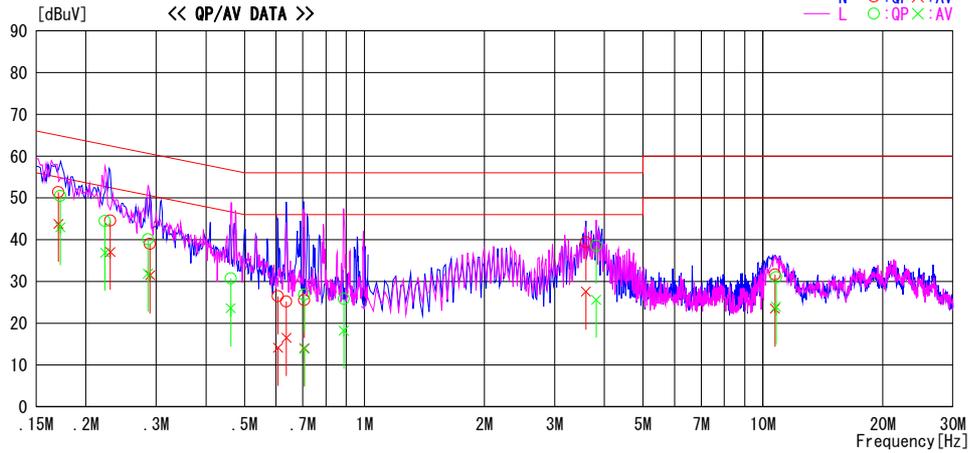
DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2012/10/26

Report No. : 33CE0171-HO
Temp./Humi. : 22deg. C / 48% RH
Engineer : Tsubasa Takayama

Mode / Remarks : Standby Mode

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



Frequency [MHz]	Reading		Corr. Factor	Results		Limit		Margin		Phase
	QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dB]	AV [dB]	
0.17062	38.2	30.6	13.2	51.4	43.8	64.9	54.9	13.5	11.1	N
0.23020	31.3	23.8	13.3	44.6	37.1	62.4	52.4	17.8	15.3	N
0.28948	25.7	18.2	13.3	39.0	31.5	60.5	50.5	21.5	19.0	N
0.60680	13.2	0.8	13.3	26.5	14.1	56.0	46.0	29.5	31.9	N
0.63643	11.9	3.2	13.3	25.2	16.5	56.0	46.0	30.8	29.5	N
0.70617	12.2	0.6	13.4	25.6	14.0	56.0	46.0	30.4	32.0	N
3.59739	25.6	13.8	13.8	39.4	27.6	56.0	46.0	16.6	18.4	N
10.71342	17.0	8.9	14.6	31.6	23.5	60.0	50.0	28.4	26.5	N
0.17244	37.3	29.8	13.2	50.5	43.0	64.8	54.8	14.3	11.8	L
0.22323	31.3	23.7	13.2	44.5	36.9	62.7	52.7	18.2	15.8	L
0.28599	26.8	18.6	13.3	40.1	31.9	60.6	50.6	20.5	18.7	L
0.46209	17.4	10.3	13.3	30.7	23.6	56.7	46.7	26.0	23.1	L
0.70617	13.4	0.5	13.4	26.8	13.9	56.0	46.0	29.2	32.1	L
0.88750	12.4	4.8	13.4	25.8	18.2	56.0	46.0	30.2	27.8	L
3.81551	24.7	11.8	13.8	38.5	25.6	56.0	46.0	17.5	20.4	L
10.79378	16.4	9.4	14.6	31.0	24.0	60.0	50.0	29.0	26.0	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)

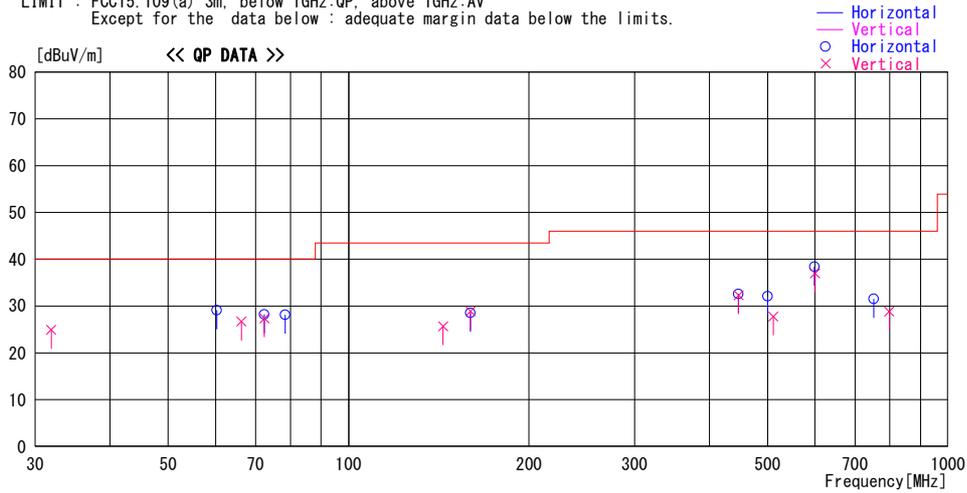
DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2012/10/26

Report No. : 33CE0171-H0
Temp./Humi. : 22deg. C / 48% RH
Engineer : Tsubasa Takayama

Mode / Remarks : USB Data Com Mode

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



Frequency [MHz]	Reading [dBuV]	DET	Antenna	Loss&	Level	Angle	Height	Polar.	Limit	Margin
			Factor	Gain						
			[dB/m]	[dB]	[dBuV/m]	[Deg]	[cm]		[dBuV/m]	[dB]
31.923	39.3	QP	17.1	-31.5	24.9	101	100	Vert.	40.0	15.1
60.301	52.5	QP	7.6	-31.0	29.1	302	400	Hori.	40.0	10.9
66.252	50.7	QP	6.9	-30.9	26.7	246	100	Vert.	40.0	13.3
72.364	52.4	QP	6.6	-30.8	28.2	116	400	Hori.	40.0	11.8
72.384	51.6	QP	6.6	-30.8	27.4	284	100	Vert.	40.0	12.6
78.408	52.0	QP	6.8	-30.7	28.1	167	391	Hori.	40.0	11.9
143.789	41.0	QP	14.6	-29.9	25.7	262	100	Vert.	43.5	17.8
159.768	43.4	QP	15.3	-29.8	28.9	129	100	Vert.	43.5	14.6
159.768	43.0	QP	15.3	-29.8	28.5	272	265	Hori.	43.5	15.0
447.350	41.5	QP	17.9	-26.8	32.6	191	177	Hori.	46.0	13.4
447.370	41.2	QP	17.9	-26.8	32.3	167	100	Vert.	46.0	13.7
500.326	40.2	QP	18.2	-26.3	32.1	243	204	Hori.	46.0	13.9
511.263	35.8	QP	18.3	-26.3	27.8	223	195	Vert.	46.0	18.2
598.799	44.5	QP	19.4	-25.5	38.4	128	200	Hori.	46.0	7.6
600.201	43.1	QP	19.4	-25.5	37.0	242	100	Vert.	46.0	9.0
751.707	34.8	QP	21.3	-24.6	31.5	26	182	Hori.	46.0	14.5
798.001	31.2	QP	22.0	-24.4	28.8	359	100	Vert.	46.0	17.2

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

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

Radiated Emission
(Below 1GHz)

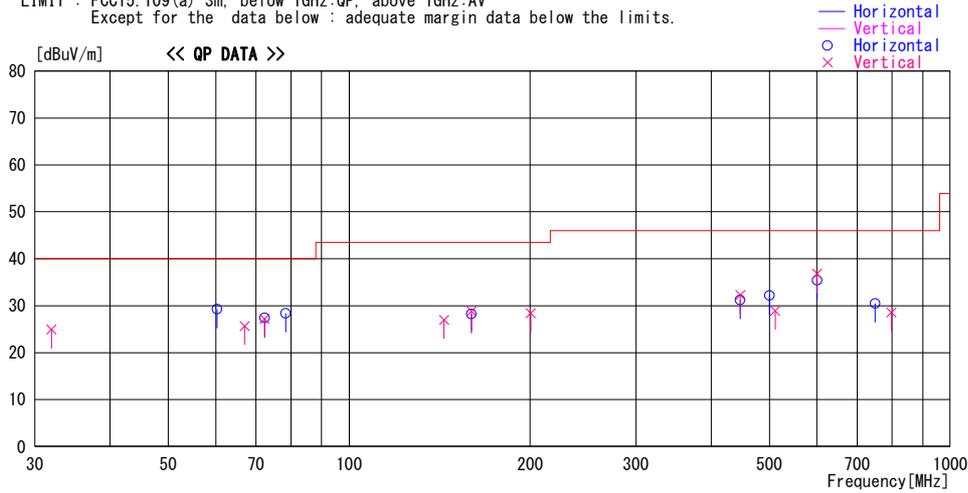
DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2012/10/26

Report No. : 33CE0171-HO
Temp./Humi. : 22deg. C / 48% RH
Engineer : Tsubasa Takayama

Mode / Remarks : Standby Mode

LIMIT : FCC15.109(a) 3m, below 1GHz:QP, above 1GHz:AV
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]
			Factor [dB/m]	Loss& Gain [dB]						
31.981	39.3	QP	17.1	-31.5	24.9	121	100	Vert.	40.0	15.1
60.321	52.7	QP	7.6	-31.0	29.3	308	400	Hori.	40.0	10.7
66.973	49.8	QP	6.8	-30.9	25.7	241	100	Vert.	40.0	14.3
72.351	51.4	QP	6.6	-30.8	27.2	281	100	Vert.	40.0	12.8
72.372	51.6	QP	6.6	-30.8	27.4	141	371	Hori.	40.0	12.6
78.421	52.3	QP	6.8	-30.7	28.4	166	327	Hori.	40.0	11.6
143.789	42.3	QP	14.6	-29.9	27.0	251	100	Vert.	43.5	16.5
159.766	42.7	QP	15.3	-29.8	28.2	281	265	Hori.	43.5	15.3
159.772	43.3	QP	15.3	-29.8	28.8	132	100	Vert.	43.5	14.7
200.440	41.2	QP	16.6	-29.4	28.4	7	100	Vert.	43.5	15.1
447.352	40.1	QP	17.9	-26.8	31.2	201	157	Hori.	46.0	14.8
447.370	41.2	QP	17.9	-26.8	32.3	151	105	Vert.	46.0	13.7
500.306	40.3	QP	18.2	-26.3	32.2	243	204	Hori.	46.0	13.8
511.263	36.9	QP	18.3	-26.3	28.9	223	192	Vert.	46.0	17.1
600.429	41.5	QP	19.4	-25.5	35.4	128	232	Hori.	46.0	10.6
599.780	42.9	QP	19.4	-25.5	36.8	265	100	Vert.	46.0	9.2
749.967	33.8	QP	21.3	-24.6	30.5	8	168	Hori.	46.0	15.5
798.001	31.0	QP	22.0	-24.4	28.6	280	100	Vert.	46.0	17.4

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
(Above 1GHz)

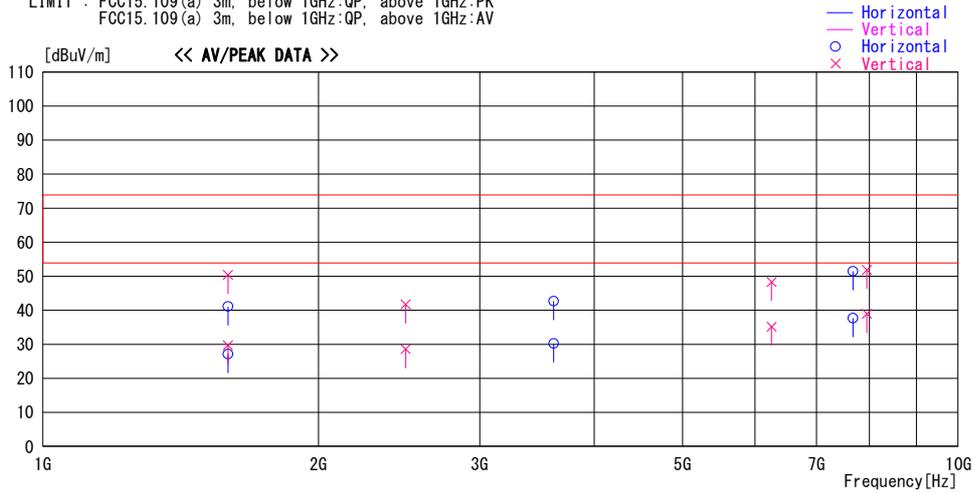
DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2012/10/26

Report No. : 33CE0171-HO
Temp./Humi. : 22deg. C / 48% RH
Engineer : Tsubasa Takayama

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 Factor [dB/m]	Loss& Gain [dB]	Level [dBuV/m]	Angle [Deg]	Height [cm]	Polar.	Limit [dBuV/m]	Margin [dB]	Comment
1593.183	38.5	AV	25.8	-34.6	29.7	54	100	Vert.	53.9	24.2	
1593.183	35.9	AV	25.8	-34.6	27.1	48	117	Hori.	53.9	26.8	
1593.183	59.2	PK	25.8	-34.6	50.4	54	100	Vert.	73.9	23.5	
1593.183	50.0	PK	25.8	-34.6	41.2	48	117	Hori.	73.9	32.8	
2490.981	35.2	AV	27.5	-34.1	28.6	58	117	Vert.	53.9	25.3	
2490.981	48.3	PK	27.5	-34.1	41.7	58	117	Vert.	73.9	32.2	
3613.237	34.2	AV	29.3	-33.3	30.2	8	101	Hori.	53.9	23.7	
3613.237	46.7	PK	29.3	-33.3	42.7	8	101	Hori.	73.9	31.2	
6252.502	33.8	AV	33.4	-32.0	35.2	175	100	Vert.	53.9	18.7	
6252.502	46.9	PK	33.4	-32.0	48.3	175	100	Vert.	73.9	25.6	
7675.345	32.8	AV	36.6	-31.7	37.7	177	100	Hori.	53.9	16.2	
7675.345	46.6	PK	36.6	-31.7	51.5	177	100	Hori.	73.9	22.4	
7945.886	33.8	AV	36.8	-31.7	38.9	178	100	Vert.	53.9	15.0	
7945.886	46.8	PK	36.8	-31.7	51.9	178	100	Vert.	73.9	22.0	

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
(Above 1GHz)

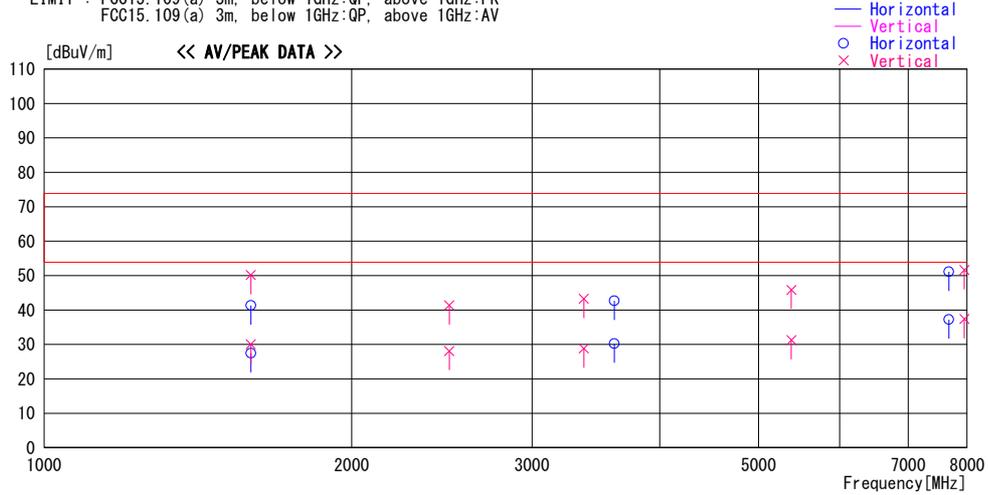
DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2012/10/26

Report No. : 33CE0171-HO
Temp./Humi. : 22deg. C / 48% RH
Engineer : Tsubasa Takayama

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 [dBuV/m]	Angle [Deg]	Height [cm]	Polar.	Limit [dBuV/m]	Margin [dB]
			Factor [dB/m]	Gain [dB]						
1593.183	38.9	AV	25.8	-34.6	30.1	97	100	Vert.	53.9	23.9
1593.183	36.3	AV	25.8	-34.6	27.5	303	126	Hori.	53.9	26.4
1593.183	59.0	PK	25.8	-34.6	50.2	97	100	Vert.	73.9	23.7
1593.183	50.2	PK	25.8	-34.6	41.4	303	126	Hori.	73.9	32.5
2490.981	34.7	AV	27.5	-34.1	28.1	149	100	Vert.	53.9	25.8
2490.981	48.0	PK	27.5	-34.1	41.4	149	100	Vert.	73.9	32.5
3372.754	33.4	AV	28.9	-33.5	28.8	168	100	Vert.	53.9	25.1
3372.754	47.9	PK	28.9	-33.5	43.3	168	100	Vert.	73.9	30.6
3613.237	34.3	AV	29.3	-33.3	30.3	172	101	Hori.	53.9	23.6
3613.237	46.7	PK	29.3	-33.3	42.7	172	101	Hori.	73.9	31.2
5380.761	32.0	AV	31.7	-32.4	31.3	147	115	Vert.	53.9	22.6
5380.761	46.6	PK	31.7	-32.4	45.9	147	115	Vert.	73.9	28.0
7675.345	32.4	AV	36.6	-31.7	37.3	125	100	Hori.	53.9	16.6
7675.345	46.2	PK	36.6	-31.7	51.1	125	100	Hori.	73.9	22.8
7945.886	32.3	AV	36.8	-31.7	37.4	332	100	Vert.	53.9	16.5
7945.886	46.5	PK	36.8	-31.7	51.6	332	100	Vert.	73.9	22.3

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 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	2012/08/01 * 12
MOS-27	Thermo-Hygrometer	CUSTOM	CTH-201	A08Q26	RE/CE	2012/02/08 * 12
MJM-01	Measure	KDS	ES19-55	-	RE/CE	-
COTS-MEMI	EMI measurement program	TSJ	TEPTO-DV	-	RE/CE	-
MTR-09	EMI Test Reseiver	Rohde & Schwarz	ESU26	100412	RE/CE	2012/06/14 * 12
KBA-05	Biconical Antenna	Schwarzbeck	BBA9106	2513	RE	2011/11/23 * 12
KLA-04	Logperiodic Antenna	Schwarzbeck	USLP9143	361	RE	2011/11/23 * 12
MAT-08	Attenuator(6dB)	Weinschel Corp	2	BK7971	RE	2011/11/02 * 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	2012/02/20 * 12
MHA-05	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	253	RE	2012/06/27 * 12
MCC-142	Microwave Cable	Junkosha	MWX221	1203S213(1m) / 1204S063(5m)	RE	2012/04/23 * 12
MPA-01	Pre Amplifier	Agilent	8449B	3008A01671	RE	2012/02/28 * 12
MLS-06	LISN(AMN)	Schwarzbeck	NSLK8127	8127363	CE(EUT)	2012/02/06 * 12
MCC-03	Coaxial Cable	Fujikura/Suhner/TSJ	5D-2W(20m)/ 3D-2W(7.5m)/ RG400u(1.5m)/ RFM-E421(Switcher)	-/01068(Switcher)	CE	2012/01/22 * 12
MMM-01	Digital Tester	Fluke	FLUKE 26-3	78030611	CE	2012/08/21 * 12
MLS-02	LISN(AMN)	Schwarzbeck	NSLK8127	8127383	CE(AE)	2012/07/17 * 12
MTA-28	Terminator	TME	CT-01	-	CE	2011/11/01 * 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

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